Consumers Energy
Count on Us

A CMS Energy Company

General Offices:
One Energy Plaza Tel: (517) 788-0550
Jackson, MI 49201 Fax: (517) 768-3644

*Washington Office:
1730 Rhode Island Ave. N.W. Tel: (202) 778-3340
Suite 1007
Washington, DC 20036 Fax: (202) 778-3355

Writer's Direct Dial Number: (517) 788-0698
Writer's E-mail Address: gary.genschjr@cmsenergy.com

August 1, 2019

Ms. Barbara Kunkel
Acting Executive Secretary
Michigan Public Service Commission
7109 West Saginaw Highway
Post Office Box 30221
Lansing, MI 48909

Re: Case No. U-20372 – In the matter, on the Commission's own motion, regarding the regulatory reviews, revisions, determinations, and/or approvals necessary for CONSUMERS ENERGY COMPANY to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016

Dear Ms. Kunkel:

Enclosed for electronic filing in the above-captioned case, please find **Consumers Energy Company's Application and the Testimony and Exhibits of Company Witnesses Theodore A. Ykimoff, Eugène M. Breuring, Rudolph M. Chahine, Alex M. Gast, Shawn C. Hurd, Svitlana Lykhytska, Richard A. Morgan, and Theresa K. Schmidt**.

This is a paperless filing and is therefore being filed only in a PDF format. I have enclosed a Proof of Service showing electronic service upon the parties to Case Nos. U-18261 and U-17771.

Sincerely,

Digitally signed by
Gary A. Gensch, Jr.
Date: 2019.08.01
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Gary A. Gensch, Jr.

cc: Parties to Case Nos. U-18261 and U-17771 per Attachment 1 to Proof of Service

Fl0819-1-233

S T A T E O F M I C H I G A N

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

APPLICATION FOR APPROVAL OF CONSUMERS ENERGY COMPANY'S 2020-2023 ENERGY WASTE REDUCTION PLAN

In this Application, Consumers Energy Company ("Consumers Energy" or the "Company") seeks approval of an Energy Waste Reduction ("EWR") Plan for the period 2020 through 2023. Consumers Energy's 2018-2021 EWR Plan was approved by the Michigan Public Service Commission ("MPSC" or the "Commission") in Case No. U-18261, January 23, 2018 Order, pursuant to 2008 PA 295, MCL 460.1001 *et seq*., ("Act 295") as amended by 2016 PA 342 ("Act 342") (collectively "Act 295, as amended"). That EWR Plan is currently in effect.

Consumers Energy is filing this Application for approval of an EWR Plan for the years 2020 through 2023 to reflect increased investments in EWR programs, and to comply with Act 295, as amended. The Company respectfully requests that the Commission review and approve its 2020-2023 EWR Plan, authorize Consumers Energy to recover the costs of the Plan, and grant it additional relief as set forth herein. In support of this Application, Consumers Energy states as follows:

I. INTRODUCTION AND JURISDICTION

1. Consumers Energy is, among other things, engaged as a public utility in the business of generating, purchasing, distributing, and selling electric energy to approximately

1.8 million retail electric customers in the state of Michigan. The retail electric system of Consumers Energy is operated as a single utility system. Consumers Energy is also engaged as a public utility in the distribution and sale of natural gas to approximately 1.8 million retail customers in the state of Michigan. Consumers Energy's natural gas system is fully integrated and interconnected.

2. Consumers Energy's retail electric and natural gas businesses are subject to the jurisdiction of the Commission pursuant to various provisions of law including 1909 PA 106, as amended, MCL 460.551 *et seq*.; 1919 PA 419, as amended, MCL 460.51 *et seq*.; 1939 PA 3, as amended, MCL 460.1, *et seq*.; 2008 PA 295, MCL 460.1001 *et seq*.; and 2016 PA 342, MCL 460.1001 *et seq*. Pursuant to its statutory authority, the Commission has power and jurisdiction to regulate Consumers Energy's retail electric and natural gas rates.

3. Act 295, as amended, authorizes utilities to file, and the Commission to review, EWR plans and amendments thereto. An EWR Plan under Act 295, as amended, is required to: (i) propose a set of EWR programs that will meet energy savings targets established by Act 295; (ii) include offerings for each customer class, including low-income residential customers; (iii) specify necessary funding levels; (iv) propose cost recovery mechanisms that will allow recovery of EWR Plan costs; (v) demonstrate that the EWR programs, excluding program offerings to low-income residential customers, will be cost effective; and (vi) provide for the practical and effective administration of the proposed programs.

4. Consumers Energy's proposed 2020-2023 EWR Plan conforms to the provisions of Act 295, as amended.

II. <u>CONSUMERS ENERGY'S 2020-2023 EWR PLAN</u>

5. Consumers Energy's proposed 2020-2023 EWR Plan includes the programs that the Company intends to implement to meet the EWR standards established by Act 295, as

amended, as well as the estimated costs of those programs. The total cost of the electric EWR Plan proposed by the Company is approximately $137.3 million in 2020, $157.2 million in 2021, $161.5 million in 2022, and $164.4 million in 2023. The total cost of the natural gas EWR Plan proposed by the Company is approximately $67.1 million in 2020, $66.4 million in 2021, $67.7 million in 2022, and $69.2 million in 2023.

6. The Company's proposed 2020-2023 EWR Plan's gas energy savings targets remove the previous downward adjustment to reflect an amount of sales for large gas transportation customers commensurate with their share of revenue contribution. This downward adjustment treatment was approved by the Commission in Case Nos. U-16412, U-16670, U-17351, U-17771, and U-18261. The Company proposes in this proceeding a downward adjustment in gas energy savings targets to remove gas sales to electric generation customers.

7. The Company is committed to helping its low-income customers reduce energy waste by continuing its investment in the Income Qualified Program. Indeed, the Company proposes to invest approximately 6% and 11% of its total electric and gas EWR funding to assist low-income customers, respectively.

8. The Company is required to provide a cost-effective EWR portfolio, as measured by the Utility System Resource Cost Test, and to have an independent third party validate the cost savings annually. Consumers Energy's proposed 2020-2023 EWR Plan complies with these requirements.

9. If the Company's proposed 2020-2023 EWR Plan spending levels are approved as part of this Application, the Company expects to exceed the electric and gas statutory savings

targets of 1.00% and 0.75% by at least 0.90% and 0.33%, respectively. The Company believes the spending levels presented in its 2020-2023 EWR Plan are reasonable and prudent.

10. The Company's 2020-2023 EWR Plan is part of a comprehensive plan to meet the future energy needs of customers through a reasonable combination of cost-effective supply-side and demand-side options, as presented and approved in the Company's Integrated Resource Plan in Case No. U-20165.

11. The Company requests continued authority to reallocate up to 30% of the overall EWR budget, by class, to ensure program flexibility and stability for the more popular programs. This reallocation was approved in Case Nos. U-16412, U-16670, U-17351, U-17771, and U-18251, and is authorized by Section 71(4)(h) of Act 295, as amended. The Company also requests the flexibility to pull back up to 5% of the following year's total electric and gas budget to be invested in the then-current year, if needed.

12. The Company requests continued authority to roll-forward any unspent EWR Plan funds from one year to the next, as applicable.

III. ACCOUNTING AUTHORITY

13. Consumers Energy seeks Commission approval to continue the accounting practices previously authorized by the Commission in its approval of the Company's original Energy Optimization (now EWR) Plan.

IV. TESTIMONY AND EXHIBITS

14. In support of this Application, the Company is filing written testimony and exhibits, describing the relief the Company is seeking in this case. Reference to this material will provide additional details on the relief being sought. The relief described in the testimony and exhibits should be considered as if specifically requested in this Application. Consumers

Energy expressly reserves the right to revise, amend, or otherwise change the relief it is requesting in any way appropriate depending upon the duration and progress of hearings in this proceeding, the issuance of orders that have an impact upon this case, or the occurrence of other material events.

V. CONSOLIDATION OF ELECTRIC AND GAS EWR PLANS

15. As encouraged by the Commission's Order issued October 21, 2008 in Case Nos. U-15805 and U-15889, the Company has prepared its filing, including its testimony and exhibits, in a fashion that presents its electric EWR Plan and natural gas EWR Plan on a consolidated basis. Since Consumers Energy has both natural gas and electric utility divisions, conducting a review of its 2020-2023 EWR Plan, on a consolidated basis, will allow for a more efficient and comprehensive review.

VI. APPROVAL OF SURCHARGES

16. Consumers Energy seeks approval of EWR surcharges to recover the electric and natural gas 2020-2023 EWR Plan costs from customers as set forth more specifically in the testimony and exhibits of Company witnesses Alex M. Gast and Theodore A. Ykimoff.

The EWR surcharges referenced above are the levelized 2020-2023 surcharges for each customer group and represent only the electric and gas EWR Plans' components of the respective surcharges. Consumers Energy anticipates requesting approval of an incentive portion of EWR surcharges in its annual reconciliations of the 2020-2023 EWR Plan, consistent with Act 295, as amended. Consumers Energy's EWR incentive proposal is specifically explained in the testimony and exhibits of Company witness Theodore A. Ykimoff.

VII. REQUESTED TIME FOR APPROVAL OF THE 2020-2023 EWR PLAN

17. In order to ensure that funds for the increased spending on EWR programs are available for all of 2020, Consumers Energy requests an order approving the proposed Plan be issued in order to allow for implementation of the requested surcharges in January 2020 customer bills.

18. Issuing an Order approving the Company's 2020-2023 EWR Plan before January 2020 will benefit customers, as there will be more time in which to levelize the EWR Plan surcharges. Delay in approving the Company's proposed EWR Plan will cause the surcharges to be higher in order to recover the costs of the EWR Plan. Moreover, without the timely approval and recovery of the additional investments being sought in this case, the Company risks suspending its business programs early in order to remain below the currently-approved funding levels, thereby eroding established relationships with trade allies and customers.

VIII. REQUEST FOR RELIEF

WHEREFORE, Consumers Energy Company requests that the Michigan Public Service Commission:

A. Determine that the Company's proposed 2020-2023 EWR Plan is reasonable and prudent, and that it meets all applicable requirements of Act 295, as amended;

B. Approve the requested 2020-2023 EWR Plan natural gas and electric surcharges;

C. Approve the requested accounting authority described in the Company's testimony;

D. Approve authority to roll forward any unspent funds into future approved EWR plans and to pull back up to 5% of the following year's total electric and gas budget to be invested in the then-current year, if needed;

E. Approve the issuance of the tariff sheets as more fully described in the attached testimony and exhibits of Company witness Shawn C. Hurd;

F. Approve the EWR incentive proposal set forth in the Company's testimony and exhibits;

G. Approve the relief requested in this proceeding before January 2020; and

H. Grant Consumers Energy such other and further relief as is just and reasonable.

Respectfully submitted,

CONSUMERS ENERGY COMPANY

Digitally signed by Lauren Youngdahl Synder
DN: cn=Lauren Youngdahl Synder, o=Consumers Energy Company, ou, email=lauren.youngdahlsnyder@cmsenergy.com, c=US
Date: 2019.08.01 16:34:10 -04'00'

Dated: August 1, 2019

By: _____

Lauren E. Youngdahl Snyder
Vice President, Customer Experience

Digitally signed by Gary A. Gensch, Jr.
Date: 2019.08.01 16:27:37 -04'00'

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Gary Gensch, Jr. (P66912)
Theresa A. G. Staley (P56998)
One Energy Plaza
Jackson, Michigan 49201
Attorneys for Consumers Energy Company
(517) 788-2910

S T A T E O F M I C H I G A N

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

VERIFICATION

Lauren E. Youngdahl Snyder, states that she is Vice President of Customer Experience; that she has executed the foregoing Application for and on behalf of Consumers Energy Company; that she has read the foregoing Application and is familiar with the contents thereof; that the facts contained therein are true, to the best of her knowledge and belief; and that she is duly authorized to execute such Application on behalf of Consumers Energy Company.

Lauren Youngdahl Snyder

Digitally signed by Lauren Youngdahl Synder
DN: cn=Lauren Youngdahl Synder, o=Consumers Energy Company, ou, email=lauren.youngdahlsnyder@cmsenergy.com, c=US
Date: 2019.08.01 16:34:45 -04'00'

Dated: August 1, 2019 By: _____

Lauren E. Youngdahl Snyder
Vice President, Customer Experience

S T A T E O F M I C H I G A N

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

DIRECT TESTIMONY

OF

THEODORE A. YKIMOFF

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

Q. Please state your name and business address.

A. My name is Theodore A. Ykimoff, and my business address is One Energy Plaza, Jackson, Michigan, 49201.

Q. By whom are you employed and in what capacity?

A. I am employed by Consumers Energy Company ("Consumers Energy" or the "Company") as Director of Smart Energy Waste Reduction ("EWR") Solutions. In this capacity, I am responsible for overseeing the development, implementation, and evaluation of the Company's electric and gas EWR Plans.

Q. Please describe your educational and professional experience.

A. I have a bachelor's degree in Business Administration from Michigan State University. In 1992, I accepted the position of Gas Conservation Program Manager in the Marketing Department with Consumers Energy. In this role, I was responsible for marketing value-added products and services to the Company's approximately 1.5 million residential gas customers. In 2003, I assumed the position of Corporate Account Manager in the Company's Customer Operations Department. In this role I provided value-added products and services to the Company's large electric and gas business customers. In early 2008, I was promoted to Senior Program Lead in the Company's Energy Efficiency Department. In this role, I was responsible for developing the Company's Energy Optimization ("EO") Plans in accordance with the requirements established by the 2008 energy law, Public Act 295 of 2008 ("Act 295"). In 2011, I was promoted to Residential Energy Efficiency Operations Director, which expanded my responsibilities to include supervising the development and implementation of the Company's residential energy efficiency programs. Public Act 342 of 2016 ("Act 342")

amended Act 295, and replaced the "Energy Optimization" nomenclature used in Act 295 with "Energy Waste Reduction." In 2017, I was promoted to my current position, which expanded my responsibility to include supervising the Company's business EWR programs; evaluation, measurement, and verification of the residential and business program savings; and the marketing of these programs.

Q. Please list the cases in which you have testified.

A. I have testified before the Michigan Public Service Commission ("MPSC" or the "Commission") in the following cases:

Case No.	Description
U-16670	2012 – 2015 EO Plan;
U-16860	Gas Revenue Pilot Decoupling Mechanism;
U-17351	2014–2017 Amended EO Plan;
U-17601	2013 EO Reconciliation;
U-17771	2016–2017 Amended EO Plan;
U-17831	2014 EO Reconciliation;
U-18025	2015 EO Reconciliation;
U-18261	2018–2021 EWR Plan;
U-20134	2018 Electric Rate Case;
U-20028	2017 EWR Reconciliation;
U-20165	2018 Integrated Resource Plan; and
U-20365	2018 EWR Reconciliation.

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

A. I am sponsoring the Company's 2020-2023 Electric and Gas EWR Plan (the "Plan"). Specifically, I will:

I. Provide an overview of the Company's Plan in this filing;

II. Describe the customer benefits and rate impacts of the Company's Plan;

III. Describe the Company's recommended 2020-2023 financial incentive mechanism; and

IV. Provide a status update on the settlement agreement from the Company's 2018-2021 EWR Plan (Case No. U-18261).

Q. Are you sponsoring any exhibits in this case?

A. Yes, I am sponsoring the following exhibits:

Exhibit A-1 (TAY-1)	Calculation of Annual Energy Savings Targets;
Exhibit A-2 (TAY-2)	2020-2023 Energy Waste Reduction Plan Report;
Exhibit A-3 (TAY-3)	Proposed 2020-2023 Financial Incentive and Mechanism; and
Exhibit A-4 (TAY-4)	Pay-My-Way Report.

Q. Were these exhibits prepared by you or under your supervision?

A. Yes.

I. <u>EWR PLAN OVERVIEW</u>

Q. Please provide a brief overview of the Company's EWR Plan.

A. The Company is committed to continue its 10-year success of delivering a cost effective and comprehensive portfolio of residential and business EWR programs that enable its customers to save more energy and spend less on their utility bill. In particular, the Company intends to leverage its existing EWR network of trade allies and program infrastructure that has been refined over the past 10 years to continue to deliver energy

savings services and programs. To accomplish this, the Company is proposing the Commission approve its filed Plan, in accordance with Act 295, as amended, before December 31, 2019. Approving this Plan will ensure the Company's customers will continue to access programs and services that help them save energy and spend less on their utility bills beyond 2019, and that the Company can meet the increased energy savings commitments approved in its Case No. U-20165 Integrated Resource Plan ("IRP") filing. The details of the residential and business programs are presented by Company witnesses Theresa K. Schmidt and Rudolph M. Chahine, respectively. The cost effectiveness of each program and the overall plan are presented by Company witness Richard A. Morgan. The energy forecasts necessary to calculate the electric and gas saving targets are presented by Company witness Eugène M. Bruering. Company witness Alex M. Gast presents the surcharges necessary to implement and administer the plan and the proposal to remove the current EWR surcharge for Company-owned streetlights and replace with an opt-in option for customers. The funding reserve balance and low-income accounting adjustment that support the EWR surcharges are sponsored by Company witness Svitlana Lykhytska. Company witness Shawn C. Hurd provides testimony in support of the draft tariff sheets supporting EWR surcharges and also removing the EWR surcharge as a line item on customer bills.

Q. What would result if the Commission does not approve the Company's 2020-2023 Plan before December 31, 2019?

A. While the Company's current approved Plan covers the 2018-2021 Plan period, beginning in 2020 the Company intends to deliver additional electric and gas savings above those filed in that Plan, which will require additional investment. The increased

electric savings target resulted from aligning with the Company's goal filed in the IRP. The increased gas savings target is a result of eliminating a long-standing energy savings reduction adjustment to the overall gas savings target as part of this filing. Until the Commission has approved the Company's 2020-2023 Plan, the Company will not have confidence that additional investment is available, which will impede planning efforts and commitments to contractors. This would ultimately put at risk the Company's ability to meet the increased savings targets and create potential disruptions to existing EWR programs, along with loss of confidence and satisfaction among customers.

Q. How would delaying approval of the Company's Plan hinder its ability to meet the increased demand-side EWR energy and capacity goals proposed in Case No. U-20165?

A. Beginning in 2020, the energy savings target increases 20% (from 1.5% to 1.8%) compared to 2019. Although acquiring the additional demand-side EWR resource requires less time than building a similar-sized supply-side resource, it is not as simple as merely flipping a switch. The Company has learned that it takes time and concerted effort to build and maintain trusting relationships with trade allies and customers. While most residential EWR programs have a short cycle time (application to rebate fulfillment or service) that can be less than 30 days, business projects can take several months to complete. The Company needs confidence when reserving funds for each customer's project that the funding is available to meet these commitments so as to not erode relationships with trade allies and customers by suspending programs until funding is available.

Q. Is the Company proposing any changes in the methodology for calculating the annual savings targets?

A. No. The annual energy savings targets are shown in Exhibit A-1 (TAY-1) for both electric and gas service. The savings targets for each service are based on the corresponding annual retail sales provided by Company witness Breuring. The Company proposes to continue calculating energy savings targets based on the prior year weather normalized sales and the statutory savings percentages in accordance with Sections 77(1) and 77(3) of Act 295, as amended by Act 342.

Q. Is the Company proposing to adjust its annual saving targets?

A. Yes, in Exhibit A-1 (TAY-1), page 2, line 2, when determining total gas sales (basis to calculate statutory target), the Company is proposing to remove gas sales to Electric Generation customers.

Q. Why is the Company proposing this adjustment?

A. The Company's 12 Electric Generation customers currently represent nearly 5% of total gas sales and their inclusion would increase the statutory annual energy savings target by over 100,000 Mcf. Electric Generation customers have not historically participated in EWR gas programs.

Q. What are some of the changing market and program issues which impacted the 2020-2023 EWR Plan?

A. Consumers Energy, like many utilities in the region and country, is facing numerous market disruptions and other challenges that impact its savings forecast and the overall 2020-2023 EWR Plan. These include changing codes and standards that are set to reduce energy savings for measures such as Light Emitting Diodes ("LEDs") and Electronically

Commutated Motors that have historically delivered a large share of the Company's energy savings, and current limits on energy savings associated with behavioral programs. For gas programs, while an absolute benefit to customers, reduced natural gas costs make it more challenging to deliver cost-effective EWR savings. These items and others are more fully discussed in Exhibit A-2 (TAY-2)

Q. If the Company's investment level is approved in this filing, will it exceed the minimum statutory energy savings targets?

A. Yes, the Company expects to exceed the electric and gas statutory savings targets of 1.00% and 0.75% by at least 0.90% and 0.33%, respectively. Although the Company expects to exceed the statutory savings targets, as already noted, we do anticipate challenges associated with changes in federal standards and declining natural gas prices that are increasing the difficulty of helping customers reduce energy waste in a cost-effective manner.

Q. Please explain why the Company believes the level of spending requested is reasonable.

A. The Company considered both the level of energy savings and cost-effectiveness of these savings when developing its plan. Specifically, the Company engaged Morgan Marketing Partners as an independent consultant to assist in evaluating the cost-effectiveness of the Company's individual programs and the overall plan. Although the Company used the Utility System Resource Cost Test ("UCT") as its primary measure of cost-effectiveness, it also considered the results of the Total Resource Cost Test, Participant Test, and Rate Impact Test when evaluating its programs. The results of these tests are presented in Exhibit A-2 (TAY-2).

Q. Please describe the results of the UCT associated with the plan.

A. The UCT provides a measure of the avoided system costs relative to the program costs associated with implementing and administering a plan. Intuitively, the avoided costs can be thought of as the system benefit from a customer participating in a program. If the energy savings can be delivered at a UCT greater than unity, then the benefit exceeds the cost of providing the program. Thus, the plan is considered a worthy investment. As shown on Exhibit A-2 (TAY-2), the Company's plan achieves UCT scores of 3.12 and 1.42 for electric and gas services, respectively.

Q. Is the Company proposing to continue investing in Education and Awareness and Pilots as part of its 2020-2023 Plan?

A. Yes, the Company proposes to invest 3% and 5% of its recommended annual funding in Education and Awareness and Pilots, respectively, for both its electric and gas programs. In addition, the Company proposes to continue applying the deemed savings from these investments as part of meeting its statutory and performance objectives.

Q. Is the Company proposing any changes to the structure of its programs as part of its Plan?

A. Yes, the Company proposes, effective January 1, 2020, to end the current EWR surcharge ($0.27/fixture) to municipal customers with utility-owned street lighting and update this to an opt-in surcharge for these customers. Other than that change, the Company proposes to continue offering its currently approved 13 residential programs and four business programs in addition to a variety of pilots.

Q. Why does the Company propose to eliminate the surcharge to municipal customers with utility-owned street lighting?

A. The Company is now replacing, upon failure, any cobra head streetlight with an LED. These lights represent 70% of the utility-owned streetlights for which municipal customers are receiving an EWR surcharge. Municipal customer feedback indicates that they plan to wait for these lights to fail rather than pay the utility for an early LED upgrade to receive an EWR incentive. Thus, the Company proposes to make this an opt-in option consistent with customer-owned lighting.

Q. Act 295 requires removal of the EWR itemized surcharge on customer bills no later than January 1, 2021. Is the Company proposing to remove the EWR itemized surcharge on customer bills prior to this date?

A. Yes. The Company proposes to remove the EWR itemized surcharge on customer bills by April 1, 2020. Company witness Hurd provides additional details in his direct testimony to support this request.

Q. How were the programs in the Company's plan selected?

A. The Company selected the programs in its plan based on (i) electric and gas market potential studies; (ii) their proven ability to deliver cost-effective energy savings in other jurisdictions; and (iii) the Company's own experience with implementing and administering the programs in Michigan. Moreover, the Company is continuously testing alternative services under its residential and business pilot programs.

Q. Does the Company propose to continue investing in informational report programs to encourage customers to reduce energy waste?

A. Yes. The benefits associated with informational report programs that help customers reduce energy waste are well documented. Indeed, the Cadmus Group has performed more than a dozen studies and evaluations, using rigorous and thoroughly vetted methods, to determine and isolate the impacts of the Company's informational report programs. Some of the techniques used by Cadmus have included: difference-in-difference billing analysis, regression analysis, uplift analysis, treatment and control group surveys, customer satisfaction surveys, stakeholder interviews, materials and database reviews, market plan assessments, and focus groups.

Q. Is the Company proposing to increase its level of investment in helping low-income customers reduce energy waste?

A. Yes, the Company is committed to providing its low-income customers with a robust set of energy saving services. In each of the first two years of this plan filing, investment in helping low-income customers is increasing 21% and 42% above the current $16.8 million investment in 2019. In particular, customers participating in the Company's Income Qualified program receive recommended energy saving solutions and financial assistance, along with energy saving information to assist them in reducing energy waste and managing their utility bills. Often the Company coordinates its low-income services with local contractors and community nonprofit agencies to provide customers with assistance, which helps keep administrative costs low. This allows the Company to provide these customers with a comprehensive list of home and equipment measures at no charge. These might include furnaces, insulation, water heaters,

refrigerators, thermostats, air sealing, low-flow showerheads, faucet aerators, and pipe wrap.

Q. Is the Company planning any special initiatives focused on low income customers?

A. Yes, the Company has engaged with City of Flint officials, Center for Neighborhood Technology, and other interested parties. The intent of this initiative and focus on Flint is to provide a comprehensive plan to help reduce the energy burden for these customers who currently have some of the highest water rates in the state. Additionally, the plan will include a focus on businesses and governmental offices to reduce energy use as well. The expectation is that the lessons learned and insights gained from this initiative will serve as a model for other community based efforts across the state.

Q. Is the Company seeking continued authority to allocate funds between programs?

A. Yes, the Company is requesting continued authority to reallocate 30% of its portfolio investments to maintain program consistency each year. This flexibility was requested and approved in Case Nos. U-16712, U-16670, U-17351, U-17771, and U-18261.

Q. Is the Company seeking continued authority to carry-forward unspent funds to the next program year?

A. Yes, the Company is requesting continued authority to carry-forward unspent funds to maintain continuity and ensure flexibility over the plan period.

Q. Is the Company seeking other flexibility options over the term of this Plan filing that would provide even greater confidence to deliver on the annual saving targets and continuity of programs in the market?

A. Yes. Since the Company is planning to deliver energy savings at significantly higher levels than in the past, the Company is requesting the flexibility to pull back up to 5% of

the following year's total electric and gas budget to be invested in the then-current year, if needed.

Q. How will the Company's programs be administered?

A. The Company plans to continue using independent contractors selected through a competitive bidding process to coordinate daily program activities in the field. The Company will continue to employ a small staff, including program managers, quality control and budget analysts, and an administrative assistant to manage the contractors and perform other administrative tasks.

Q. What process does the Company propose for evaluating actual energy savings associated with the plan?

A. The Company plans to continue using independent third-party consultants to evaluate the effectiveness of its efforts using billing analyses, customer surveys, and on-site verifications based on a sample of customers participating in each program. In addition, the Company proposes to continue using primary research methods, such as surveys and interviews with customers, trade allies, and other stakeholders to better understand their perceptions of each program and to help improve program operations and the overall customer experience.

Q. How will the Company demonstrate that its plan is achieving the intended results?

A. The Company will continue to file an annual reconciliation report with the Commission after the end of each plan year that details the level of spending and energy saved from each program.

Q. Is the Company proposing alternative Net-to-Gross ("NTG") factors in its 2020-2023 Plan?

A. Yes, the Company proposes to continue using an NTG factor of 0.90 for most programs and 1.00 for its Income Qualified program. For 2020 and beyond, the Company proposes to apply a 0.57 NTG ratio for Standard and 0.71 for Specialty (such as reflector, candelabra, and globe) LEDs, based on independent and peer-reviewed research conducted by a team of evaluation contractors.

Q. Did the Company engage any interested parties to provide feedback on development of the Plan?

A. Yes, the Company held at least four separate meetings with interested parties to gather feedback to help inform development of the 2020-2023 Plan. These meetings provided valuable insight on the various stakeholder groups' key issues and an opportunity to exchange ideas around anticipated market dynamics as well as end uses and programs offering the best options to capture cost-effective energy savings.

Q. Is the Company open to continued collaboration with other parties regarding the design and implementation of its plan?

A. Certainly. The Company has been, and will continue to be, an active participant in the energy efficiency market and various working groups. For instance, the Company is currently active in the EWR Collaborative, Low-Income Workgroup, and Economic Development Forums.

II. CUSTOMER BENEFITS AND RATE IMPACTS

Q. Please describe the expected customer benefits associated with the Company's 2020-2023 Plan.

A. Customers have reduced electric and gas energy waste by participating in the Company's EWR programs by over 17,000 Gigawatt-hours and 87 Billion Cubic Feet since 2009. These reductions in energy waste have saved the Company's customers over $2.6 billion on their utility bills. In addition, customers have avoided the need for additional supply-side generation by reducing peak demand by approximately 500 MW. The Company intends to continue helping its customers reduce energy waste in the 2020-2023 Plan by a projected 2,799,178 MWh in electric savings, 344.7 MW in demand reduction, and 11,436,167 Mcf of natural gas savings.

Q. Does the Company intend to perform end-use load shape research as part of this Plan filing?

A. Yes, during the 2020-2023 Plan period the Company intends to increase its focus on understanding the full value of its demand-side management resources and ensure accurate representation of EWR benefits and costs in its IRP by developing end-use load shapes that are based on statistically representative data applicable to the Company's territory. Accurate end-use load shapes will enable Consumers Energy to confidently characterize the time-varying costs and benefits of its EWR and demand response investments and enhance the planning and analytical accuracy of a range of the Company's EWR programs and operational functions, including cost-effectiveness calculations, load forecasting, distribution planning, transmission planning, resource adequacy planning, renewable energy integration, rate making, and financial planning.

Q. How will the proposed 2020-2023 EWR investment be recovered from customers?

A. The Company proposes to recover the respective electric and gas investments of $620.4 million and $270.4 million from customers over four years beginning with its January 2020 bill month. The revised surcharges would replace the energy efficiency surcharges approved through December 31, 2019. The proposed monthly incremental and total surcharges are presented in the testimony and exhibits of Company witness Gast.

Q. Is the Company recommending any changes in how it recovers its investments from customers?

A. Yes. The Company proposes variability in the per-meter charge for electric Secondary customers in Tier 3, Tier 4, and Tier 5. This update provides consistency with how the Company applies the five surcharge Tiers for Primary customers. The surcharge details are discussed in the direct testimony of Company witness Gast.

Q. How will the Company ensure, to the extent feasible, that charges collected from a particular customer rate class align with the corresponding benefits?

A. The Company will continue to track spending for each program separately to ensure it does not exceed the Commission-approved program spending levels. In addition, the Company will evaluate the system benefits from each class during its annual plan reconciliations and biennial plan reviews and adjust the surcharges in these proceedings as needed.

Q. What is the rate impact to customers associated with the Company's proposed 2020-2023 Plan?

A. The Company considers both the impact and expense necessary to deliver energy savings when developing its plans. The objective is to offer customers both affordable and meaningful programs. The average rate impacts for the Company's residential electric and gas customers are projected to be a 0.1% increase and no increase, respectively. The average incremental rate impacts for the Company's business electric and gas customers are projected to be an increase of 4.5% and 1.0%, respectively. The Company's investments are consistent with those in the IRP and provide additional savings opportunities for its customers.

III. FINANCIAL INCENTIVE MECHANISM

Q. Is the Company proposing a financial incentive mechanism for 2020 through 2023?

A. Yes. Pursuant to Section 75 of Act 295, as amended, the Company believes it is allowed to earn the financial incentive set forth in this section for helping customers reduce energy waste based on the percent of first year energy savings. The Company proposes that the basis of the financial incentive be tied to achieving first year savings, lifetime savings, and investment in low-income programs. These are consistent with what was approved in the previous plan, Case No. U-18261. I have provided an illustration of the electric and gas financial incentive mechanisms in Exhibit A-3 (TAY-3).

Q. Is the Company requesting any modifications to the currently-approved financial incentive calculation?

A. No. In Case No. U-18261 the Commission approved a linear sliding scale incentive mechanism based on the savings tiers set forth in Section 75 of Act 295, as amended. I

1 believe the continued use of a sliding scale financial incentive is appropriate in that it
2 would continue to encourage utilities to invest beyond the minimum levels necessary to
3 jump from one incentive tier to the next.

4 **IV. <u>SETTLEMENT AGREEMENT IN CASE NO. U-18261</u>**

5 **Q. What were the items from the Settlement Agreement in Case No. U-18261 upon**
6 **which the Company is providing an update in this proceeding?**

7 A. Per the approved Settlement Agreement in Case No. U-18261, the Company agreed to
8 discuss or pursue the following:

9 1. Participate in a stakeholder collaborative initiated by the MPSC Staff, with
10 e-mail notice provided to counsel for the parties in this proceeding, for the
11 purpose of developing a uniform method for computing gas savings targets;

12 2. Display the residential low-income and multifamily low-income investments
13 as individual line items in its EWR plan and reconciliation, work with
14 interested parties to explore tracking energy efficiency investments in
15 individual multi-family buildings over time, and implement the multifamily
16 low-income design enhancements set forth in Attachment B of the Settlement
17 Agreement;

18 3 For its 2020-2021 Plan, work with interested parties to transition low-income
19 multifamily performance metric to a more outcome-based metric, work to
20 identify future performance metrics for small business, and continue
21 collaborative work to develop, implement, and evaluate a non-wires
22 alternative pilot program;

23 4. Assess the NTG factor for LEDs for application in 2019 and beyond;

24 5. Limit the annual energy savings delivered from Home Energy Reports as a
25 percent of the residential portfolio and include all evaluation costs when
26 calculating the cost-effectiveness of this program;

27 6. Transition the Pay-My-Way pilot to a full-scale program only if approved as
28 part of the Company's 2020-2021 Plan and include Pay-My-Way research and
29 findings as part of this filing; and

30 7. Begin collecting data which shows EWR investments by tariff rates, provide
31 this information to participants in Case No. U-18261, and, as part of the
32 2020-2021 Plan filing, consider (i) alternative methods for allocating costs
33 within the customer classes as presently administered in the EWR program

including classes defined by Tariff Rate, and (ii) including such allocation in the 2020-2021 Plan filing.

Q. What is the status to develop a uniform method for computing the gas savings targets?

A. While there have not been any official meetings to align on a uniform method, the Company has engaged with Commission Staff to discuss options. As part of this filing, the Company has proposed what it believes is a fair method to calculate the gas savings target and is open to further discussion.

Q. What is the status of the commitments made for residential and multifamily low-income reporting?

A. In its 2018 Annual Report, the Company displayed as individual line items its residential and multifamily low-income programs and will continue this approach in future plan filings and reconciliations. The Company has been working closely with interested parties to address tracking and reporting for these programs and plans to continue these efforts. The "One Stop Shop" design concept was initiated and continues to be refined based on feedback received from customers and interested parties.

Q. What is the status on efforts to collaborate on various performance metrics and the non-wires alternative pilot?

A. Collaboration with interested parties in the development of this Plan filing included some discussion on performance metrics. Interested parties continue to be heavily engaged in the non-wires alternative pilot and the Company welcomes their involvement.

Q. What is the status of the evaluation of the NTG factor and effective useful life for LEDs?

A. The Company completed the NTG study, submitted new NTG values for 2019 and 2020, and incorporated recommended sunset dates for the applicable lighting products into the Michigan Energy Measures Database.

Q. What is the status on limiting energy savings from Home Energy Reports and including all costs when calculating the cost-effectiveness of this program?

A. For its 2018 and 2019 implementation efforts, the Company's reported savings from the Home Energy Reports program was within the percent limits identified in the Case No. U-18261 Settlement Agreement. While not required to do so for the 2020-2023 Plan filing, the Company is projecting electric and gas savings from Home Energy Reports to be no more than 15% of the entire residential portfolio. To provide even greater flexibility to deliver electric and gas savings, the Company proposes to apply the 15% limit to the entire portfolio instead of only the residential portfolio.

Q. What is the status of the Pay-My-Way pilot?

A. Beginning in 2020, the Company will no longer use EWR funds to support Pay-My-Way. Details of the research completed related to Pay-My-Way are available in the report included as Exhibit A-4 (TAY-4) and filed on July 31, 2019 in Case No. U-18060. The Company is currently evaluating the future of the Pay-My-Way pilot.

Q. What is the status of assessing alternative methods to allocate costs within customer classes?

A. The Company has engaged in conversations with interested parties and provided data to demonstrate where incentive dollars are being invested. The data is available for review by interested parties in this proceeding.

Q. Does this conclude your direct testimony?

A. Yes.

S T A T E O F M I C H I G A N

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

EXHIBITS

OF

THEODORE A. YKIMOFF

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company

Case No.: U-20372
Exhibit: A-1 (TAY-1)

Witness: TAYkimoff
Date: August 2019

Calculation of Annual Energy Savings Targets
Electric Service (Megawatt-hours)

		(a)	(b)	(c)	(d)	(e)	(f)
Line No.	Description	2018	2019	2020	2021	2022	2023
1	Retail Electric Sales (1)	33,222,571	33,228,053	33,274,622	33,082,617	33,041,184	33,021,162
2	Prior Year Weather Normal Sales		33,222,571	33,228,053	33,274,622	33,082,617	33,041,184
3	Electric Statutory Savings Percentage		1.0%	1.0%	1.0%	1.0%	1.0%
4	Electric Statutory Savings Target		332,226	332,281	332,746	330,826	330,412

Notes:
(1) Exhibit A-5 (EMB-1), column g.

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company

Case No.: U-20372
Exhibit: A-1 (TAY-1)
Page: 2 of 2
Witness: TAYkimoff
Date: August 2019

Calculation of Annual Energy Savings Targets
Gas Service (Thousand Cubic Feet)

		(a)	(b)	(c)	(d)	(e)	(f)
Line No.	Description	2018	2019	2020	2021	2022	2023
1	Retail Gas Sales Sales (1)	303,340,000	303,085,000	298,492,000	303,489,000	305,424,000	305,978,000
2	Prior Year Weather Normal Sales		303,340,000	303,085,000	298,492,000	303,489,000	305,424,000
3	Gas Statutory Savings Percentage		0.75%	0.75%	0.75%	0.75%	0.75%
4	Gas Statutory Savings Target		2,275,050	2,273,138	2,238,690	2,276,168	2,290,680

Notes:
(1) Exhibit A-5 (EMB-2), column g.

CONSUMERS ENERGY:

2020 - 2023

ENERGY WASTE REDUCTION PLAN

Submitted To:

Michigan Public Service Commission

Case No: U-20372

August 1, 2019

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FOREWORD

Consumers Energy Company ("Consumers Energy" or the "Company") has provided reliable, affordable electricity and natural gas to advance its customers' quality of life for more than 130 years. Consumers Energy remains committed to planning for and ensuring an adequate electricity and natural gas supply to meet the needs of Michigan homes and businesses, now and in the future. However, more than just supplying energy, Consumers Energy remains a vital part of the state's economic, social, and environmental network, committed to the customers and communities it serves.

Under the Michigan energy law, adopted in 2008 and amended in 2016, Consumers Energy has taken major steps to help Michigan shape a secure, stable, and reliable energy landscape, including:

- Becoming a leading supplier of renewable energy in Michigan. Consumers Energy utilizes sources such as wind, solar, hydro, landfill gas, anaerobic digestion, and biomass for the electricity supplied to customers.
- Achieving the state's required standard for renewables a full year ahead of schedule and below initial cost estimates.
- Installing emissions control equipment at coal-fueled generating plants to help make Michigan's air the cleanest it has been in decades.
- Installing smart meters in Consumers Energy service territory to improve reliability, help provide customers more control over their energy use, and promote energy waste reduction ("EWR").
- Helping customers save more than $2.6 billion since 2009 by creating and implementing EWR programs to reduce their use of electricity and natural gas.

In 2019, Consumers Energy began a transformative journey with the approval of its Integrated Resource Plan ("IRP"), the Clean Energy Plan. Consumers Energy's Clean Energy Plan sets a course for the Company to meet customers' long-term energy needs as a lean and green utility committed to a triple bottom line of people, planet, and prosperity. In the Clean Energy Plan, demand reduction, including EWR, takes on a critical role in meeting our residential and business customers' energy and capacity needs.

As evidenced by 10 years of successful EWR programs and the adoption of the Clean Energy Plan, Consumers Energy believes EWR is good for Michigan, our company, and each of us. We believe everyone has the power to save and should have opportunity to participate in EWR (people); EWR helps lower greenhouse gas emissions and protect natural resources (planet); and improving efficiency in homes and businesses is clean, smart, relatively inexpensive, and serves to help stabilize volatile energy prices and boost energy security (prosperity). As such, we are strongly committed to helping our customers get the most value possible for every kilowatt-hour of electricity or cubic foot of natural gas purchased from us through the comprehensive portfolio of EWR programs and opportunities for all customers detailed in this Plan.

EXECUTIVE SUMMARY

The Energy Savings Challenge

Consumers Energy is excited to provide this report as part of its 2020–2023 EWR Plan ("Plan") for consideration by the Michigan Public Service Commission ("Commission" or "MPSC"). The EWR Plan is designed to identify the portfolio of residential and business programs determined to provide energy savings for its customers.

The annual, statutory energy savings goals, as a percent of sales, are listed below in Table ES-1.

Table ES-1. Statutory Savings Goals and Investment Limits

Electricity	2020	2021	2022	2023
Electricity Savings Goal, % of Total Sales	1.00%	1.00%	1.00%	1.00%
Natural Gas	**2020**	**2021**	**2022**	**2023**
Natural Gas Savings Goal, % of Total Sales	0.75%	0.75%	0.75%	0.75%

Exceeding the Energy Challenge: Count on Us

Consumers Energy anticipates exceeding the statutory energy savings targets each year through the continued implementation of a robust portfolio of EWR programs. As demonstrated by the excellent results delivered for customers through Consumers Energy's programs to-date, the proposed portfolio will provide all customers with continued opportunity to reduce their energy usage, decrease their environmental impact, and lower their electricity and natural gas utility bills.

This comprehensive Plan presents detailed information on Consumers Energy's proposed approach, EWR measures, and incentive levels. Similar to experience with implementation efforts since the portfolio launch in July 2009, Consumers Energy anticipates portions of the Plan will require revision over time to reflect better information and changing market conditions. Consumers Energy will update the Commission regarding any significant revisions to this plan.

EWR Portfolio Summary

Consumers Energy is proposing to invest a total of $890.8 million in its electricity and natural gas EWR programs over the next four-year period, calendar years 2020 - 2023. As detailed in Table ES-2, Consumers Energy plans to achieve 175% - 220% of the statutory electricity savings goal. As detailed in Table ES-3, the Company plans to achieve 133% - 134% of the statutory gas savings goal.

Table ES-2. Electricity Investment and Savings Compared to Targets (2020 - 2023)

	2020	2021	2022	2023
Planned Investment, Electricity Programs ($)	$137.3	$157.2	$161.5	$164.4
Annual Electricity Savings, Statutory Target (MWh)	332,281	332,746	330,826	330,412
Annual Electricity Savings, Planned (MWh)	632,768	724,851	719,323	722,235
% of Target	*190%*	*218%*	*217%*	*219%*

Table ES-3. Natural Gas Investment and Savings Compared to Targets (2020 - 2023)

	2020	2021	2022	2023
Planned Investment, Natural Gas Programs ($)	$67.1	$66.4	$67.7	$69.2
Annual Natural Gas Savings, Statutory Target (Mcf)	2,164,260	2,130,968	2,133,685	2,138,381
Annual Natural Gas Savings, Planned (Mcf)	2,886,005	2,844,014	2,848,307	2,857,842
% of Target	*133%*	*133%*	*133%*	*134%*

As detailed in Table ES-4, during the four years of the proposed portfolio, 67 - 70% of the investment is allocated for electricity programs and 30 - 33% to natural gas programs.

Table ES-4. Summary Investment and Percent of Total Investment (2020 - 2023)

	2020	2021	2022	2023
Planned Investment, Electricity Programs ($)	$137.3	$157.2	$161.5	$164.4
% of Total Investment	*67%*	*70%*	*70%*	*70%*
Planned Investment, Natural Gas Programs ($)	$67.1	$66.4	$67.7	$69.2
% of Total Investment	*33%*	*30%*	*30%*	*30%*
Total Investment, EWR Programs ($)	**$204.5**	**$223.6**	**$229.2**	**$233.5**

Figure ES-1 presents the portfolio structure. The residential offerings include thirteen programs: Appliance Recycling, ENERGY STAR® Appliances, ENERGY STAR® Lighting, Home Energy Analysis, Home Energy Report, Home Performance with ENERGY STAR®, HVAC and Water Heating, Income Qualified Energy Assistance, Insulation and Windows, Residential Agriculture, Residential Multifamily Direct Install, New Home Construction, and Think! Energy Programs in addition to Residential Pilots. The business offerings include three programs: Comprehensive Business Solutions, Small Business Direct Install, and Business Multifamily Direct Install Programs, in addition to Business Pilots. Consumers Energy will also continue to conduct program evaluation and other essential program support functions, such as awareness campaigns.

Figure ES-1. 2020 - 2023 Energy Waste Reduction Portfolio Structure

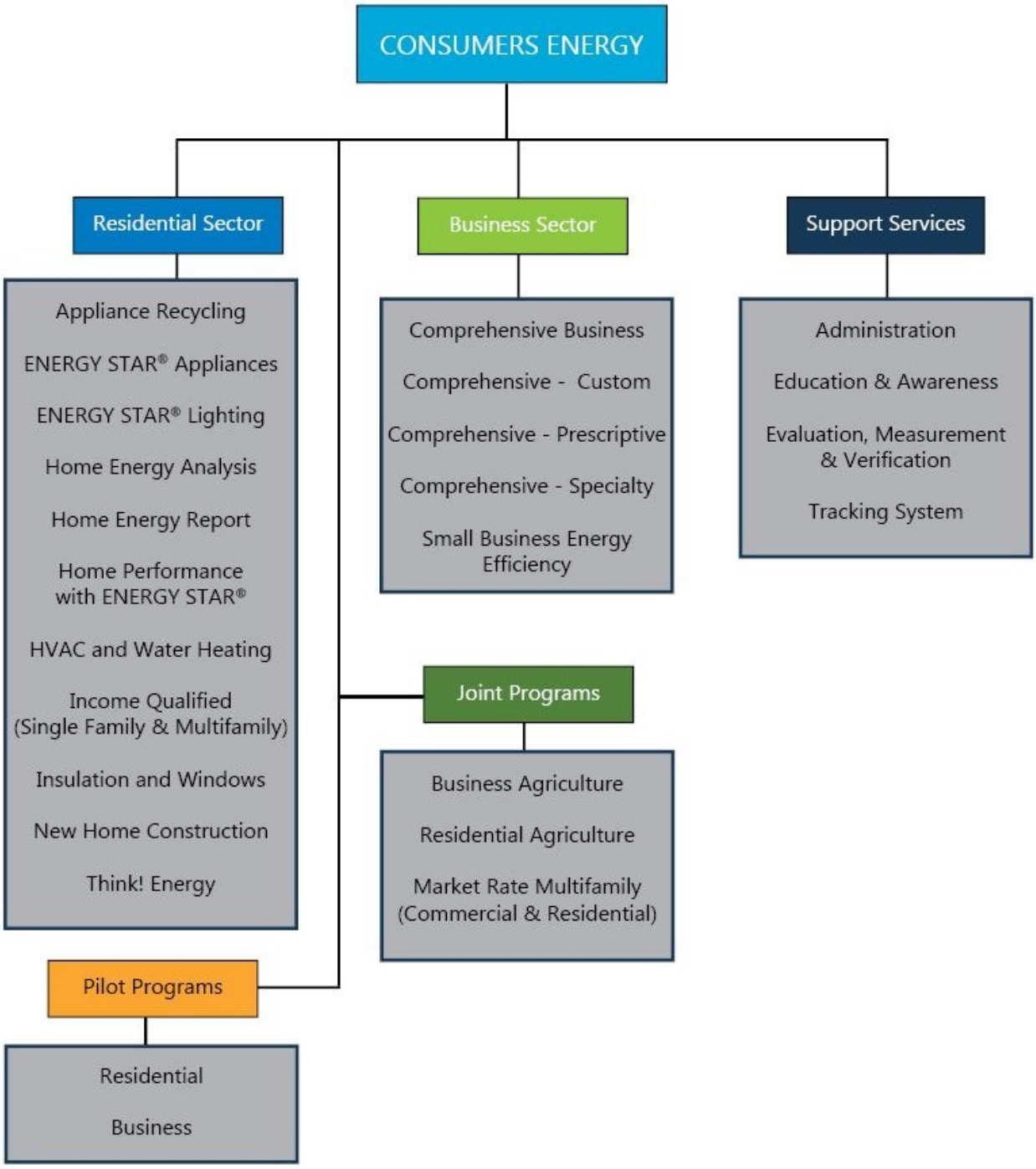


Table ES-5 below presents the total first year energy savings and corresponding investment levels over the four years of the plan. Table ES-6 presents the lifetime benefits of the portfolio including the Lifetime Cost of Conserved Energy per kWh.

Table ES-5. Summary of Total Portfolio 1st Year Annual Savings & Total Investments

	All Years (2020-2023)								
	Annual Electricity Savings, Planned (MWh)	Annual Electricity Savings, Planned (MW)	Planned Investment, Electricity Programs ($M)	Utility System Resource Cost Test, Electricity Programs	Annual Natural Gas Savings, Planned (Mcf)	Planned Investment, Natural Gas Programs ($M)	Utility Cost Test, Natural Gas Programs	Total Investment, EWR Programs ($M)	Utility Cost Test, EWR Programs
Residential Programs									
Appliance Recycling	124,941	14.9	$27.0	2.13	-	-	-	$27.0	2.13
ENERGY STAR Appliances	9,447	1.8	$4.4	2.00	395,834	$6.4	1.51	$10.8	1.70
ENERGY STAR Lighting	217,752	16.4	$17.8	1.05	-	-	-	$17.8	1.05
Think! Energy	5,746	0.5	$2.7	0.41	205,525	$2.5	2.38	$5.2	1.41
Home Energy Analysis	23,408	1.2	$16.8	0.37	364,074	$7.7	1.39	$24.6	0.70
Home Energy Report	80,487	-	$2.8	0.68	893,267	$3.5	0.55	$6.3	0.62
Home Performance with ENERGY STAR	847	0.4	$4.1	0.46	90,734	$4.3	0.97	$8.4	0.73
HVAC and Water Heating	13,654	5.0	$8.5	2.04	2,484,314	$38.6	2.29	$47.1	2.24
Income Qualified Energy Assistance	28,285	2.4	$20.6	0.51	363,493	$42.0	0.30	$62.6	0.37
Insulation and Windows	2,433	1.5	$4.6	1.55	220,017	$8.3	1.57	$12.9	1.57
Residential New Construction	2,489	2.5	$1.8	4.44	92,160	$3.8	1.21	$5.6	2.24
Residential Agriculture	2,903	0.7	$0.5	4.79	1,488	-	1.99	$0.5	4.69
Multifamily	15,239	1.5	$8.6	0.59	489,237	$8.5	1.95	$17.1	1.28
Multifamily Income Qualified	20,690	2.1	$17.2	0.69	281,448	$17.8	0.56	$34.9	0.63
Residential Pilot Programs	29,800	-	$8.6	-	319,652	$8.5	-	$17.1	-
Subtotal, Residential Programs	**578,120**	**50.8**	**$146.0**	**1.16**	**6,201,241**	**$151.9**	**1.27**	**$298.0**	**1.22**
Business Programs									
Comprehensive & Custom Business Solutions	1,745,090	263.9	$286.8	4.47	3,684,132	$56.1	2.22	$342.9	4.06
Small Business Solutions	269,844	26.7	$71.6	3.22	686,550	$20.2	0.56	$91.8	2.85
Business Multifamily	11,990	3.2	$1.9	2.85	269,002	$6.0	1.38	$7.9	1.76
Business Pilots	110,159	-	$22.4	3.35	252,157	$4.9	1.90	$27.3	3.09
Subtotal, Business Programs	**2,137,082**	**293.9**	**$382.7**	**4.05**	**4,891,841**	**$87**	**1.87**	**$469.9**	**4.06**
Support Services									
Utility Oversight	-	-	$41.2	-	-	$13.9	-	$55.0	-
Tracking System	-	-	$7.0	-	-	$2.4	-	$9.4	-
Education & Awareness	83,975	-	$18.6	-	343,085	$8.1	-	$26.7	-
EM&V	-	-	$24.9	-	-	$6.8	-	$31.7	-
Subtotal, Support Services	**83,975**	**-**	**$91.7**	**-**	**343,085**	**$31.1**	**-**	**$122.9**	**-**
Total, EWR Programs	**2,799,178**	**344.7**	**$620.4**	**2.80**	**11,436,167**	**$270.3**	**1.42**	**$890.8**	**2.43**

Table ES-6. Summary of Total Portfolio Cost of Conserved Energy

Program	Total (2020-2023)			
	Lifetime Cost of Conserved		Average Measure Life	
	$/kWh	$/Mcf	Electric	Gas
Residential Programs				
Appliance Recycling	$ 0.027	$ -	7.9	-
ENERGY STAR Appliances	$ 0.048	$ 1.79	9.8	9.0
ENERGY STAR Lighting	$ 0.042	$ -	2.3	-
Think! Energy	$ 0.090	$ 1.17	6.5	10.4
Home Energy Analysis	$ 0.129	$ 2.07	5.6	10.2
Home Energy Report	$ 0.037	$ 3.89	1.0	1.0
Home Performance with ENERGY STAR	$ 0.301	$ 2.86	16.0	16.5
HVAC and Water Heating	$ 0.052	$ 1.19	11.9	13.1
Income Qualified Energy Assistance	$ 0.117	$ 9.52	6.2	12.1
Insulation and Windows	$ 0.077	$ 1.60	24.3	23.6
Residential New Construction	$ 0.036	$ 2.06	20.0	20.0
Residential Agriculture	$ 0.013	$ 1.21	14.1	11.8
Multifamily	$ 0.086	$ 1.25	7.0	13.9
Multifamily Income Qualified	$ 0.082	$ 4.82	10.2	13.1
Residential Pilot Programs	$ 0.051	$ 2.16	5.0	10.9
Residential Subtotal	**$ 0.051**	**$ 2.16**	**4.9**	**10.9**
Business Programs				
Comprehensive & Custom Business Solutions	$ 0.012	$ 1.03	14.1	14.6
Small Business Solutions	$ 0.028	$ 3.79	10.0	9.4
Business Multifamily	$ 0.016	$ 2.58	9.4	10.0
Business Pilots	$ 0.013	$ 1.34	13.4	13.4
Business Subtotal	**$ 0.013**	**$ 1.34**	**13.4**	**13.4**
TOTAL	**$ 0.021**	**$ 1.79**	**11.6**	**12.0**

1 ENERGY WASTE REDUCTION PLAN ORGANIZATION

Consumers Energy's EWR Plan for 2020 - 2023 is divided into the following sections:

Section 2: Developing the 2020 - 2023 Plan: Provides an overview of how the Plan was developed, relevant goals and objectives, and considerations in addressing risks with a changing market environment.

Section 3: Consumers Energy's Portfolio of EWR Programs: Provides a high-level overview of each of Consumers Energy's proposed EWR programs.

Section 4: Portfolio Management & Implementation: Presents an overview of Consumers Energy's approach to delivering its EWR programs through a combination of in-house staff resources and third-party implementation contractors ("IC"). This section also includes an overview of the management approach, results tracking, and coordination with other entities.

Section 5: Support Services: Provides an overview of the four portfolio initiatives comprising support services: Evaluation, Measurement & Verification ("EM&V"), Education & Awareness, Tracking System and Administration. Support Services activities ensure programs are achieving intended goals with resources that can be shared to minimize program expenditures.

Section 6: Summary Results of the Plan: Details the summary results of the annual electricity and natural gas savings, investment allocations and benefit-cost results.

Section 7: Residential Program Descriptions: Presents detailed program plans for Consumers Energy's proposed residential programs.

Section 8: Joint Program Descriptions: Presents detailed program plans for Consumers Energy's proposed programs for residential and commercial multifamily buildings.

Section 9: Business Program Descriptions: Presents detailed program plans for Consumers Energy's proposed business programs.

Appendix A: Appendix A is a list of detailed program measures including an itemized list of installation adjustments and free-ridership levels.

2 DEVELOPING THE 2020 - 2023 PLAN

Since 2009, Consumers Energy has been implementing a diverse and balanced portfolio of EWR programs that have achieved significant energy savings for all major sectors and customer classes, including small businesses and low-income customers. The Company proposes to continue offering a portfolio of proven programs that have demonstrated market interest and acceptance. Additionally, we are proposing new line extension and business initiatives to our EWR portfolio to ensure achievement of EWR program and Integrated Resource Plan ("IRP") goals, and to advance EWR participation opportunities for all customers.

In developing this plan for our EWR programs over the next four years, Consumers Energy looked for ways to improve over preceding plans. First and foremost, Consumers Energy sought the insight from external stakeholders, including the MPSC, Natural Resources Defense Council, National Housing Trust, and Ecology Center. We also enlisted our implementation and EM&V contractors who offered valuable insights on market trends, customer preferences and barriers, and realistic performance expectations.

Consumers Energy also aligned its forecasts with current research and other planning efforts. We looked at the IRP for guidance in setting EWR goals over this planning period. EWR is a significant component of the IRP's Clean Energy Plan, a clean and green plan to end coal use to generate electricity, reduce carbon emissions by 90 percent, and meet customers' energy needs with 90 percent clean energy sources. The Company also utilized electricity and natural gas conservation potential studies and proposals from our implementation contractors in the Plan development process.

The resulting plan is comprised of a mix of proven EWR programs that have been successful in Michigan and elsewhere. Consumers Energy's 2020 - 2023 EWR Plan builds on past success, but acknowledges and accounts for a changing market, new opportunities, increased savings goals, and our commitment to a triple bottom line of people, planet, and prosperity.

2.1 Goals and Objectives

Consumers Energy's goals and objectives for the 2020 - 2023 EWR Plan are as follows:

- Meet our increased resource acquisition goals tied to our IRP commitments and continue to support long-term market transformation;
- Offer a diverse portfolio of programs that provide participation opportunities for all customers;
- Realize opportunities through coordination with other providers of EWR services (e.g., DTE);
- Maximize energy waste reduction at a minimum cost, by implementing comprehensive and cost-effective programs;
- Provide our customers with easy access to information on electricity and natural gas savings programs through our website and toll-free telephone numbers;
- Expand EWR infrastructure in Michigan, increasing the number and availability of qualified contractors and trade allies like electricians, builders, and HVAC contractors; and

- Inform and educate customers to use energy more efficiently, with an emphasis on comprehensive and deep energy savings.

Consumers Energy's statutory savings targets are shown in Table 2-1.

Table 2-1. Statutory EWR Targets, 2020 - 2023

	2020	2021	2022	2023
Electricity Savings, % of Total Sales	1.00%	1.00%	1.00%	1.00%
Natural Gas Savings, % of Total Sales	0.75%	0.75%	0.75%	0.75%

2.2 Deemed Savings

The plan portfolio is built by packaging and delivering programs and relevant measures to customers. To assess energy savings for electric and natural gas measures, Consumers Energy uses the Michigan Energy Measures Database ("MEMD") developed in conjunction with the Commission Staff and other energy utilities specifically for the Michigan market. In the MEMD, non-weather sensitive measure savings estimates are standardized throughout the state. For weather sensitive measures, a weighting calculation tool allows weighting the energy savings from measures based on the mix of weather station locations throughout the Company's service territory. Except for custom projects, this report relies on the MEMD for savings calculations, measure lifetimes, and incremental cost estimates. In the few cases where measure savings were not included in the MEMD, standard engineering calculations were used to assess savings. Over time, through the independent evaluation process, the MEMD has been updated to increase the accuracy of the savings estimates based on actual results achieved in Michigan.

2.3 Portfolio Considerations and Risk Management Strategies

Consumers Energy, like many utilities in the region and country, is facing challenges to the efficacy and cost-effectiveness of our programs. Changes to equipment standards, market dynamics, and the general cost of doing business are potential risks to the success of our programs. These are outlined briefly below.

Our plan for EWR programs in the coming years reflects ongoing and new initiatives to better manage resource acquisition costs, optimize our portfolio, and deliver programs more efficiently—while continuing to meet customers' needs for better communication and simpler engagement. We are committed to:

- Moving to midstream and online program deployment strategies where appropriate;
- Increasing emphasis on providing deep and comprehensive building and home retrofits;
- Emphasizing measure mix packages that increase savings per customer interaction;
- Targeting customers and measures that offer the best savings opportunities;
- Adding new measures to the residential and business portfolios; and
- Modifying incentive levels to improve participation.

The 2020 - 2023 EWR Plan also increases investment in traditionally underserved populations in Michigan, including low-income communities and customers residing in multifamily housing.

Changing Equipment Standards

Recent changes to national equipment standards have implications for our past and current investment, especially for the residential market. Two notable examples follow:

- ***The Energy Independence and Security Act of 2007 ("EISA") "backstop" provision.*** In 2007, EISA established minimum efficiency standards for screw-based lighting. EISA's "backstop" provision, due to go into effect on January 1, 2020, would change the lighting market such that LEDs would become the new baseline more rapidly, leading to early retirement of some of our current lighting programs. However, over the past year, the U.S. Department of Energy ("DOE") has proposed a change to this rulemaking that could delay these standards. Regardless of this regulatory uncertainty at the Federal level, Consumers Energy understands that the success of our efforts to transform the markets for lighting equipment means we will need to continue to innovate.

- ***Electronically-Commutated Motors ("ECMs").*** In 2014, the U.S. DOE established the first national efficiency standards for furnace fans. The new standards, which took effect in July 2019, specify a maximum fan energy rating based on the airflow provided by the furnace fan. To meet the standard, furnace manufactures must shift from installing induction motors to drive furnace fans to constant-torque ECMs as a standard feature of all new furnaces. Furnaces with integrated ECMs will become the baseline technology and ECMs will no longer be an eligible program measure after December 31, 2021.

These changes to equipment standards will have a dramatic impact on Consumers Energy's residential programs and energy savings achievements. In 2018, screw-based LED lighting and ECMs represented a combined total of just over 45 percent of savings in our residential portfolio. The 2020 - 2023 Plan accounts for these market transformations and greatly reduces reliance on these measures.

Changes and Updates to the Michigan Energy Measures Database

The State of Michigan maintains a database of characteristics, costs, and savings values for most of the EWR measures included in Consumers Energy's programs. Maintaining the Michigan Energy Measures Database ("MEMD") is a continuous effort in which new measures may be added and existing measures modified, based on periodic evaluation or implementation studies. A companion database, the Behavioral Resource Manual, provides savings values for behavioral measures and programs. Changes to the MEMD during the 2020 - 2023 planning period may impact our ability to meet our goals.

Cost of Natural Gas

Unconventional natural gas extraction methods and other technological advances have led to an abundant supply of natural gas in the United States, resulting in fuel costs at a 20-year low. As the cost of natural gas declines, customers have less incentive to upgrade to energy-efficient equipment. Additionally, because avoided fuel costs are a major factor in calculating cost-effectiveness, this drop in natural gas prices puts negative pressure on the benefit/cost ratios of natural gas efficiency measures.

Changing Customer Expectations

In nearly every industry, customer choice, personalized services, and competitive pricing have become the norm. Customers are increasingly demanding their service providers offer a variety of simple, low-cost options from which to customize their engagement. They also wish their service providers to communicate with them using a variety of digital and traditional platforms. To keep pace, the utility industry must continue to invest in technologies and systems that support customized engagement, a personalized experience and, increasingly, a total digital solution.

2.4 Benefit-Cost Analysis

Michigan Law established the Utility System Resource Cost Test ("UCT") as the cost-effectiveness measure for utility EWR program portfolios in Michigan. The UCT measures the net benefits of an EWR program as a resource option, based on the costs and benefits incurred by the utility (including incentive costs) and excluding any net costs incurred by the customer. The benefits are the avoided supply costs of energy and demand and the reduction in transmission, distribution, generation, and capacity valued at marginal costs for the periods when there is a load reduction. The costs are the program costs incurred by the utility, the incentives paid to the customers, and the increased supply costs for the periods in which load is increased. A benefit-cost ratio equal to or greater than 1 indicates that a program is cost-effective.

DSMore

Consumers Energy utilizes a software program called DSMore™, which applies avoided cost savings generated by each measure or program across the entire portfolio. DSMore™ uses more than 30 years of data on the variation of savings and avoided costs with weather, rather than relying on a typical year or average savings. DSMore™ also uses load-shape and price-shape input files. DSMore™ calculates a full distribution of load shapes and reports the mean load shape for each month, both weekend and weekday, along with the standard deviation of theses shapes at the hourly level. Hourly load and price distributions are tailored to the specific group of customers for which a program is designed.

Discount Rate

There is a time value associated with money because money spent in the future does not have the same value as money spent today. This time value is represented by a discount rate (analogous to an interest rate). Economic equations use the discount rate to convert all costs and benefits to a "present value" for comparing alternative costs and benefits. Consumers Energy used uniform after-tax discount rates of 5.96 percent for electricity and 5.86 percent for gas EWR programs and supply side resources.

Pricing Scenario

The DSMore™ price simulation file allows modeling of a range of energy cost scenarios. Consumers Energy's avoided energy cost served as the basis for selecting a DSMore™ pricing scenario which models energy costs for 8,760 hours per year over 30-plus years of weather statistics. Subsequent years within the analysis used Consumers Energy's projected escalation factors to model avoided costs.

Avoided Capacity and Energy Benefits

DSMore™ avoided cost benefits fall into two categories: avoided capacity benefits and avoided energy benefits. Avoided capacity benefits are the benefits derived from deferring the need to build new

generating plants in the future. Avoided capacity values are based on Midcontinent Independent System Operator ("MISO") projections of future power plant costs considering expected levels of capacity available over future years, and the costs of that capacity. Avoided energy benefits are estimated by DSMore™ using the annual hourly patterns of equipment use, and input values incorporating the varying costs to generate electricity at different times of the day and year.

Avoided Transmission and Distribution Benefits

Transmission and distribution system line losses can be avoided through energy savings at the home or premise. The Consumers Energy line loss study was used to value losses at the secondary, primary, and transmission voltage levels.

Administration, Implementation and Direct Costs

Administration, implementation, and direct costs were included as technology inputs of DSMore™ to allow aggregation into total program cost effectiveness. Consumers Energy support services that are not specific to individual programs are added as costs at the portfolio level for all programs and are allocated proportionately by fuel type (electricity and natural gas).

3 CONSUMERS ENERGY'S PORTFOLIO OF EWR PROGRAMS

A brief description of Consumers Energy's 2020 - 2023 portfolio of EWR programs and pilots is presented below. Together, they represent a comprehensive and cost-effective portfolio of programs that invests in EWR in every customer sector. Many programs in the portfolio have been in-market since the program launched in mid-2009. Consumers Energy will continue to offer a wide range of electric and gas EWR programs across residential, business, and multifamily sectors, and pilot promising new programs. Further details of these programs are provided in Sections 6, 7, and 8.

3.1 Summary of Residential Programs

Appliance Recycling

Many of the less-efficient refrigerators and freezers replaced by Consumers Energy customers remain in use, often ending up as back-up appliances in basements and garages or getting sold in the used appliance market. The Appliance Recycling program offers an environmentally responsible turnkey pick-up and recycling service that targets these second refrigerators and freezers, as well as small appliances, and provides the dual benefits of cutting energy consumption and keeping these older appliances out of the resale market.

ENERGY STAR® Appliances

The ENERGY STAR® Appliances program employs a web-based and in-store promotional strategy, coupled with robust incentives and multiple participation options to influence the purchase of high-efficiency appliances. Customers may purchase appliances through one of Consumers Energy's retail partners and apply for rebates by mail or online or receive instant rebates by purchasing qualifying products through Consumers Energy's new online store. Since appliance standards, as well as the market share of high-efficiency appliances, are gradually increasing, the program offers specific qualifying appliance models and uses targeted marketing to educate customers about the benefits of efficient products. The program provides a range of opportunities for customer participation, offering a variety of measures such as Wi-Fi-enabled thermostats, pool pumps, room air conditioners, dehumidifiers, air purifiers, advanced power strips, and clothes washers.

ENERGY STAR® Lighting

The Residential Lighting program provides incentives and marketing support through major retailers to promote sales and use of ENERGY STAR® LED lighting products. Consumers Energy uses general advertising, in-store signage, sales associate training, an online Find-a-Retailer tool and instant incentives through price markdowns to drive participation. During the 2020 - 2023 EWR Plan period, LED bulbs will become the market baseline for high efficiency lighting (see section 2.3 for details). The energy savings and effective useful life of LEDs will begin to decline in 2020 as new equipment standards take effect; therefore, Consumers Energy will initiate a transition period in 2020 and will phase out standard and specialty LED bulbs by the end of 2023.

Home Energy Analysis (HEA)

Customers participating in the HEA program receive installation of free energy-savings measures (including LED bulbs, water heater pipe insulation, low-flow water aerators, shower heads, and programmable or Wi-Fi-enabled thermostats), a walk-through inspection of their homes, and a customized report with energy saving tips and recommendations. The report also describes the Consumers Energy programs and incentives that can help them realize other energy-saving opportunities. Customers are encouraged to take the next step in their EWR journey by participating in the Home Performance with ENERGY STAR® Program. Beginning in 2020, Consumers Energy will add a new component to this program that targets customers in the Company's electric-only service territory.

Home Energy Reports (HER)

The HER program provides residential customers with information on their home's energy use through personalized reports delivered by mail and supplemented with electronic reports to help them understand their energy consumption patterns and empower them to make informed energy decisions. Behavioral science research has demonstrated that peer-based comparisons are highly motivating ways to present information. The HER program leverages a dynamically created comparison group for each residence using similarly sized and located households. In addition to comparison information, customers receive individually targeted savings tips based on their energy use patterns, housing characteristics, and demographics.

Home Performance with ENERGY STAR® (HPwES)

The HPwES Program produces long-term electricity and natural gas energy savings in the residential sector by helping customers understand their energy use and emphasizing a holistic approach to making homes safe, healthy, and energy efficient. Through the program, Building Performance Institute-certified contractors offer market-rate Comprehensive Home Assessments that include diagnostic testing and a visual inspection for health and safety issues. Once the inspection is complete, the contractor uses energy modeling software to generate a final report that informs the customer of the energy savings, costs, and payback associated with the recommended improvements. The program targets residential customers in single-family homes and offers various options to capture savings; financial incentives are available for building envelope improvements and energy-efficient heating and cooling equipment.

Heating, Ventilation, Air Conditioning (HVAC) and Water Heating

The HVAC and Water Heating program offers prescriptive rebates to customers (and to distributors via a midstream initiative) for the purchase and installation of high-efficiency heating, cooling, and water heating technologies. The program uses a combination of market push and pull strategies to stimulate demand and increase market providers' investment in stocking and promoting high-efficiency products. The pull strategy focuses on educating customers about the economic and home comfort benefits associated with efficient equipment and providing financial incentives to overcome the first-cost barrier. The HVAC and Water Heating program's push strategy engages contractors to promote the program and ensure equipment purchased is properly sized and correctly installed. The program stimulates HVAC to stock and promote efficient products by offering direct benefits and support, including account management representation, training, educational materials, and marketing collateral. Customers can easily locate a participating contractor through Consumers Energy's web-based Find-a-Contractor tool.

Income-Qualified Energy Assistance

The Income-Qualified Energy Assistance program helps low-income customers lower their energy bills by providing home weatherization assistance, installation of energy-efficient measures, and education about how to conserve energy usage and manage their utility costs. Consumers Energy provides financial assistance to cover the full cost of all home upgrades and coordinates with local weatherization providers and community nonprofit agencies to offer comprehensive services at lower administrative costs. Beginning in 2020, Consumers Energy will add a new component to this program that targets customers in the Company's electric-only service territory.

Insulation & Windows (INWIN)

The INWIN program provides financial incentives to encourage customers to install qualified energy-saving windows and home insulation. Customers can use the services of a contractor or perform the improvements and apply for rebates themselves. This is particularly appealing for the do-it-yourself customer. The program is marketed through a network of contractors, traditional and digital media, and though point-of-purchase advertising in insulation and window retail outlets throughout the state.

Residential Agriculture

The Agriculture Program is designed to offer residential agriculture customers incentives for energy saving measures in retrofit and major renovation projects. It provides participating customers the same level of rebates as the prescriptive and custom incentives from the Business EWR Program.

Residential New Construction

The New Construction program produces long-term electricity and natural gas savings by encouraging the construction of single-family homes that meet the current ENERGY STAR® standards or achieve a minimum Home Energy Rating System (HERS) score. Participating builders are eligible for incentives based on the home type, level of efficiency achieved above the Michigan Uniform Energy Code, and fuel(s) delivered by Consumers Energy. Participating builders also receive training on high-performance building practices and how to promote the value of energy-efficient homes to their customers.

Residential Pilots

The intent of the pilot programs is to test new initiatives and technology approaches that could capture additional energy savings within the residential sector. Consumers Energy has identified emerging strategies and applications that will support broader and more effective delivery of EWR services to customers. Planned pilot concepts either being implemented or evaluated include Fuel Switching (heat pump) and Smart Home initiatives.

Think! Energy

The intent of the Think! Energy program is to influence students and their families to take actions that can reduce their home energy use and increase efficiency. The program provides elementary and middle school students in grades 4-6 with in-class EWR presentations and a "take-home" kit that raises awareness about how individual actions and low-cost measures reduce electricity, natural gas, and water consumption. The program is endorsed by the Michigan Department of Education.

3.2 Summary of Business Programs

Comprehensive & Custom Business Solutions Program

The Comprehensive Business Solutions program is a multi-faceted offering designed to meet the needs of various segments of the business community and includes the following options.

- The **Prescriptive Business Solutions Program** creates energy savings for business customers through the promotion of high-efficiency electricity and natural gas equipment. Cash-back mail-in incentives typically range from 20 percent to 60 percent of the incremental cost to purchase high-efficiency models.
- The **Custom Business Solutions Program** assists larger commercial and industrial customers with the analysis and selection of high-efficiency equipment or processes not covered under the prescriptive program. The program approach identifies more complex energy savings projects, provides economic analysis, and aids in the completion of the incentive application. Incentives are provided for installed measures, based on energy saved.
- **Specialty Programs**, first introduced in 2013, are designed to offer specialized services to customers beyond traditional rebates. These programs provide additional information to customers on energy use and assist in identifying opportunities for EWR. To provide an easy and enjoyable experience that meets customers' needs, multiple programs are sometimes consolidated to provide a holistic approach for customers by technology or market sector. Examples of additional service offerings include ENERGY STAR® benchmarking, assessments, gap analysis, and audits. Current program offerings include, but are not limited to: Agriculture, Advanced Lighting Controls, ENERGY STAR® Programs, Industrial Energy Programs, New Construction, Smart Buildings, and Buy Michigan.

Small Business Solutions

Small Business Solutions consists of several programs, each targeting small, non-residential customers that are typically underserved by other EWR programs. These customers, often sole proprietorships, face unique barriers and typically lack the technical and financial resources necessary to participate in EWR program offerings. To overcome these barriers, several subprogram offerings are available for this market.

- The **Small Business Assessment Program** provides an on-site energy assessment along with limited direct installation of products. The teams performing the work perform the assessment, discuss EWR opportunities with the business owner and install LEDs, showerheads, pipe wrap, and faucet aerators, where applicable. As a follow-up to the assessment, customers are sent a report via mail and email, indicating the measures installed, recommendations of products, and tips on how to save more energy.
- The **Small Business Direct Install Program** is designed to introduce EWR to small businesses. This program provides installation of showerheads, faucet aerators, pre-rinse sprayers, pipe wrap, programmable and smart thermostats, and LEDs.
- The **Small Business Trade Ally Program** is designed to promote EWR opportunities to small businesses through the installation of common lighting and refrigeration measures by participating trade allies. These trade allies are responsible for auditing the site, proposing EWR measures, specifying equipment, performing the installations, and providing required warrantees. The program team is responsible for conducting inspections to verify pre- and post-installation

conditions and equipment, disbursing incentives, and overall program oversight. The program team also provides necessary program information and an internet web-based tool to enter, track, and receive approval and payment for projects.

- A new program, **Small Business Marketplace**, will be added in 2020. The Marketplace will be a scalable and innovative, self-service online store that provides customers instant incentives when purchasing energy efficient products. The Marketplace is primarily marketed digitally, via email and targeted social media ads, with high-converting inbound traffic from blogs and other downloadable content.

Business Pilots

Each year, Consumers Energy has set aside up to 5 percent of the EWR budget to develop small scale offerings testing new technologies, segmentations, outreach methods, and education to increase business EWR participation and energy savings. We strive to find new ways to save energy and money while making our businesses more productive and providing for the sustainable future of Michigan.

3.3 Summary of Joint Programs

Market-Rate Multifamily Program

The Market-Rate Multifamily program is designed to offer property owners a turn-key service for their residents to help reduce energy use in their living units through the direct installation of various energy-saving devices. The direct install service is provided at no cost to the property owners and the tenants. In addition to the products installed, educational materials are left in the individual units explaining the energy and money saving benefits.

This program also offers incentives for property owners to install energy-saving equipment during retrofits of individual units and common areas. By addressing the needs of residential and commercial spaces, the program is designed to encourage comprehensive energy improvements—following a "whole-property" approach. Prescriptive and custom measure rebate application can be submitted by customers and trade allies for completed projects.

Income-Qualified Multifamily Program

The Income-Qualified Multifamily Program is similar to the Market-Rate Multifamily Program except that it targets income-qualified customers. Incentives to income-qualified customers are offered at an increased rate as compared to the market-rate multifamily offering.

4 PORTFOLIO MANAGEMENT & IMPLEMENTATION

4.1 Portfolio Management

Consumers Energy manages a diverse portfolio of programs through a combination of in-house utility staff and competitively selected third-party implementation contractors ("ICs"). Consumers Energy employs this approach to ensure the most cost-effective and qualified implementation contractors. Table 4-1 lists the current implementation contractors and the program(s) they administer.

Table 4-1. Implementation Contractors

Implementation Contractor	Customer Class	Program
CLEAResult	Residential Residential Residential Business	Home Energy Analysis Income Qualified Appliance Recycling Business Pilots
Franklin	Business/Residential	Multifamily
ICF	Residential Residential Residential Residential Residential Residential Residential	ENERGY STAR® Appliances ENERGY STAR® Lighting Home Performance with ENERGY STAR® HVAC &Water Heating Insulation and Windows New Construction Residential Pilots
Tendril	Residential	Home Energy Report
DNV GL / Franklin	Business Business/Residential	All Business Programs Agriculture Programs
National Energy Foundation	Residential	Energy Education Program

A portfolio of this size and scope requires careful management oversight. Consumers Energy staff provide oversight of administrative, contract management, program design, program implementation, marketing, and cross-sector education and awareness activities.

Consumers Energy also uses a comprehensive tracking database to ensure accurate and comprehensive recording of all program participation. The database allows Consumers Energy to research and track participation by customer class and geographic area and to identify trends and untapped opportunities to advance program goals. Additionally, Consumers Energy staff assumes primary responsibility for general EWR education and awareness strategies and activities, including the corporate website, online energy audit software, mass-market general education, and efficiency awareness promotions.

In summary, Consumers Energy staff provides comprehensive program oversight, including management, financial planning, budgeting, and the following:

- High-level guidance and direction to the implementation contractors, including review and revision of proposed annual implementation plans and proposed milestones and engagement with the contractor team on a daily basis when working through strategy and policy issues;
- Review and approval of IC invoices to ensure programs are within budget and on schedule;
- Review of IC operational databases to ensure accuracy of Consumers Energy's comprehensive tracking and reporting system;
- Review of measure characteristics and estimates of saved energy;
- Public education and outreach to community groups, trade allies, and trade associations;
- Guidance and direction on new initiatives or strategies proposed by the ICs;
- Communication to the ICs of opportunities for cross-program promotion;
- Review and approval of printed materials and advertising plans;
- Program evaluation and recommendations for improvement; and
- Periodic review of methods for program measurement, analysis, and design.

4.2 Marketing and Outreach Strategy

The marketing and outreach strategy for Consumers Energy's portfolio of EWR programs ensures that customers, trade allies, and other key market actors are aware of program offers and their benefits. We also seek to inform customers of these opportunities as they are purchasing and installing new energy-using equipment. Marketing strategy is tailored to the program and the demographics of the engaged group. Generally, it includes a mix of television, radio, web, print media, direct contact, direct mail, bill inserts, and presentations.

4.3 Midstream Adjustments

Consumers Energy continuously reviews customer participation levels in each of its programs to ensure it can meet customer demand. To be responsive to market demand, Consumers Energy reserves its right to exercise flexibility with regard to midstream budget reallocations. Having this flexibility is critical to ensuring that Consumers Energy can maintain continuity of programs, especially those that are visible in the market.

4.4 Inter-Utility Coordination

Consumers Energy will continue to work with DTE Energy and other utilities to attempt to maximize the effectiveness of its EWR programs. Ongoing communication and coordination with DTE is especially important where natural gas and electricity service territories overlap. The two companies will work together to identify administrative and implementation cost savings, provide a consistent message, and manage programs in a similar manner to remove barriers for customers and trade allies.

4.5 Coordination with Other Efficiency Initiatives

Other entities in Michigan provide EWR services, including state and federal governments, Midwest Energy Efficiency Alliance, U.S. Environmental Protection Agency, U.S. Department of Energy's "ENERGY STAR®" brand, Michigan Saves, and other MPSC programs such as Michigan Energy Efficiency Grants for low-income customers. Consumers Energy will work diligently to keep up-to-date with these efforts and coordinate with these entities.

4.6 Trade Ally and Contractor Coordination

Trade allies and contractors are essential to the effective implementation and achievement of energy savings results. Consumers Energy currently has over 3,000 trade allies and contractors helping customers reduce energy waste. Relationships with these key groups will continue to be cultivated and nurtured through numerous methods to ensure effective two-way communication. Ongoing training and program updates are a key part of program delivery and effective in stimulating trade ally involvement.

Feedback from trade allies about "what is working and what is not," as well as suggestions for improvement, have been incorporated into Consumers Energy's programs. Consumers Energy will continue to emphasize coordination, listening sessions, and frequent communications with these key partners to advance program goals.

4.7 Michigan Saves Collaboration

Consumers Energy offers a financing option in conjunction with Michigan Saves, presenting a buy-down opportunity option from a typical Michigan Saves rate and allowing customers who would not otherwise complete a project to participate in the EWR program. Consumers Energy will continue to work with Michigan Saves to provide a low-cost EWR financing option to residential and business customers.

5 SUPPORT SERVICES

5.1 Evaluation, Measurement, and Verification

Evaluation, measurement and verification ("EM&V") are key elements for validating program impacts and measuring success. These activities monitor and improve program performance and verify the impact of the EWR program. Ongoing research ensures that program results are measurable, robust, and defensible, participation in programs is maximized, the portfolio is cost-effective, and customers are satisfied.

Third-Party Evaluation Contractors

All evaluation activities are conducted by nationally-recognized third-party evaluation contractors. EMI Consulting is the lead evaluator for the business portfolio and The Cadmus Group is the lead evaluator for the residential portfolio. These evaluation contractors will review, audit, and certify savings and include those results in an annual report provided to the MPSC. Consumer Energy's evaluation contractors are active participants in the MPSC EWR Collaborative. The Collaborative provides an effective forum to develop evaluation guidelines, collectively resolve EM&V issues, and support managing and updating the MEMD.

Objective of EM&V

Evaluation plans are designed and implemented to provide an ongoing assessment of program performance, including measurements of program participation, measure installation and persistence, and achieved gross and net demand and energy impacts. Timely and ongoing feedback allows for mid-course adjustments in program implementation if results indicate progress is falling short of expectations. Three primary types of evaluation activities are performed for Consumers Energy: impact evaluation, process evaluation, and market assessments.

- ***Impact Evaluation:*** The primary objective of impact evaluation is to assess the changes in energy use consumption that can be attributed to a particular intervention (such as the installation of energy efficient equipment). Impact evaluation activities include verification of equipment installation, performance, and operating conditions; proposed adjustments to MEMD saving estimates based on metering, engineering, or statistical methods; and determination of "net savings" directly attributable to a program.

- ***Process Evaluation:*** These evaluations study all aspects of program administration and implementation, including internal and external procedures and operations; alignment of program activities and objectives; organization and efficiency of implementation contractors; the manner and effectiveness of how the programs are interacting with the market (with customers, trade allies, etc.); participation barriers and effectiveness of programs in addressing those barriers; as well as other relevant topics identified through the course of the evaluation. Increasingly, Consumers Energy process evaluation efforts seek to provide near-real-time feedback based on frequent customer input related to program awareness, participation experience, and overall satisfaction. Benchmarking of peer utilities is also increasingly used to provide additional comparison metrics to measure and manage program performance and identify best practices in design and delivery approaches.

- ***Market Assessment:*** This activity identifies factors in the market that may affect program design and delivery, including customer acceptance of new technologies and opinions of key market

actors that support infrastructure to supply and service energy-efficient technologies. These assessments also provide information concerning the impact that EWR programs have on transforming the energy service/product market and on emerging trends that may impact future potential for EWR programs.

As part of market assessment work, GDS Associates conducted a very broad study to assess the remaining overall EWR potential in Consumers Energy service territory that could be obtained under different cost scenarios. This study included separate analyses for electricity and natural gas opportunities, and results were shared with the MPSC.

EM&V also encompasses a variety of tasks that do not pertain to specific programs but are important to the overall evaluation effort:

- Reviewing deemed measure estimates and making recommendations for revisions (if needed) to the MEMD;
- Coordinating and participating in the Evaluation Working Group and other statewide collaboratives established by the MPSC;
- Providing input and recommendations on the development and ongoing tracking of program enrollment and participation data;
- Synthesizing program evaluations and market assessments to provide a strategic performance assessment of the entire portfolio; and
- Conducting certification of savings through a systematic review of all data that are maintained in the tracking system to ensure accuracy of reported savings by measure, program, and total portfolio of EWR programs.

Annual certification reports prepared by third-party evaluators are provided to the MPSC. Summaries of each year's evaluation activities are also included in the Annual EWR report filed with the MPSC. Additional results are communicated through the MPSC EWR Collaborative.

Load Shape Research

The value of demand management, such as EWR and demand response, requires a detailed understanding of *when* these resources can decrease loads. A program or measure that decreases load during a peak period, for example, can offset the need to acquire additional supply to service that peak. Understanding energy consumption at each time throughout the day and year for various end uses can help Consumers Energy develop EWR and demand response programs that best match our needs and our customers' needs. Accurate load shapes also enhance cost-effectiveness calculations, load forecasting, distribution planning, transmission planning, resource adequacy planning, renewable energy integration, rate making, and financial planning.

To address this opportunity, Consumers Energy will develop hourly load shapes specific to its service territory and customers, through direct metering, secondary data, or other modeling methods. For each end use, the team will construct "baseline" and "efficient" load shapes. Consumers Energy will identify possible uses for new load shapes as part of Consumers Energy's planning processes.
Consumers Energy plans to deliver this load shape research through a combination of in-house staff resources and third-party contractors comprised of EMI Consulting and The Cadmus Group. Consumers Energy will reduce the cost of this research by recruitment, scheduling, site visits, purchased equipment, macro literature and data searches, and modeling techniques.

5.2 Education & Awareness

Consumers Energy supports EWR programs with efforts to educate customers and increase awareness of opportunities to save energy.

Interval Web Portal

The Interval Web Portal is a web-based tool that provides residential customers with online access to personalized reports to help them use energy wisely and save money on their monthly bills. The portal is accessible to all customers, regardless of meter type. Customers with AMI electricity meters receive reports that provide insight on a near-real-time basis. Visitors to the portal can take advantage of bill forecasting, rate comparisons, neighbor comparison, environmental impact analysis, and view detailed energy usage graphs that overlay costs, usage and weather over time.

The web portal can also provide customers with high bill notification alerts as well as energy savings tips and recommendations for Consumers Energy's EWR programs. Comparisons to similar homes can encourage customers to adopt energy saving behaviors and home upgrades.

5.3 Tracking and Reporting System

Consumers Energy uses a data management system called "eTracker" to track and report critical information for the portfolio of EWR programs. Consumers Energy's implementation contractors supply eTracker with reports on programs and measures, including program participation, application documents, and reports from measure installation. Measure characteristics in this system align with the MEMD and custom measure savings. The energy savings values contained within eTracker are the basis for the annual energy savings certification performed by our third-party evaluators.

Implementation contractors update the database with new measures based on emerging technologies, and they account for other necessary updates to measures, such as the impacts of changing equipment standards. These updates go through a rigorous quality review and approval process before being added into the eTracker system. Consumers Energy, in consultation with its evaluation teams, conducts an annual review of the eTracker system, which includes validation that the system correctly incorporates installation rate adjustment factors, net-to-gross factors, certification updates, and changes to the MEMD from the previous year to the current year.

5.4 Administration

To provide overall management and support for the Company's EWR portfolio to deliver on our commitments, Consumers Energy uses internal staff to perform key roles that include: implementation contractor and evaluation oversight; invoice processing and budgeting; quality assurance/quality control; regulatory support; customer acquisition support; and reporting. Additionally, costs associated with outside services needed throughout the year (e.g., Plan filing benefit-cost tests) are included in administration costs.

6 SUMMARY RESULTS OF 2020 - 2023 PLAN

6.1 Savings and Investment Forecasts

Consumers Energy is proposing to invest $890.8 million in EWR programs during calendar years 2020 to 2023.

The EWR Plan is designed to maximize the amount of program funds that go directly to customers through rebates and incentives, training and technical assistance, and customer and trade ally education. This portfolio also takes into account the realities of program costs needed to adequately plan, develop, deliver, and evaluate quality programs. The balance of the expenditures is applied to program administration, including the maintenance of a comprehensive data tracking system.

This EWR Plan presents a four-year portfolio of investment consistent with legislative requirements. Additionally, incentive levels and other program elements will be reviewed and modified on an annual basis to reflect changes in market conditions or implementation processes in order to maximize cost-effective savings. Such modifications will be reported in the annual reports submitted to the MPSC.

Consumers Energy has developed this plan to cost-effectively exceed the annual statutory electricity and natural gas savings goals. Annual savings and investment amounts for program years 2020 to 2023 are detailed in the following tables.

Table 6-1. EWR Programs Investment Summary

	2020	2021	2022	2023
Planned Investment, Electricity Programs ($)	$137,338,253	$157,190,100	$161,534,207	$164,369,084
% of Total Investment	*67%*	*70%*	*70%*	*70%*
Planned Investment, Natural Gas Programs ($)	$67,142,666	$66,377,544	$67,690,965	$69,179,681
% of Total Investment	*33%*	*30%*	*30%*	*30%*
Total Investment, EWR Programs ($)	$204,480,919	$223,567,645	$229,225,172	$233,548,765

Table 6-2. Electricity Programs Investment and Savings, Compared to Statutory Targets

	2020	2021	2022	2023
Planned Investment, Electricity Programs ($)	$137,338,253	$157,190,100	$161,534,207	$164,369,084
Annual Electricity Savings, Statutory Target (MWh)	332,281	332,746	330,826	330,412
Annual Electricity Savings, Planned (MWh)	632,768	724,851	719,323	722,235
% of Target	*190%*	*218%*	*217%*	*219%*

Table 6-3. Natural Gas Programs Investment and Savings, Compared to Statutory Targets

	2020	2021	2022	2023
Planned Investment, Natural Gas Programs ($)	$67,142,666	$66,377,544	$67,690,965	$69,179,681
Annual Natural Gas Savings, Statutory Target (Mcf)	2,164,260	2,130,968	2,133,685	2,138,381
Annual Natural Gas Savings, Planned (Mcf)	2,886,005	2,844,014	2,848,307	2,857,842
% of Target	*133%*	*133%*	*133%*	*134%*

Table 6-4. Summary of 1st Year Annual Savings & Total Investments, All Years (2020 - 2023)

	All Years (2020-2023)								
	Annual Electricity Savings, Planned (MWh)	Annual Electricity Savings, Planned (MW)	Planned Investment, Electricity Programs ($M)	Utility System Resource Cost Test, Electricity Programs	Annual Natural Gas Savings, Planned (Mcf)	Planned Investment, Natural Gas Programs ($M)	Utility Cost Test, Natural Gas Programs	Total Investment, EWR Programs ($M)	Utility Cost Test, EWR Programs
Residential Programs									
Appliance Recycling	124,941	14.9	$27,030,387	2.13	-	-	-	$27,030,387	2.13
ENERGY STAR Appliances	9,447	1.8	$4,404,541	2.00	395,834	$6,398,186	1.51	$10,802,727	1.70
ENERGY STAR Lighting	217,752	16.4	$17,804,257	1.05	-	-	-	$17,804,257	1.05
Think! Energy	5,746	0.5	$2,675,127	0.41	205,525	$2,492,463	2.38	$5,167,589	1.41
Home Energy Analysis	23,408	1.2	$16,847,605	0.37	364,074	$7,723,597	1.39	$24,571,201	0.70
Home Energy Report	80,487	-	$2,824,072	0.68	893,267	$3,456,432	0.55	$6,280,504	0.62
Home Performance with ENERGY STAR	847	0.4	$4,094,542	0.46	90,734	$4,286,674	0.97	$8,381,217	0.73
HVAC and Water Heating	13,654	5.0	$8,450,780	2.04	2,484,314	$38,649,970	2.29	$47,100,751	2.24
Income Qualified Energy Assistance	28,285	2.4	$20,608,543	0.51	363,493	$42,029,459	0.30	$62,638,002	0.37
Insulation and Windows	2,433	1.5	$4,574,038	1.55	220,017	$8,329,578	1.57	$12,903,616	1.57
Residential New Construction	2,489	2.5	$1,804,556	4.44	92,160	$3,794,904	1.21	$5,599,459	2.24
Residential Agriculture	2,903	0.7	$513,007	4.79	1,488	$21,306	1.99	$534,313	4.69
Multifamily	15,239	1.5	$8,574,119	0.59	489,237	$8,491,897	1.95	$17,066,016	1.28
Multifamily Income Qualified	20,690	2.1	$17,158,386	0.69	281,448	$17,770,357	0.56	$34,928,743	0.63
Residential Pilot Programs	29,800	-	$8,632,848	-	319,652	$8,512,378	-	$17,145,225	-
Subtotal, Residential Programs	**578,120**	**50.8**	**$145,996,807**	**1.16**	**6,201,241**	**$151,957,200**	**1.27**	**$297,954,007**	**1.22**
Business Programs									
Comprehensive & Custom Business Solutions	1,745,090	263.9	$286,816,029	4.47	3,684,132	$56,080,114	2.22	$342,896,144	4.06
Small Business Solutions	269,844	26.7	$71,618,072	3.22	686,550	$20,211,004	0.56	$91,829,076	2.85
Business Multifamily	11,990	3.2	$1,892,210	2.85	269,002	$5,996,922	1.38	$7,889,133	1.76
Business Pilots	110,159	-	$22,393,590	3.35	252,157	$4,930,019	1.90	$27,323,608	3.09
Subtotal, Business Programs	**2,137,082**	**293.9**	**$382,719,901**	**4.05**	**4,891,841**	**$87,218,060**	**1.87**	**$469,937,961**	**4.06**
Support Services									
Utility Oversight	-	-	$41,173,579	-	-	$13,875,183	-	$55,048,762	-
Tracking System	-	-	$7,029,188	-	-	$2,370,812	-	$9,400,000	-
Education & Awareness	83,975	-	$18,612,949	-	343,085	$8,111,726	-	$26,724,675	-
EM&V	-	-	$24,904,075	-	-	$6,780,729	-	$31,684,804	-
Subtotal, Support Services	**83,975**	**-**	**$91,719,792**	**-**	**343,085**	**$31,138,449**	**-**	**$122,858,241**	**-**
Total, EWR Programs	**2,799,178**	**344.7**	**$620,436,499**	**2.80**	**11,436,167**	**$270,313,710**	**1.42**	**$890,750,209**	**2.43**

Table 6-5. Summary of 1st Year Annual Savings & Total Investments, 2020

	2020							
	Annual Electricity Savings, Planned (MWh)	Annual Electricity Savings, Planned (MW)	Planned Investment, Electricity Programs ($)	Average Measure Life, Electricity Programs (Years)	Annual Natural Gas Savings, Planned (Mcf)	Planned Investment, Natural Gas Programs ($)	Average Measure Life, Natural Gas Programs (Years)	Total Investment, EWR Programs ($)
Residential Programs								
Appliance Recycling	26,341	3.1	$5,630,833	7.9	-	-	-	$5,630,833
ENERGY STAR Appliances	2,356	0.5	$1,141,987	9.7	91,876	$1,525,929	9.0	$2,667,916
ENERGY STAR Lighting	78,687	6.2	$6,441,073	3.7	-	-	-	$6,441,073
Think! Energy	1,760	0.2	$715,995	5.4	51,381	$617,217	10.4	$1,333,212
Home Energy Analysis	5,992	0.3	$3,707,885	5.4	91,018	$1,930,899	10.2	$5,638,785
Home Energy Report	24,786	-	$700,249	1.0	204,019	$842,923	1.0	$1,543,172
Home Performance with ENERGY STAR	201	0.1	$977,722	15.9	20,349	$995,364	16.5	$1,973,086
HVAC and Water Heating	3,183	1.1	$1,982,850	12.0	552,637	$8,578,081	13.0	$10,560,931
Income Qualified Energy Assistance	5,468	0.5	$3,536,346	9.5	79,502	$9,271,015	12.1	$12,807,360
Insulation and Windows	524	0.3	$1,018,909	24.3	54,417	$2,022,361	23.7	$3,041,271
Residential New Construction	622	0.6	$441,503	20.0	23,040	$941,968	20.0	$1,383,471
Residential Agriculture	726	0.2	$128,252	14.1	372	$5,327	11.8	$133,578
Multifamily	5,210	0.5	$2,341,100	5.7	111,745	$2,000,057	13.8	$4,341,157
Multifamily Income Qualified	4,850	0.5	$4,009,732	9.2	56,920	$3,524,549	13.1	$7,534,280
Residential Pilot Programs	8,734	-	$2,147,801	4.8	72,678	$1,922,523	11.2	$4,070,324
Subtotal, Residential Programs	**169,442**	**14.2**	**$34,922,237**	**4.7**	**1,409,953**	**$34,178,213**	**10.9**	**$69,100,450**
Business Programs								
Comprehensive & Custom Business Solutions	343,607	52.2	$56,322,329	14.0	1,066,425	$16,620,168	14.7	$72,942,497
Small Business Solutions	74,526	7.0	$17,539,145	9.2	184,174	$5,333,487	8.7	$22,872,632
Business Multifamily	3,307	1.0	$544,912	8.7	67,250	$1,500,736	9.2	$2,045,647
Business Pilots	22,904	-	$4,721,829	13.0	71,622	$1,413,380	13.6	$6,135,209
Subtotal, Business Programs	**444,343**	**60.2**	**$79,128,215**	**13.0**	**1,389,471**	**$24,867,771**	**13.6**	**$103,995,986**
Support Services								
Utility Oversight			$9,839,396			$3,318,747		$13,158,143
Tracking System			$3,290,258			$1,109,742		$4,400,000
Education & Awareness	18,983	-	$4,120,148	-	86,580	$2,014,280	-	$6,134,428
EM&V			$6,040,717			$1,632,683		$7,673,400
Subtotal, Support Services	**18,983**	**-**	**$23,290,519**	**-**	**86,580**	**$8,075,452**	**-**	**$31,365,971**
Total, EWR Programs	**632,768**	**74.4**	**$137,340,970**	**10.7**	**2,886,005**	**$67,121,435**	**12.3**	**$204,462,406**

Table 6-6. Summary of 1st Year Annual Savings & Total Investments, 2021

	2021							
	Annual Electricity Savings, Planned (MWh)	Annual Electricity Savings, Planned (MW)	Planned Investment, Electricity Programs ($)	Average Measure Life, Electricity Programs (Years)	Annual Natural Gas Savings, Planned (Mcf)	Planned Investment, Natural Gas Programs ($)	Average Measure Life, Natural Gas Programs (Years)	Total Investment, EWR Programs ($)
Residential Programs								
Appliance Recycling	31,732	3.8	$6,596,047	7.9	-	-	-	$6,596,047
ENERGY STAR Appliances	2,483	0.6	$1,150,399	9.8	96,449	$1,568,854	9.0	$2,719,253
ENERGY STAR Lighting	63,546	4.9	$5,532,725	2.7	-	-	-	$5,532,725
Think! Energy	1,760	0.2	$719,125	4.6	51,381	$619,916	10.4	$1,339,041
Home Energy Analysis	7,402	0.4	$5,047,417	5.2	91,018	$1,930,899	10.2	$6,978,316
Home Energy Report	19,743	-	$693,565	1.0	208,907	$872,495	1.0	$1,566,060
Home Performance with ENERGY STAR	214	0.1	$1,009,620	16.0	22,547	$1,060,138	16.5	$2,069,758
HVAC and Water Heating	3,532	1.3	$2,193,188	12.0	629,616	$9,767,425	13.1	$11,960,613
Income Qualified Energy Assistance	8,575	0.7	$5,715,411	7.0	86,262	$9,921,089	12.1	$15,636,500
Insulation and Windows	590	0.4	$1,108,959	24.3	54,734	$2,058,613	23.7	$3,167,571
Residential New Construction	622	0.6	$447,149	20.0	23,040	$946,399	20.0	$1,393,548
Residential Agriculture	726	0.2	$128,252	14.1	372	$5,327	11.8	$133,578
Multifamily	4,218	0.4	$2,196,700	5.9	118,337	$2,077,397	13.8	$4,274,096
Multifamily Income Qualified	5,167	0.5	$4,210,343	9.5	64,909	$4,065,813	13.1	$8,276,156
Residential Pilot Programs	8,169	-	$2,327,167	4.8	78,672	$2,069,614	11.4	$4,396,781
Subtotal, Residential Programs	**158,478**	**14.1**	**$39,076,065**	**4.7**	**1,526,244**	**$36,963,977**	**11.1**	**$76,040,043**
Business Programs								
Comprehensive & Custom Business Solutions	440,924	66.7	$70,043,243	14.1	931,876	$14,166,091	14.6	$84,209,333
Small Business Solutions	72,321	7.7	$18,299,820	9.1	169,795	$4,912,109	8.7	$23,211,929
Business Multifamily	3,308	0.9	$527,114	8.7	67,250	$1,501,202	9.1	$2,028,316
Business Pilots	28,074	-	$5,533,207	13.3	63,528	$1,231,222	13.4	$6,764,429
Subtotal, Business Programs	**544,627**	**75.3**	**$94,403,385**	**13.3**	**1,232,449**	**$21,810,623**	**13.4**	**$116,214,007**
Support Services								
Utility Oversight			$10,137,560			$3,415,328		$13,552,887
Tracking System			$1,495,572			$504,428		$2,000,000
Education & Awareness	21,746	-	$4,715,703	-	85,320	$1,991,326	-	$6,707,029
EM&V			$7,362,685			$1,673,821		$9,036,506
Subtotal, Support Services	**21,746**	**-**	**$23,711,520**	**-**	**85,320**	**$7,584,903**	**-**	**$31,296,423**
Total, EWR Programs	**724,851**	**89.4**	**$157,190,970**	**11.4**	**2,844,014**	**$66,359,503**	**12.1**	**$223,550,473**

Table 6-7. Summary of 1st Year Annual Savings & Total Investments, 2022

	2022							
	Annual Electricity Savings, Planned (MWh)	Annual Electricity Savings, Planned (MW)	Planned Investment, Electricity Programs ($)	Average Measure Life, Electricity Programs (Years)	Annual Natural Gas Savings, Planned (Mcf)	Planned Investment, Natural Gas Programs ($)	Average Measure Life, Natural Gas Programs (Years)	Total Investment, EWR Programs ($)
Residential Programs								
Appliance Recycling	34,634	4.1	$7,310,374	7.8	-	-	-	$7,310,374
ENERGY STAR Appliances	2,268	0.4	$1,041,228	9.8	101,244	$1,618,102	9.0	$2,659,330
ENERGY STAR Lighting	48,405	3.6	$4,044,608	1.7	-	-	-	$4,044,608
Think! Energy	1,760	0.2	$719,125	3.9	51,381	$619,916	10.4	$1,339,041
Home Energy Analysis	6,112	0.3	$4,603,265	5.3	91,018	$1,930,899	10.2	$6,534,164
Home Energy Report	21,611	-	$706,300	1.0	232,616	$859,760	1.0	$1,566,060
Home Performance with ENERGY STAR	224	0.1	$1,039,960	16.1	23,798	$1,104,249	16.5	$2,144,209
HVAC and Water Heating	3,752	1.4	$2,326,039	12.0	651,330	$10,131,630	13.2	$12,457,669
Income Qualified Energy Assistance	8,383	0.7	$6,046,018	7.0	94,433	$10,895,301	12.2	$16,941,318
Insulation and Windows	658	0.4	$1,202,570	24.3	55,060	$2,096,400	23.6	$3,298,970
Residential New Construction	622	0.6	$454,961	20.0	23,040	$950,941	20.0	$1,405,901
Residential Agriculture	726	0.2	$128,252	14.1	372	$5,327	11.8	$133,578
Multifamily	3,568	0.3	$2,113,148	6.5	125,585	$2,161,438	13.9	$4,274,587
Multifamily Income Qualified	5,571	0.6	$4,449,721	9.8	74,292	$4,709,719	13.1	$9,159,440
Residential Pilot Programs	7,516	-	$2,216,122	4.7	82,835	$2,195,763	11.3	$4,411,885
Subtotal, Residential Programs	**145,810**	**12.9**	**$38,401,691**	**4.6**	**1,607,004**	**$39,279,445**	**11.0**	**$77,681,136**
Business Programs								
Comprehensive & Custom Business Solutions	455,204	68.6	$76,248,405	14.1	861,700	$13,075,965	14.5	$89,324,370
Small Business Solutions	65,221	6.2	$17,849,981	9.6	167,323	$5,006,774	9.4	$22,856,754
Business Multifamily	3,059	0.8	$477,398	9.4	67,250	$1,497,493	9.6	$1,974,891
Business Pilots	28,450	-	$5,859,691	13.5	59,580	$1,169,532	13.3	$7,029,223
Subtotal, Business Programs	**551,934**	**75.6**	**$100,435,475**	**13.5**	**1,155,853**	**$20,749,763**	**13.3**	**$121,185,238**
Support Services								
Utility Oversight			$10,441,686			$3,517,787		$13,959,474
Tracking System			$1,121,679			$378,321		$1,500,000
Education & Awareness	21,580	-	$4,846,026	-	85,449	$2,030,729	-	$6,876,755
EM&V			$6,286,752			$1,715,667		$8,002,419
Subtotal, Support Services	**21,580**	**-**	**$22,696,144**	**-**	**85,449**	**$7,642,504**	**-**	**$30,338,648**
Total, EWR Programs	**719,323**	**88.5**	**$161,533,310**	**11.6**	**2,848,307**	**$67,671,712**	**11.9**	**$229,205,021**

Table 6-8. Summary of 1st Year Annual Savings & Total Investments, 2023

	2023							
	Annual Electricity Savings, Planned (MWh)	Annual Electricity Savings, Planned (MW)	Planned Investment, Electricity Programs ($)	Average Measure Life, Electricity Programs (Years)	Annual Natural Gas Savings, Planned (Mcf)	Planned Investment, Natural Gas Programs ($)	Average Measure Life, Natural Gas Programs (Years)	Total Investment, EWR Programs ($)
Residential Programs								
Appliance Recycling	32,234	3.9	$7,493,133	8.0	-	-	-	$7,493,133
ENERGY STAR Appliances	2,340	0.4	$1,070,927	9.7	106,265	$1,685,301	9.0	$2,756,228
ENERGY STAR Lighting	27,114	1.6	$1,785,851	1.0	-	-	-	$1,785,851
Think! Energy	465	-	$520,882	12.0	51,381	$635,414	10.4	$1,156,296
Home Energy Analysis	3,902	0.1	$3,489,037	7.1	91,018	$1,930,899	10.2	$5,419,936
Home Energy Report	14,346	-	$723,958	1.0	247,726	$881,254	1.0	$1,605,212
Home Performance with ENERGY STAR	208	0.1	$1,067,240	16.2	24,039	$1,126,923	16.5	$2,194,163
HVAC and Water Heating	3,187	1.1	$1,948,702	11.5	650,732	$10,172,835	13.2	$12,121,538
Income Qualified Energy Assistance	5,859	0.5	$5,310,769	9.9	103,297	$11,942,055	12.2	$17,252,824
Insulation and Windows	662	0.4	$1,243,600	24.3	55,806	$2,152,204	23.6	$3,395,803
Residential New Construction	622	0.6	$460,943	20.0	23,040	$955,596	20.0	$1,416,539
Residential Agriculture	726	0.2	$128,252	14.1	372	$5,327	11.8	$133,578
Multifamily	2,242	0.2	$1,923,171	10.1	133,571	$2,253,005	14.0	$4,176,176
Multifamily Income Qualified	5,102	0.5	$4,488,591	12.1	85,327	$5,470,277	13.1	$9,958,867
Residential Pilot Programs	5,381	-	$1,941,758	5.7	85,466	$2,324,478	11.2	$4,266,235
Subtotal, Residential Programs	**104,390**	**9.6**	**$33,596,813**	**5.6**	**1,658,039**	**$41,535,566**	**10.9**	**$75,132,379**
Business Programs								
Comprehensive & Custom Business Solutions	505,355	76.5	$84,202,053	14.2	824,132	$12,217,891	14.5	$96,419,943
Small Business Solutions	57,776	5.9	$17,929,126	12.1	165,259	$4,958,634	10.8	$22,887,760
Business Multifamily	2,316	0.5	$342,786	10.8	67,250	$1,497,493	12.1	$1,840,279
Business Pilots	30,731	-	$6,278,862	13.8	57,426	$1,115,885	13.2	$7,394,747
Subtotal, Business Programs	**596,178**	**82.8**	**$108,752,827**	**13.8**	**1,114,068**	**$19,789,903**	**13.2**	**$128,542,729**
Support Services								
Utility Oversight			$10,754,937			$3,623,321		$14,378,258
Tracking System			$1,121,679			$378,321		$1,500,000
Education & Awareness	21,667	-	$4,931,073	-	85,735	$2,075,390	-	$7,006,463
EM&V			$5,213,921			$1,758,558		$6,972,479
Subtotal, Support Services	**21,667**	**-**	**$22,021,609**	**-**	**85,735**	**$7,835,591**	**-**	**$29,857,200**
Total, EWR Programs	**722,235**	**92.4**	**$164,371,249**	**12.6**	**2,857,842**	**$69,161,059**	**11.8**	**$233,532,309**

6.2 Benefit-Cost Background

There are five standard practice benefit-cost tests commonly utilized in the energy efficiency industry, each of which addresses different perspectives as shown in Table 6-9 below.

Table 6-9. Comparative Benefit-Cost Tests

	UTILITY SYSTEM RESOURCE COST TEST (UCT)	TOTAL RESOURCE COST TEST	PARTICIPANT COST TEST	RATE IMPACT MEASURE TEST	SOCIETAL TEST
BENEFITS					
Reduction in Customer's Utility Bill			X		
Incentive Paid by Utility/Program Administrator			X		
Any Tax Credit Received		X	X		
Avoided Supply Costs	X	X		X	X
Avoided Participant Costs		X	X		X
Participant Payment to Utility (if any)	X			X	
External Benefits					X
COSTS					
Utility Admin Costs	X	X		X	X
Participant Costs		X	X		X
Incentive Costs	X				
External Costs					X
Lost Revenues				X	

The **Utility System Resource Cost Test** ("UCT") measures the net benefits of a demand-side management (DSM) program as a resource option based on the costs and benefits incurred by the utility (including incentive costs) and excluding any net costs incurred by the customer participating in the efficiency program. The benefits are the avoided supply costs of energy and demand, the reduction in transmission, distribution, generation and capacity valued at marginal costs for the periods when there is a load reduction. The costs are the program costs incurred by the utility, the incentives paid to the customers, and the increased supply costs for the periods in which load is increased.

The **Total Resource Cost Test** ("TRC") is a test that measures the total net resource expenditures of a DSM program from the point of view of the utility and its ratepayers. Resource costs include changes in supply and participant costs. A DSM program which passes this test (i.e., a ratio greater than 1) is viewed as beneficial to the utility and its customers because the savings in electric costs outweigh the DSM costs incurred by the utility and its customers.

The **Participant Cost Test** ("PCT") illustrates the relative magnitude of net benefits that go to participants compared to net benefits achieved from other perspectives. While called a "participant" perspective, it is not necessarily a perspective indicating whether customers participate. The implied discount rate can vary substantially between customers. More importantly, many customers do not even

know what a present value benefit-cost analysis is, let alone feel confident in making decisions based on it. Consequently, a simple payback (years) net of rebate has been shown to provide further guidance on customer participation. The benefits derived from this test reflect reductions in a customer's bill and energy costs plus any incentives received from the utility or third parties, and any tax credit. Savings are based on gross revenues. Costs are based on out-of-pocket expenses from participating in a program, plus any increases in the customer's utility bill(s).

The **Rate Impact Measure Test** ("RIM") measures the change in utility energy rates resulting from changes in revenues and operating costs. The higher the RIM test result, the less impact on increasing energy rates. While the RIM results provide a guide as to which technology has more impact on rates, generally it is not considered a pass/fail test. Instead, the amount of rate impact is usually considered at a policy level. The policy level decision is whether the entire portfolio's impact on rates is so detrimental that some net benefits have to be forgone.

The **Societal Cost Test** ("SCT") is similar to the TRC test. However, it also accounts for the effects of externalities, such as reductions in carbon dioxide (CO_2), nitrogen oxides (NOx), and sulfur dioxide (SO_2).

Statutory Standard

Michigan law established the UCT as the official test by which the cost-effectiveness of utility EWR program portfolios will be judged. In addition to calculating the benefit-cost ratios of this test, Consumers Energy performed similar calculations for three others, the results of which are shown in Table 6-10 and Table 6-11. Consumers Energy chose not to calculate benefit-cost ratios for the SCT because of the uncertain values of environmental externalities.

Regardless of which perspective is used, a benefit-cost ratio equal to or greater than 1.0 indicates that a program is cost-effective from that perspective.

6.3 Benefit-Cost Test Results

As shown in Table 6-10 below, the 2020 - 2023 portfolio of electricity programs passes the UCT with a score of 2.80.

Table 6-10. Summary of Electricity Programs Benefit-Cost Test Results (2020 - 2023)

Program	Utility Cost Test	Total Resource Cost Test	Participant Measure	Rate Impact Measure
Residential Programs				
Appliance Recycling	2.13	1.80	6.41	0.67
ENERGY STAR Appliances	2.00	0.97	1.21	0.87
ENERGY STAR Lighting	1.05	1.11	8.47	0.39
Think! Energy	0.41	0.41	-	0.24
Home Energy Analysis	0.37	0.37	-	0.24
Home Energy Report	0.68	0.68	-	0.33
Home Performance with ENERGY STAR	0.46	0.36	0.82	0.38
HVAC and Water Heating	2.04	0.69	0.71	0.94
Income Qualified Energy Assistance	0.51	0.51	-	0.33
Insulation and Windows	1.55	0.32	0.23	0.93
Residential New Construction	4.44	3.31	2.79	1.78
Residential Agriculture	4.79	1.67	2.00	0.94
Multifamily	0.59	0.54	3.71	0.34
Multifamily Income Qualified	0.69	0.62	2.10	0.39
Residential Pilot Programs	0.71	0.71	-	0.34
Residential Portfolio Average	**1.16**	**0.88**	**2.86**	**0.53**
Business Programs				
Comprehensive & Custom Business Solutions	4.47	0.99	2.69	0.40
Small Business Solutions	3.22	0.92	1.81	0.59
Business Multifamily	2.85	0.52	1.71	0.33
Business Pilots	3.35	3.35	3.35	0.32
Business Portfolio Average	**4.05**	**1.12**	**2.93**	**0.43**
Total Portfolio with Support Services	**2.80**	**0.93**	**2.70**	**0.41**

As shown in Table 6-11 below, the 2020 - 2023 portfolio of natural gas programs passes the UCT with a score of 1.42.

Table 6-11. Summary of Natural Gas Programs Benefit-Cost Test Results (2020 - 2023)

Program	Utility Cost Test	Total Resource Cost Test	Participant Measure	Rate Impact Measure
Residential Programs				
Appliance Recycling	-	-	-	-
ENERGY STAR Appliances	1.51	0.70	1.87	0.41
ENERGY STAR Lighting	-	-	-	-
Think! Energy	2.38	2.38	-	0.46
Home Energy Analysis	1.39	1.39	-	0.40
Home Energy Report	0.55	0.55	-	0.28
Home Performance with ENERGY STAR	0.97	0.49	1.55	0.36
HVAC and Water Heating	2.29	0.70	1.62	0.46
Income Qualified Energy Assistance	0.30	0.30		0.20
Insulation and Windows	1.57	0.17	0.40	0.43
Residential New Construction	1.21	1.03	3.31	0.39
Residential Agriculture	1.99	1.45	4.53	0.44
Multifamily	1.95	0.81	2.22	0.44
Multifamily Income Qualified	0.56	0.68	3.28	0.28
Residential Pilot Programs	1	1.22	-	0.39
Residential Portfolio Average	**1.27**	**0.56**	**1.63**	**0.40**
Business Programs				
Comprehensive & Custom Business Solutions	2.22	1.31	3.76	0.45
Small Business Solutions	0.56	0.48	5.37	0.28
Business Multifamily	1.38	1.82	9.20	0.40
Business Pilots	1.90	1.90	1.90	0.44
Business Portfolio Average	**1.87**	**1.24**	**4.10**	**0.44**
Total Portfolio with Support Services	**1.42**	**0.73**	**2.28**	**0.41**

7 RESIDENTIAL PROGRAMS

7.1 Appliance Recycling

Program	Appliance Recycling
Objective	Produce long-term electricity energy savings in the residential sector by permanently removing operable second refrigerators, freezers, and small appliances from the power grid and recycling them in an environmentally safe manner.
Target Market	Residential electricity customers who are currently operating second refrigerators and/or freezers.
Program Duration	The Appliance Recycling Program was launched in August 2009 and is an ongoing element of the program portfolio.
Program Description	The average household replaces a refrigerator every ten years. However, many of the refrigerators and freezers being replaced still function and often end up as energy-guzzling back-up appliances in basements and garages or are sold in a used appliance market. The Appliance Recycling Program targets these second refrigerators and freezers, providing the multiple benefits of cutting energy consumption, keeping the appliances out of the used appliance market, and ensuring they are decommissioned in an environmentally responsible manner. An appliance recycling contractor provides turnkey services including verification of customer eligibility, scheduling pick-up appointments, appliance pick-up, rebate processing, and recycling services. The recycling process involves removing chlorofluorocarbon-based refrigerant and other hazardous materials, preparing for reclamation, and recycling components such as metals, foam, and plastic. Customers who participate receive free pick-up services, a cash incentive, and a free kit that contains self-install EWR measures like LED bulbs, as well as cross promotional materials for other Consumers Energy EWR programs.
Program Logic	The following strategies are employed to address current market barriers: **Market Barrier** ▪ Lack of awareness about operating costs for second refrigerators and freezers, as well as for older units ▪ Inconvenience of removing old units **Program Element** ▪ Marketing materials with operating cost estimates ▪ Free pick-up/removal from customer site plus incentive

- Cost of disposal
- Free disposal and proper recycling

Incentive Strategy

Program participants who recycle a secondary refrigerator or freezer receive a $50 rebate and free pick-up and disposal. Typically, appropriate disposal of these units entails a municipal fee of approximately $35; therefore, the free pick-up service provides an additional value.

Participants who recycle an old operable window air conditioner or dehumidifier are eligible for a $15 rebate as well as free pick-up when they recycle a refrigerator or freezer at the same time. Consumers Energy also sponsors periodic turn-in events during which customers may drop off these small appliances and receive the rebate.

Eligible Measures, Measure Qualifications, Energy Savings & Incentives

To be eligible to participate in the Appliance Recycling Program, the customer must be a residential Consumers Energy electricity customer.

The program's eligible measures, measure qualifications, savings and incentive levels are outlined below.

Measure	Measure Qualifications	Gross Annual kWh Savings	Incentive
Recycled refrigerator	Operable unit; 10-30 ft^3; up to 2 per customer per year[1]	1,135	$50
Recycled freezer		944	$50
Recycled room air conditioner	Operable unit; up to 4 per customer per year[2]	113	$15
Recycled dehumidifier		139	$15

[1] Customers may recycle up to two "large appliances" (i.e., refrigerators and freezers per year.

[2] Customers may recycle up to four "small appliances" (i.e., room air conditioners and dehumidifiers) per year. Free pick up services are only available for small appliances when a large appliance is picked up at the same time.

Implementation Strategy

Consumers Energy uses an implementation contractor to deliver key elements of the implementation strategy, including:

- ***Turnkey Appliance Pick-Up/Recycling:*** Consumers Energy will continue to work with its implementation contractor to provide comprehensive turnkey implementation services, from eligibility verification and scheduling of pick-ups to proper disposal and recycling of turned-in appliances. The implementation contractor also hosts turn-in events in Consumers Energy's territory each year, allowing customers to drop off both large and small appliances.
- ***Partnering with Retail Stores:*** Consumers Energy provides additional options for customers to schedule retrieval of old appliances through retail outlets when they purchase a new unit.
- ***Incentive Coordination and Processing:*** The implementation contractor coordinates prompt processing of incentive payments. Since prompt incentive payment is essential to retailer/customer satisfaction, the implementation contractor follows established protocols and service level requirements that expedite payments.

The implementation contractor also handles implementation-related administrative requirements, including the following:

- Management of the eligibility verification and scheduling, pick-up, and appliance recycling processes;
- Marketing strategy and messaging;
- Incentive processing;
- Data tracking and reporting;
- Investment tracking and reporting;
- Contact with (call) center services; and
- Public relations, customer satisfaction, and problem resolution.

Marketing Strategy

Marketing materials for the Appliance Recycling Program carry a strong consumer education message emphasizing the cost of operating second refrigerators and freezers and older, inefficient appliances, and the importance of proper disposal and recycling of older units.

Key elements of the marketing strategy include:

- Email marketing;
- Paid media (e.g., print advertising, radio, or digital media);
- Program website (The program website promotes the availability of the program to interested customers);
- Cross-promotional opportunities with other EWR programs;

- Sponsorship, promotion of, and participation in community recycling events; and
- Partnerships with retail stores to promote the program and schedule pick-ups.

EM&V Strategy & Requirements

All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified and that other appropriate adjustments such as net-to-gross ratios are properly applied.

Consumers Energy Administrative Requirements

Consumers Energy staff is responsible for general administrative oversight of the program portfolio including:

- Program leadership and management of the implementation contractor;
- Investment administration;
- Energy saving goal achievement;
- Customer EWR education;
- Coordination of marketing strategy/public relations;
- Development and placement of marketing materials and advertising;
- Management of quality assurance metrics;
- Ensuring high level of customer satisfaction;
- Data warehousing; and
- Program-related reconciliation efforts.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$5,630,833	$6,596,047	$7,310,374	$7,493,133
Natural Gas	-	-	-	-
Total	$5,630,833	$6,596,047	$7,310,374	$7,493,133

Savings Targets

	2020	2021	2022	2023
MWh	26,341	31,732	34,634	32,234
MW	3.1	3.8	4.1	3.9
Mcf	-	-	-	-

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	2.13
Total Resource Cost Test	1.80
Participant Test	6.41
Rate Impact Measure Test	0.67

7.2 ENERGY STAR® Appliances

Program	ENERGY STAR® Appliances
Objective	Produce long-term energy savings in the residential sector by promoting high-efficiency home appliances through the retail channel and online store.
Target Market	The ENERGY STAR® Appliances Program targets residential customers purchasing new appliances and other household products, including clothes washers, room air conditioners, dehumidifiers, variable speed pool pumps, air purifiers, advanced power strips, and Wi-Fi-enabled thermostats. Residential rental property owners and tenants are also eligible to participate.
Program Duration	The ENERGY STAR® Appliance Program was launched in September 2009 and is an ongoing element of the portfolio.
Program Description	The program provides incentives to customers to encourage them to purchase ENERGY STAR® products. Since appliance standards as well as the market share of high-efficiency appliances are gradually increasing, the program targets specific qualifying models and customer marketing. Customers can purchase qualifying items at brick and mortar stores or online.
Program Logic	The program stimulates demand by educating customers about the energy and money saving benefits associated with efficient products and providing financial incentives to overcome the first-cost barrier. Although consumer awareness of high-efficiency products has significantly increased, a first cost barrier still exists when promoting the highest efficiency units. The program employs the following strategies to address primary market barriers. **Market Barrier**: ▪ First cost concerns ▪ Insufficient awareness about emergent technology ▪ Insufficient education and awareness among retail sales force **Program Element**: ▪ Customer incentives ▪ Educational content on program website ▪ Field work/training with retailers

Incentive Strategy

Program participants who install a high-efficiency clothes washer, dehumidifier, room air conditioner, variable speed pool pump, Wi-Fi-enabled thermostat, or other eligible measures receive a rebate. Customers and retailers can download a rebate application from Consumers Energy's website or apply online using the online application link. Customers receive instant rebates on certain products in the Consumers Energy Online Store. Additionally, Consumers Energy will develop an instant rebate incentive mechanism during the 2020 - 2023 EWR Plan period for selected appliances purchased in participating retail stores.

Eligible Measures, Efficiency Requirements, Energy Savings & Incentives

To participate in the program, customers must be natural gas and/or electricity customers of Consumers Energy. The program's eligible measures, measure qualifications, savings and incentive levels are outlined below.

Measure	Efficiency Requirements	Incentive
Clothes Washer	ENERGY STAR® Combination Customers	$50
	ENERGY STAR® Electricity Only and Gas Only customers	$25
Room Air Conditioner	ENERGY STAR® Combination or Electricity Only Customers	$20
Dehumidifier	ENERGY STAR® Combination or Electricity Only Customers	$20
Air Purifier	ENERGY STAR® Combination or Electricity Only Customers	$50
Advanced Power Strips	Tier 1 Combination or Electricity Only Customers	$10
Wi-Fi-Enabled Thermostat	Tier 2 and Tier 3 Combination Customers	$100
Wi-Fi-Enabled Thermostat Pool Pump	Tier 2 or Tier 3 Electricity Only and Gas Only Customers	$50
	ENERGY STAR® Variable Speed Combination and Electricity Only Customers	$350

Additional measure detail is found in Appendix A: Detailed Program Measures.

Implementation Strategy

Consumers Energy uses an implementation contractor to deliver key elements of the implementation strategy, including:

- ***Retailer Education and Outreach:*** Consumers Energy's implementation contractor uses field representatives to educate participating retailers. The field representatives maintain regular contact with participating retailers to ensure the following:
  - Retail sales staff are informed about the program offerings, rebate application process, and benefits of ENERGY STAR® qualifying products;
  - Point-of-purchase displays are visible and qualifying products are stocked in accordance with retailer commitments; and
  - Retailers' concerns and issues are addressed promptly.
- ***Incentive Coordination and Processing:*** The implementation contractor processes all incentive requests and manages prompt processing of incentive payments. The online store enables an instant rebate.

Strategies to limit free-ridership and promote spillover include:

- Incentives for only ENERGY STAR® products; and
- Program promotion primarily on Consumers Energy's website.

The implementation contractor is responsible for handling implementation-related administrative requirements, including the following:

- Retailer education;
- Marketing strategy and messaging;
- Online Store maintenance;
- Field services;
- Rebate processing;
- Data tracking and reporting;
- Investment tracking and reporting;
- Contact with (call) center services;
- Managing public relations;
- Quality assurance; and
- Customer satisfaction/problem resolution.

Marketing Strategy	Key elements of the marketing strategy include: ▪ Customer marketing through Consumers Energy's website; ▪ Email, bill inserts, television, and radio, encouraging customers to visit Consumers Energy's website to find out more about ways to save energy and money; ▪ Attending meetings or events organized by community-based organizations; and ▪ Hosting occasional in-store promotion events. The website carries a strong consumer education message emphasizing the benefits of high-efficiency appliances and early replacement with ENERGY STAR®-certified models (lifetime dollar savings, energy savings, water savings, and lower noise).
EM&V Strategy & Requirements	All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments such as net-to-gross ratios are properly applied.
Consumers Energy Administrative Requirements	Consumers Energy staff is responsible for general administrative oversight of the program portfolio including: ▪ Program leadership and management of the implementation contractor; ▪ Investment administration; ▪ Energy saving goal achievement; ▪ Customer EWR education efforts; ▪ Coordination of marketing strategy/public relations; ▪ Development and placement of marketing materials and advertising; ▪ Management of quality assurance metrics; ▪ Ensuring a high level of customer satisfaction; ▪ Data warehousing; and ▪ Program-related reconciliation efforts.
Estimated Participation	See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$1,141,987	$1,150,399	$1,041,228	$1,070,927
Natural gas	$1,525,929	$1,568,854	$1,618,102	$1,685,301
Total	$2,667,916	$2,719,253	$2,659,330	$2,756,228

Savings Targets

	2020	2021	2022	2023
MWh	2,356	2,483	2,268	2,340
MW	0.5	0.6	0.4	0.4
Mcf	91,876	96,449	101,244	106,265

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	1.70
Total Resource Cost Test	0.80
Participant Test	1.64
Rate Impact Measure Test	0.55

7.3 ENERGY STAR® Lighting

Program	ENERGY STAR® Lighting
Objective	Produce long-term electricity energy savings in the residential sector by increasing the market share of high-efficiency lighting products sold through retail sales channels.
Target Market	All residential customers purchasing light bulbs and fixtures through retail sales channels in Consumers Energy's territory and Consumers Energy's online store. Residential rental property owners and tenants are also eligible.
Program Duration	The ENERGY STAR® Lighting Program was launched in July 2009. Due to changing lighting standards and the adoption of sunset dates for light emitting diode (LED) lamps in the MEMD, Consumers Energy will phase out most residential lighting products during the 2020 - 2023 EWR planning period. Consumers Energy will discontinue offering incentives for standard A-line LED lamps in 2022 and most specialty lamps in 2023. Consumers Energy anticipates continuing to offer and promote new and emerging lighting technologies, such as connected lighting throughout the 2020 - 2023 EWR Plan period.
Program Description	Through the ENERY STAR® Lighting Program, Consumers Energy provides incentives and marketing support directly to retailers who reduce the retail price of ENERGY STAR® standard and specialty lighting products, promote these products, and administer product discounts to build market share. Customer incentives, in the form of instant savings, help mitigate first cost as a barrier to program participation and make purchasing high-efficiency lighting simple. Consumers Energy marketing support (such as in-store signage, sales associate training, and advertising and promotion) makes retailer participation easier. During the 2020 - 2023 EWR Plan period, LED bulbs will become the market baseline for high-efficiency lighting (see section 2.3 for details). The energy savings and effective useful life of LEDs will begin to decline in 2020 as new equipment standards take effect and, as a result, Consumers Energy's programs will initiate a transition period and phase out in 2020. Specifically, the program will deemphasize standard screw-in LED bulbs, phasing them out completely by the end of 2022, when the measure's effective useful life (EUL) will sunset. Consumers Energy will increasingly shift its focus toward specialty lighting during the first two program years, before ramping down and phasing out specialty lighting by the end of 2023. Finally, Consumers Energy will continue to offer connected lighting solutions through this program and will increase its emphasis on this emerging technology to determine the potential value to its portfolio overall. During this EWR Plan, Consumers Energy's ENERGY STAR® Lighting program will coordinate with its proposed

Smart Home Pilot program (see section 7.13) to test market acceptance, explore savings potential, and identify accurate savings analysis and accounting methods.

Program Logic

The program's upstream approach leverages retail sales channels to distribute lighting products, which creates opportunities for cooperative promotions and makes participation easy for customers. This increases demand for efficient lighting products and influences the stocking of qualifying products, thereby supporting long-term market transformation.

Following is a list of the primary barriers in this market and the program elements that addressed those barriers:

Market Barrier	Program Element
▪ First cost concerns	▪ Upfront customer incentives
▪ Lack of customer awareness	▪ Point-of-purchase displays
▪ Limited retail sales force information	▪ Outreach and education to retailers

Incentive Strategy

The program uses an upstream markdown approach to drive a large volume of measure adoption. Consumers Energy reimburses select retailers within its electricity territory for discounting the cost of qualifying LED bulbs by a specified dollar amount per unit throughout the year and during special, limited-term promotions. Qualifying products are listed at a lower retail price on store shelves, and point-of-purchase materials help direct customers to program-discounted bulbs. At the end of every month, the retailer provides a point-of-sale report and Consumers Energy reimburses them for the discount provided on each unit sold. This strategy eliminates costs associated with mail-in rebate fulfillment, printing claim forms, and store location set up. Volume is controlled by allocating a specific number of bulbs that each retailer can sell, and discounts are offered on a "while supplies last" basis. Consumers Energy continually re-examines its incentive strategies in light of current market conditions.

Eligible Measures, Efficiency Requirements, Energy Savings & Incentives

Any customer that purchases an LED from a participating retailer is eligible to receive a discount. Customers who purchase bulbs through the Consumers Energy online store must have an active Consumers Energy residential electricity account to receive the incentive.

Deemed savings values are based on documented values from the Michigan Energy Measures Database. The qualifying bulb incentive amounts listed below reflect an average across multiple measures and individual agreements negotiated with retailers. The program's eligible measures, measure qualifications, savings, and incentive levels are outlined below.

Measure[1]	Efficiency Requirements	Gross Annual kWh Savings/ Unit	Incentive (Range per Unit)
LED Standard Bulbs	ENERGY STAR®	19.3 - 46.2	$1.25 - $2.25
LED Specialty	ENERGY STAR®	23.7 - 276.4	$1.25 - $2.25

[1]Consumers Energy currently offers: LED Bulbs replacing A-Line 29W, A-Line 43W, A-Line 53W, A-Line 100W/72W Halogen, LED Flood PAR, LED Globe, LED Candelabra, LED Outdoor Flood PAR, and LED Downlight.

Implementation Strategy

Consumers Energy uses an implementation contractor to deliver key elements of the implementation strategy, including:

- ***Retailer Recruitment and Program Delivery:*** An experienced implementation contractor manages the lighting program and leverages existing relationships with several retailers throughout the United States to recruit retail partners and maintain seamless program delivery. The program has partnerships with a range of retailers, including big box stores, general merchandisers, and hardware stores. Consumers Energy also has, and is committed to, expanding its relationships with retailers that have greater access to hard to reach and income qualified customers, such as Dollar General and Habitat for Humanity. The agreement with each participating retailer specifies program requirements such as product specifications, performance criteria, product stocking objectives and data sharing requirements.
- ***Customer Engagement through Marketplace:*** Consumers Energy also works with an experienced e-commerce software and service provider to offer instant rebates on qualified lighting products through Consumers Energy's Online Store.
- ***Retailer Retention, Education, and Outreach***. The implementation contractor uses field representatives to maintain

regular contact with participating retailers to ensure the following:

- Retail sales staff are informed about the program offering and benefits of qualifying products;
- Point-of-purchase displays are visible and qualifying products are stocked in accordance with retailer commitments;
- Retailers' concerns and issues are addressed promptly;
- Retailers are informed well in advance of planned promotional activities;
- Retail sales staff and customers are educated on high-efficiency lighting options and equipment standards; and
- Retail sales staff and customers are briefed on other EWR programs offered by Consumers Energy.

- ***Incentive Processing and Program Administration:*** The implementation contractor processes retailer incentive payments. A prompt incentive payment is essential to ensuring manufacturer and retailer satisfaction, and the implementation contractor has established protocols that expedite payments.

The implementation contractor also handles implementation-related administrative requirements, including the following:

- Field services;
- Marketing strategy;
- Content recommendations for marketing materials and advertising;
- Data tracking and reporting;
- Investment tracking and reporting;
- Contact with (call) center services; and
- Customer satisfaction/problem resolution.

Marketing Strategy

Key elements of the marketing strategy include:

- Point-of-purchase displays;
- Cooperative advertising with retailers;
- Customer marketing through Consumers Energy's website and newsletter;
- Mass-market advertising through email, bill inserts, radio, newspaper, and television;
- Leveraging the program as an entry-point to other Consumers Energy's EWR programs;
- LED light bulb campaign promotions; and

- Attendance at meetings or events organized by community-based organizations.

Consumers Energy markets the ENERGY STAR® Lighting Program in stores through point-of-purchase displays, signage, and other materials that are developed in cooperation with participating retailers. Materials employ a strong consumer education component, emphasizing the benefits of high-efficiency lighting products (e.g., lifetime energy and cost savings, longer product life, safety, light quality). The marketing materials leverage the ENERGY STAR® brand, which enjoys a high level of consumer recognition and acceptance.

In 2012, Consumers Energy established a partnership with the Feeding America West Michigan Food Bank, which distributes high-efficiency bulbs to those in need. Consumers Energy will continue this partnership throughout the 2020 - 2023 EWR Plan period.

Consumers Energy's program website provides comprehensive information about the benefits of energy-efficient lighting with links provided to the ENERGY STAR® website. Additionally, the Consumers Energy website offers a Find-A-Retailer tool, featuring multiple search options and GIS-based map views to help customers easily find a participating retailer near them.

Consumers Energy also uses bill inserts and mass media advertising (radio, print, and television) to promote the program, increase customer awareness of Consumers Energy's other EWR programs, and drive customers to its website for more information.

EM&V Strategy & Requirements

All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year, these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.

Consumers Energy Administrative Requirements

Consumers Energy staff is responsible for general administrative oversight of the program portfolio including:

- Program leadership and management of the implementation contractor;
- Investment administration;
- Energy saving goal achievement;
- Lead customer EWR education efforts;
- Coordination of marketing strategy/public relations;
- Development and placement of marketing materials and advertising;
- Management of quality assurance metrics;
- Ensuring a high level of customer satisfaction;
- Data warehousing; and
- Lead program-related reconciliation efforts.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($M)

	2020	2021	2022	2023
Electricity	$6,441,073	$5,532,725	$4,044,608	$1,785,851
Natural gas	-	-	-	-
Total	$6,441,073	$5,532,725	$4,044,608	$1,785,851

Savings Targets

	2020	2021	2022	2023
MWh	78,687	63,546	48,405	27,114
MW	6.2	4.9	3.6	1.6
Mcf	-	-	-	-

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	1.05
Total Resource Cost Test	1.11
Participant Test	8.47
Rate Impact Measure Test	0.39

7.4 Home Energy Analysis (HEA)

Program	Home Energy Analysis
Objective	Initiate a conversation about EWR with natural gas and combination fuel customers that increases customers' awareness of the benefits of EWR, opportunities to conserve energy in their homes, and Consumers Energy's program portfolio while increasing their satisfaction levels and capturing both short and long-term energy savings.
Target Market	Residential homeowners in Consumers Energy's natural gas or combination service territory who reside in single-family dwellings and duplexes and are interested in improving EWR efforts in their homes.
Program Duration	The HEA program launched January 2012 and is an ongoing element of the portfolio. Consumers Energy will add a new program component focused specifically on customers in its electric-only territory in the first quarter of 2020.
Program Description	As described further below, the HEA program offers customers an in-home energy assessment performed by a trained analyst. The assessment includes a visual inspection of the home, the installation of EWR measures, and a customized summary report with energy savings tips and recommendations. • ***Introduction:*** A trained analyst describes what the assessment entails and explains how they will help identify areas where energy saving opportunities are present. • ***Visual Inspection:*** The analyst walks the perimeter of the home with the customer, checks the mechanical equipment and envelope, and looks for signs of potential inefficiencies in areas where they commonly occur. The analyst will focus on inspecting those systems that are supplied by a Consumers Energy-delivered fuel. The analyst may bypass some of these steps if they create an inconvenience for the participant or if they are unable to access a location (though the analyst will still attempt to gather missing information by asking questions to the customer). • ***Direct Install:*** With the customer's approval, the analyst installs energy saving measures throughout the home including LED light bulbs, LED night lights, energy efficient shower heads, energy efficient kitchen and bathroom faucet aerators, water heater pipe insulation and a programmable thermostat or Wi-Fi-enabled thermostat. Direct install measures will be limited to those that save energy associated with a Consumers Energy-delivered fuel. Participants receive about $50 worth of energy saving measures on average, which provides an estimated average annual energy cost savings of $100 to $150 after the first year.

- ***Customizable Report:*** The analyst enters their findings into a web-based intake tool as they perform the visual inspection. The tool is then used to generate a personalized report for each participant. The analyst discusses the report with the customer during the last step of the assessment, focusing on educating the homeowner about their findings.

The report includes energy usage data, describes the measures installed during the assessment and their estimated annual and lifetime savings, and offers energy saving tips and suggestions for next steps. It also describes available Consumers Energy programs and incentives that can help them install the EWR measures identified in the report. Details regarding infiltration, insulation and the efficiency of mechanical systems are not obtainable during a Home Energy Analysis. Therefore, the analyst explains the benefits of having a more comprehensive energy audit performed and how it can potentially identify ways to increase the comfort and efficiency of the home.

The report is either printed or emailed to the homeowner immediately following the assessment, at the homeowner's choice.

Program Logic

The program is designed to overcome one of the key barriers customers face in implementing EWR improvements in their homes - lack of information about how the home uses energy and how to prioritize actions that will save energy and money. The program provides customers with an educational resource to make it as easy as possible for them to act.

The educational component of the program is achieved by having trained analysts work directly with customers to identify EWR opportunities that offer the greatest impact and value for the customer, as well as inform customers about other residential programs in Consumers Energy's portfolio that can help them achieve their goals.

The HEA program's EWR direct install component also provides customers with immediate energy savings.

Incentive Strategy

Participating customers receive free direct installation of energy saving measures, a walkthrough energy inspection and a customized summary report that includes energy saving tips and recommendations.

The program is promoted as having a $25 fee; however, Consumers Energy waives the fee when customers provide a promotional code during scheduling. The fee helps screen out those unlikely to implement improvements. Promotional codes are made available to customers via a variety of marketing outlets.

Eligible Measures, Efficiency Requirements, Energy Savings & Incentives

To be eligible to participate, customers must receive electricity, natural gas, or combination service from Consumers Energy and have an active account. If the customer is not the property owner, the property owner must first provide written or verbal consent for the analyst to enter the home and install any measures. The Home Energy Analysis program is not designed to provide additional incentives for customers to participate, nor does it offer incentives for EWR measures installed for the customers. Customers who participate receive a home energy assessment, a customized energy report with improvement recommendations, and free direct installation of a range of measures that provide instant energy savings. Direct installation measures provided at no cost and are outlined below. Note: measures that reduce water usage (i.e., showerheads and aerators) provide either electricity or natural gas savings depending on the home's water heating fuel type.

Measure	Efficiency Requirements	Gross Annual kWh Savings/ Unit	Gross Annual Mcf Savings/ Unit
LED Standard Bulbs	ENERGY STAR® Electricity service provided by Consumers Energy	40.0	-
LED Specialty Bulbs			
Low-Flow Showerhead	1.5 Gallons per Minute (gpm) Water heating fuel provided by Consumers Energy	356	1.46
Faucet Aerator bath	1.0 gpm Water heating fuel provided by Consumers Energy	44	0.30
Faucet Aerators kitchen	1.5 gpm Water heating fuel provided by Consumers Energy	260	1.22
Shower start	1.5 gpm		
Water Heater Pipe Insulation[1]	Water heating fuel provided by Consumers Energy	51.0	0.25
Programmable			

Thermostats[2]			
Wi-Fi-Enabled Thermostat[2]			

[1] Water heating fuel must be supplied by Consumers Energy

[2] Electric only customers must have electric heating system or central air conditioner

Implementation Strategy

Consumers Energy uses an implementation contractor to deliver key elements of the implementation strategy include:

- ***Recruiting and Training Field Staff:*** The staff hired to perform home assessments are experts in delivering home EWR, and several are Building Performance Institute (BPI)-certified and/or RESNET-certified analysts. This level of expertise is essential to delivering accurate and credible energy saving information and ensuring satisfaction.
- ***Web based intake tool*:** The online intake tool enables field staff to capture data as it pertains to a customer's home and its current level of efficiency. This tool is instrumental to achieving high customer satisfaction by enabling analysts to provide a timely, personalized on-site report.

The following implementation-related administrative requirements are handled by the implementation contractor:

- Management of dedicated web page, online intake tool, and GIS enabled scheduling system;
- Call Center services;
- Recruiting and training field team staff;
- On-premise direct installation services;
- Visual inspection;
- Walk-through analysis report;
- Quality assurance verification;
- Post service follow-up;
- Inventory management;
- Segment-targeted marketing strategy and materials;
- Data tracking and reporting;
- Investment tracking and reporting; and
- Customer satisfaction/problem resolution.

Marketing Strategy

Key elements of the marketing strategy include:

- Direct mail campaigns targeted to specific geographic areas;
- Utility newsletter and bill inserts;
- Program website;
- Press releases in targeted communities;
- Email messaging;
- Community Outreach events throughout the state; and
- Training trade allies to promote the program.

The program primarily utilizes direct mail and email media advertising to promote and direct customers to contact the call center or visit the program's website for program information and scheduling opportunities.

EM&V Strategy & Requirements

All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year, these evaluation contractors conduct appropriate program specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.

Consumers Energy Administrative Requirements

Consumers Energy staff is responsible for general administrative oversight of the program portfolio including:

- Program leadership and management of the implementation contractor;
- Investment administration;
- Energy saving goal achievement;
- Customer EWR education;
- Coordination of marketing strategy/public relations;
- Development and placement of marketing materials and advertising;
- Management of quality assurance metrics;

- Ensuring a high level of customer satisfaction;
- Data warehousing; and
- Program-related reconciliation efforts.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$3,707,885	$5,047,417	$4,603,265	$3,489,037
Natural Gas	$1,930,899	$1,930,899	$1,930,899	$1,930,899
Total	$5,638,785	$6,978,316	$6,534,164	$5,419,936

Savings Targets

	2020	2021	2022	2023
MWh	5,992	7,402	6,112	3,902
MW	0.3	0.4	0.3	0.1
MCF	91,018	91,018	91,018	91,018

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	0.70
Total Resource Cost Test	0.70
Participant Test	-
Rate Impact Measure Test	0.33

7.5 Home Energy Report (HER)

Program	Home Energy Report
Objective	Encourage Consumers Energy's natural gas and electricity customers to use less energy and save money on their monthly bills by providing them with personalized information on their energy use, including comparisons to energy used by nearby customers in similar homes and customized energy-saving advice.
Target Market	The HER Program will serve residential customers. Approximately 300,000-400,000 households that are electricity-only, natural gas-only, or combination service customers will receive reports throughout the year. All participants will be given the opportunity to opt-out at any time through the duration of the program.
Program Duration	The HER Program was officially launched in 2013 and is an ongoing element of the portfolio.
Program Description	The HER Program is a proven EWR program that leverages large-scale consumer engagement to drive measurable and sustainable energy savings. The HER Program provides residential customers with energy information through personalized reports delivered by mail and supplemented with electronic reports to help them understand their energy consumption patterns and make better energy use decisions. Behavioral science research has demonstrated that peer-based comparisons are highly motivating ways to present information. The HER program leverages a dynamically created comparison group for each residence using similarly sized and located households. In addition to this comparison, customers receive individually targeted savings tips based on their energy use patterns, housing characteristics, and demographics. The HER Program will present customers with the most relevant suggestions that are likely to deliver the greatest savings.
Program Logic	The HER Program is organized around two concepts. First, motivate consumers to change their behavior by putting their energy use in context to other customers' usage. Second, capitalize on this motivation and provide them with salient, personalized advice to help them use less energy and save money. In addition, the HER Program is designed to enrich the effectiveness of the overall residential portfolio by increasing participation and savings in other programs. HER programs have been independently verified to deliver statistically significant energy savings in over 20 independent evaluations. Consumers Energy's HER Program savings forecast does not exceed 15 percent of

	total residential portfolio savings for either fuel in any year of the 2020 - 2023 EWR Plan.
Incentive Strategy	The HER Program relies on low- to no-cost behavioral adaptations.
Eligible Measures, Measure Qualifications, Energy Savings & Incentives	Deemed savings values will be based on values from the Michigan Behavior Resource Manual that are provided as part of evaluation efforts to assess energy savings values. Alternatively, Consumers Energy may calculate program savings and submit results through a custom measure process.
Implementation Strategy	Consumers Energy launched the HER Program as a pilot in April 2011, with 50,000 test customers. After demonstrating success and energy savings, the program was expanded in subsequent years and now reaches between 300,000 and 400,000 customers annually. Consumers Energy uses an implementation contractor to deliver key details of the implementation strategy are as follows: ▪ ***Delivery of Reports:*** Targeted households automatically receive approximately four print reports annually depending on program design. These reports provide periodic updates on the energy usage behavior of a given household and offer tips for saving energy. Supplemental electronic reports are delivered to customers with email addresses on a more frequent basis to reinforce savings messages in print reports. ▪ ***Targeted Messaging:*** Reports feature personalized messaging to encourage participation in relevant EWR programs or to offer low-cost/no-cost energy savings tips. These dynamic information modules vary seasonally to best suit customer needs. ▪ ***Ability to opt-out:*** All participants have a clear method for opting out of the program if they no longer want to receive the information. The opt-out rate for the HER Program has generally been less than 0.1 percent.
Marketing Strategy	The HER Program will automatically be delivered on an opt-out basis to electricity, natural gas, and combination customers.

EM&V Strategy & Requirements

All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year, these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.

Consumers Energy Administrative Requirements

Consumers Energy staff is responsible for general administrative oversight of the program portfolio including:

- Program leadership and management of the implementation contractor;
- Investment administration;
- Energy savings goal achievement;
- Customer EWR education efforts;
- Management of quality assurance metrics;
- Ensuring a high level of customer satisfaction;
- Data warehousing; and
- Program-related reconciliation efforts.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$700,249	$693,565	$706,300	$723,958
Natural gas	$842,923	$872,495	$859,760	$881,254
Total	$1,543,172	$1,566,060	$1,566,060	$1,605,212

Savings Targets

	2020	2021	2022	2023
MWh	24,786	19,743	21,611	14,346
MW	-	-	-	-
MCF	204,019	208,907	232,616	247,726

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	0.62
Total Resource Cost Test	0.62
Participant Test	-
Rate Impact Measure	0.30

7.6 Home Performance with ENERGY STAR®

Program	Home Performance with ENERGY STAR®
Objective	Produce significant long-term electricity and natural gas energy savings in the residential sector by helping customers to understand their energy use and identify conservation opportunities, as well as providing incentives for the installation of appropriate weatherization measures, high-efficiency heating and cooling systems, and other energy-efficient applications.
Target Market	Residential homeowners in single-family homes and duplexes. The program targets customers with above average energy consumption and mean household income to promote whole home analysis and deep energy savings.
Program Duration	The program was launched in 2011 and is an ongoing element of the portfolio.
Program Description	The program relies on a network of participating contractors, trained in building science and certified with the Building Performance Institute (BPI) on the delivery of a comprehensive home energy assessment and measure installation under the Home Performance with ENERGY STAR® model. Customers pay the contractor a market-based fee for a comprehensive home assessment, a prerequisite to qualify for rebates. The comprehensive home assessment includes diagnostic testing for combustion safety, duct leakage, and air infiltration. Both “test in” and “test out” diagnostics are required to assure the efficacy of installed measures. Once the inspection and “test-in” are completed, results are entered into energy modeling software to create a final report that informs the customer of the energy savings, cost, and payback for the suggested improvements. Consumers Energy offers participants financial incentives for building shell improvements and energy-efficient heating and cooling equipment. To qualify for financial incentives, the contractor administers all required paperwork on behalf of the homeowner once improvements are completed and the “test-out” has been performed. Financial incentives are paid to the customer either as an instant rebate by the contractor in the form of a discount on the project invoice or in the form of a rebate check that is mailed to the customer an average of 15 days following receipt of an application.

Program Logic

The program is designed to overcome one of the key barriers in the residential existing homes market: lack of information about how homes use energy and actions that will save the most energy and money. The program provides an educational resource to homeowners and makes it as easy as possible for them to take action.

The program maintains a sustainable market-based network of experienced energy professionals who assist customers with the major renovation work necessary to capture long-term savings in the existing homes market.

Market Barrier	Program Element
▪ Lack of information about home energy use and how to prioritize energy-saving actions	▪ A variety of energy analysis tools that provide prioritized recommendations
▪ First-cost concerns for customers	▪ Financial incentives and information on lifecycle savings
▪ Lack of experienced home energy analysts to address more complex home performance issues	▪ Training and mentoring for contractors, including BPI certification training
▪ Hassle of finding contractors and arranging work	▪ List of qualified contractors that meet program standards, with recognition for those that have received program awards or offer special financing

Incentive Strategy

Customers participating in the Home Performance with ENERGY STAR® program can receive financial incentives for implementing some of the measure examples listed below.

Eligible Measures, Efficiency Requirements, Energy Savings & Incentives

To be eligible to participate, homeowners must be Consumers Energy electricity, natural gas, or combination customers with active accounts. Measures installed in garages or manufactured homes are not eligible, and enclosed porches are only eligible if they have supply ducts.

The program's eligible measures, qualification standards, savings, and incentive levels are outlined below.

Measure	Efficiency Requirements	Incentive (Range per Unit)	
		Combination & Gas Only	Electricity Only
Multiple Measure Installation Bonus	2+ Measures installed	$200 - $700	$100 - $250
Air Sealing	20 percent to 50 percent Reduction	$100 - $200	$40 - $80
Duct Sealing	15 percent to 30 percent Reduction	$50 - $100	$15 - $35
Duct Insulation and/or Replacement		$50	$15
Roof (Attic) Insulation[1]	R-30 to R-49	$125 - $250	$35 - $70
Above-Grade Wall Insulation[1]		$200	$50
Kneewall Insulation[1]		$50	$15
Basement Wall Insulation		$100	$70
Crawlspace Insulation		$100	$20
Floor Insulation		$100	$20
Rim Joist Insulation		$100	$20
Natural Gas Furnace	95 percent or Higher AFUE	$400-$500	N/A
Furnace or AC Tune-Up[2]		$50 (Furnace only for gas customers)	$50 (AC Only)
Natural Gas Boiler	92 percent or Higher AFUE	$1,250	N/A
Programmable Thermostat		$10	$10

Wi-Fi-Enabled Thermostat		$50 - $100	$50
Split System Central A/C	15.0 SEER or Higher	$300-$600*	$300-$600
Air Source Heat Pump	15.0 SEER or Higher	$300*	$300
Ground Source Heat Pump	17.0 SEER or Higher	$500*	$500
Tankless Water Heater	0.82 EF	$200	N/A
High-Efficiency Natural Gas Water Heater[1]	0.67 EF or greater	$120	N/A
Window/Patio Door Replacement[1]	0.27U-factor or ENERGY STAR for Norther Climate Zone	$2/SF of window area, up to $500	$2/SF of window area, up to $500

* Combination customers only.
[1] Measure may be eligible for a Made in Michigan bonus incentive up to $250
[2] Must be performed by a participating contractor who offers the comprehensive Consumers Energy tune-up service.

Implementation Strategy

Consumers Energy uses an implementation contractor to deliver key elements of the implementation strategy include:

- ***Application Processing:*** The implementation contractor processes all incentive applications, verifies eligibility, and delivers rebate checks to contractors/customers.
- ***Trade Ally Recruitment, Education, and Outreach:*** The implementation contractor uses account managers to recruit trade allies to the program. The account managers maintain regular contact with participating trade allies to ensure that:
  - Trade allies are informed about the program offering, incentive application process, and any special program opportunities;
  - Trade allies have an adequate supply of program marketing materials and application forms;
  - Qualifying equipment is installed;
  - Concerns and issues are addressed promptly;
  - Trade allies provide exceptional customer service; and
  - Trade allies are trained on how to sell and market the whole-house approach and use building science to properly diagnose a home for energy-efficient improvements.

Strategies to limit free-ridership and promote spillover include:

- Offer sufficient incentives to motivate customers who would not otherwise implement improvements due to the first-cost barrier; and
- Utilize Consumers Energy's customer billing information to identify high-use customers who are most likely to benefit from the program.

The following implementation-related administrative requirements are handled by the program's implementation contractor:

- Marketing strategy and materials;
- Field services;
- Assisting with development of network of Home Performance providers;
- Data tracking and reporting;
- Investment tracking and reporting;
- Call center services;
- Public relations; and
- Customer satisfaction/problem resolution.

Marketing Strategy

Key elements of the marketing strategy include:

- Utility newsletter bill inserts;
- Email promotional offers;
- Direct mail postcards;
- Program website;
- Mass media advertising;
- Digital marketing;
- Assist participating contractors with marketing strategies;
- Co-op advertising with contractors; and
- Promote comprehensive assessments by offering $100 coupons through Home Energy Analysis (HEA) program.

The program primarily utilizes email, direct mail, bill inserts, and digital advertising to promote awareness of the program. Customers are directed to contact the call center or visit the website for program information. The program website and Consumers Energy's online bill analysis system also promote the program to interested customers.

EM&V Strategy & Requirements

All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year, these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.

Consumers Energy Administrative Requirements

Consumers Energy staff is responsible for general administrative oversight of the program portfolio. Key functions include:

- Program leadership and management of the implementation contractor;
- Investment administration;
- Energy savings goal achievement;
- Customer EWR education efforts;
- Coordination of marketing strategy/public relations;
- Development and placement of marketing materials and advertising;

- Management of quality assurance metrics;
- Ensuring high level of customer satisfaction;
- Data warehousing; and
- Program-related reconciliation efforts.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$977,722	$1,009,620	$1,039,960	$1,067,240
Natural gas	$995,364	$1,060,138	$1,104,249	$1,126,923
Total	$1,973,086	$2,069,758	$2,144,209	$2,194,163

Savings Targets

	2020	2021	2022	2023
MWh	201	214	224	208
MW	0.1	0.1	0.1	0.1
MCF	20,349	22,547	23,798	24,039

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	0.73
Total Resource Cost Test	0.44
Participant Test	1.39
Rate Impact Measure	0.37

7.7 HVAC and Water Heating

Program	HVAC and Water Heating
Objective	Produce long-term electricity and natural gas energy savings in the residential sector by promoting the purchase and installation of high-efficiency heating, cooling, and water heating equipment.
Target Market	Residential customers installing new central air conditioning units, heat pumps, natural gas furnaces and boilers, and/or water heating equipment. Products installed in single-family homes, including condominiums and townhouses, must be individually owned and metered for natural gas and/or electricity service.
Program Duration	The HVAC and Water Heating Program was launched in July 2009 and is an ongoing element of the portfolio.
Program Description	The HVAC and Water Heating Program offers prescriptive rebates to customers (and to distributors via a midstream initiative) for the purchase and installation of high-efficiency heating, cooling, and water heating technologies. The program uses a combination of market push and pull strategies to simultaneously stimulate demand and increase market providers' investment in stocking and promoting high-efficiency products.
Program Logic	The program stimulates demand by educating customers about the energy- and money-saving benefits associated with efficient products and by providing financial incentives to overcome the first cost barrier. The program encourages HVAC contractors to stock and promote efficient products by offering direct benefits and support including training, educational materials, and marketing collateral. Further, the availability of rebates provides participating contractors with a competitive advantage that motivates them to stock and promote targeted products. **Market Barrier** ▪ First cost concerns ▪ Lack of consumer information ▪ Competing motivations for contractors (high profit on premium products vs. concerns about being low-cost bidder) **Program Element** ▪ Financial incentives and information on lifecycle savings ▪ Educational materials that highlight energy and non-energy benefits of high-efficiency equipment ▪ Contractor training on value of program participation and value to customers from purchasing high-efficiency products. ▪ Collateral materials including sales brochures provided to participating

contractors

- Urgency of replacement decision when equipment fails
- Train contractors to inform consumers about available high-efficiency technologies

Incentive Strategy

Program participants who install a high-efficiency furnace, boiler, central air-conditioner, heat pump, or water heater receive a rebate. Additionally, Consumers Energy offers midstream incentives to participating equipment distributors and dealers for select measures. Incentives are tiered to encourage installation of higher efficiencies. Comprehensive tune-up incentives are offered to ensure maximum lifetime savings are achieved through diagnostic assessments.

Eligible Measures, Efficiency Requirements, Energy Savings & Incentives

Eligible customers must hold an active residential Consumers Energy electricity, natural gas, or combination account. Electricity and combination customers are eligible to receive rebates for air or ground source heat pumps and central air conditioning. Natural gas and combination customers are eligible to receive furnace and boiler rebates, as well as water heater rebates. Instant discounts on selected equipment will be also made available to customers via midstream rebates paid to participating distributors.

Customers who wish to participate must do so through a participating contractor. Participating contractors must attend a free webinar training offered by the implementation contractor, submit a trade ally participation agreement, and have a valid mechanical contractors license issued by the state of Michigan. Contractors submit rebate application materials on behalf of their customers, which significantly reduces the number of flawed applications and improves customer satisfaction.

Qualifying equipment must be installed in existing single-family homes (including condominiums and townhouses with four or fewer units) that are individually-owned and metered. The program is not available for new construction.

The program's eligible measures, qualification standards, savings, and incentive levels are outlined below.

Measure	Efficiency Requirements	Incentive (Range per Unit)
Split System Central AC	14.5 - 21 SEER or higher (Tiered)	$50 - $500
Ground Source Heat Pump	17 - 19 EER or higher (Tiered) Replaces existing heat pump	$200 - $300

Air Source Heat Pump	15 - 16 SEER or higher (Tiered) Replaces existing heat pump	$150 - $250
Ductless Mini-Split Heat Pump	18 - 21 SEER or higher (Tiered) Replaces primary electricity heating system	$250 - $350
Natural Gas Furnace	95 - 98 percent AFUE or higher, AHRI rated (Tiered)	$200 - $400
Furnace, Boiler or AC System Comprehensive Tune-Up		$50
Natural Gas Boiler	92 - 95 percent AFUE or higher (Tiered)	$750 - $900
High Efficiency Storage Natural Gas Water Heater	ENERGY STAR certified or >0.64 UEF	$50 - $65
Tankless Natural Gas Water Heater	ENERGY STAR certified or EF 0.82 or higher	$100
Programmable Thermostat[3]	Replaces existing manual thermostat, One rebate per customer	$10
Wi-Fi-Enabled Thermostat[3]		$50 - $100

Implementation Strategy

Consumers Energy uses an implementation contractor to deliver key elements of the implementation strategy, including:

- ***Contractor Retention, Recruitment, Education, and Outreach:*** The implementation contractor utilizes field staff to recruit, retain, and educate HVAC contractors who participate in the program. The staff maintains regular contact with participating contractors to ensure that:
  - Contractors are kept informed about the program offering and incentive application process;
  - Contractors are provided with an adequate supply of program marketing materials;
  - Qualifying equipment is readily stocked;
  - Contractors' concerns and issues are addressed promptly; and
  - Contractors' participation statistics are shared.
- ***Trade Ally Input:*** The implementation contractor solicits input

and/or support from HVAC distributors, manufactures, and local trade associations and meets with these additional trade allies to promote the program, request recruitment support, and gain key market insights, such as information about new products that meet the program's standards.

- ***Application Processing:*** The implementation contractor processes rebate applications, verifies eligibility, and delivers rebate checks to customers and administers midstream incentives.

Strategies to limit free-ridership and promote spillover include:

- Incentives are limited to high-efficiency equipment; and
- Incentive levels are tiered to encourage purchases of high-efficiency equipment that would not have happened without the rebate.

The implementation contractor manages the following implementation-related administrative requirements:

- Coordination with other utilities for combined natural gas and electricity savings;
- Contractor retention, recruitment, and education;
- Marketing strategy and messaging;
- Field services;
- Rebate processing;
- Data tracking and reporting;
- Investment tracking and reporting;
- Call center services;
- Public relations; and
- Customer satisfaction/problem resolution.

Marketing Strategy

Key elements of the marketing strategy include:

- HVAC contractor meetings to discuss the program and solicit contractor involvement;
- Provide incentive forms and other collateral materials to HVAC contractors;
- Online program information including rebate applications;
- List participating contractors on Consumers Energy's website; and
- Mass media and digital advertising.

Consumers Energy primarily markets the HVAC and Water Heating Program through local HVAC contractors, the most direct influencers of customer HVAC purchasing decisions. Contractors can access educational

	materials to share with their customers through training meetings, in-person visits and an online order form. Further, Consumers Energy recruits HVAC equipment distributor representatives to support the program by passing information on to the contractors they serve. A trade ally website contains all necessary information about the program, including incentives and downloadable forms. Consumers Energy also uses data analytics to identify and target potential participants based on both propensity scores and other data. Consumers Energy uses targeted promotions with promotional codes to track response rates.
EM&V Strategy & Requirements	All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year, these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.
Consumers Energy Administrative Requirements	Consumers Energy staff is responsible for general administrative oversight of the program portfolio including: ▪ Program leadership and management of the implementation contractor; ▪ Investment administration; ▪ Energy saving goal achievement; ▪ Customer EWR education efforts; ▪ Coordination of marketing strategy/public relations; ▪ Development and placement of marketing materials and advertising; ▪ Management of quality assurance metrics; ▪ Ensuring a high level of customer satisfaction; ▪ Data warehousing; and ▪ Program-related reconciliation efforts.
Estimated Participation	See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$1,982,850	$2,193,188	$2,326,039	$1,948,702
Natural gas	$8,578,081	$9,767,425	$10,131,630	$10,172,835
Total	$10,560,931	$11,960,613	$12,457,669	$12,121,538

Savings Targets

	2020	2021	2022	2023
MWh	3,183	3,532	3,752	3,187
MW	1.1	1.3	1.4	1.1
MCF	552,637	629,616	651,330	650,732

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	2.24
Total Resource Cost Test	0.70
Participant Test	1.48
Rate Impact Measure	0.50

7.8 Income-Qualified Energy Assistance

Program	Income-Qualified Energy Assistance
Objective	Assist limited income customers with home weatherization interventions that are delivered at no cost. Provide and install EWR measures and offer sustainable energy education to help customers reduce their energy use and better manage their energy bills over the long-term.
Target Market	Residential customers in single-family, manufactured homes, or multifamily dwellings up to four units with a household income equal to or less than 200 percent of the current poverty level as defined by the U.S. Department of Energy or up to 80 percent of Area Median Income.
Program Duration	The Income-Qualified (IQ) Energy Assistance Program was launched in 2009 and is an ongoing element of the portfolio. Consumers Energy will add a new program component focused specifically on customers in its electric-only territory in the first quarter of 2020.
Program Description	Operating under the Consumers Energy Helping Neighbors program brand, the IQ program includes five discrete initiatives, described below. For each participant, Consumers Energy either funds 100 percent of the service and measure costs provided through the program (non-leveraged measures) or shares the cost with nonprofit organizations (leveraged measures) that provide weatherization services. **Non-Leveraged Initiatives:** ▪ ***Non-Leveraged Phase One Initiative:*** This initiative offers an in-home assessment and direct installation of lighting, water-saving devices, programmable or Wi-Fi enabled thermostats, and carbon monoxide detection. The technician who conducts the assessment provides verbal recommendations to customers. Phase One is generally the entry point for single-family customers to participate in the Non-leveraged Premium Measures initiative. ▪ ***Non-Leveraged Premium Measures Initiative:*** This initiative provides single-family customers with several Premium Measures recommended in Phase One: air conditioning, furnace, boiler, or refrigerator replacement; air conditioning or furnace tune-up; insulation; and air or duct sealing. ▪ ***Manufactured Homes Initiative (MHI):*** Consumers Energy introduced the MHI in 2015 to address the relatively high energy consumption of mobile home customers through direct install measures and envelope efficiency upgrades. **Leveraged Initiatives:** ▪ ***Partner Weatherization Initiative:*** To expand its community reach, Consumers Energy partners with nonprofit organizations to provide rebates for installation of energy efficient measures, such

as furnaces, water heaters, air conditioning, boilers and refrigerators to income-qualifying customers. For example, through the program, Consumers Energy partners with several housing developments, Habitat for Humanity and community development groups throughout Michigan.

- ***Agency Rewards:*** Consumers Energy offers financial incentives to organizations, such as houses of worship and school organizations, that direct customers into the IQ program and schedule an initial appointment for those customers.

Eligibility for each individual initiative may vary based on a customer's fuel service.

Program Logic

The IQ Energy Assistance Program is designed to provide direct assistance to Michigan's most vulnerable populations by helping them reduce their monthly operating expenses. It provides both equipment upgrades and education to help customers learn energy efficient behaviors.

Market Barrier	Program Element
Limited governmental funding for weatherization services	Coordinate with non-profits leverage emerging sources of funding.
Lack of EWR awareness	Educate customers to reinforce behavioral changes.
Ability to reach IQ target market customers and validate eligibility	Work with nonprofit agency contacts/client lists to identify qualified leads for targeted outreach.
Short-term customer outlook shaped by continued incidents of crisis.	Coordinated community outreach and marketing campaigns that promote the benefits of program participation.
Difficulty of scheduling and conducting in home services	Strive to keep the program participation process as simple as possible.

Incentive Strategy

Consumers Energy works with an implementation contractor and partners with nonprofit organizations to schedule appointments and install eligible measures at no cost to eligible customers. Qualified field technicians provide home assessments, comprehensive weatherization services, and equipment installations at no cost to customers.

Eligible Measures, Efficiency Requirements, Energy Savings & Incentives

To participate in the program, customers must be an active Consumers Energy electricity, natural gas, or combination account holder. Customers residing in rental properties must obtain property owner consent (written or verbal) in order for the surveyor/technician to enter the home and install any measures.

Consumers Energy coordinates with partner agencies to comply with federal/state standards applicable to current income qualified programs.

Customers who participate receive a free home energy assessment, direct installation of a range of measures that provide instant energy savings, a customized energy report with improvement recommendations, and larger energy saving equipment as recommended by the site technician. Installed measures must save fuel delivered by Consumers Energy.

Typical measures include:

- Pre- and post-diagnostic testing (blower door & duct blaster);
- Blower door testing, pre and post test;
- Direct installation measures (e.g., LED bulbs, low-flow showerheads and faucet aerators, water heater pipe wrap);
- Air sealing;
- Insulation (attic, floor, wall, kneewall, rim joist);
- Appliance/equipment replacements with high-efficiency (water heaters, refrigerators);
- Programmable thermostats;
- Furnace (95-98 percent AFUE) and boiler ($\geq$ 95 percent AFUE) replacements;
- Central air conditioner replacement;
- Furnace/boiler tune-ups;
- Carbon monoxide detection; and
- Duct sealing (primarily for manufactured homes).

Implementation Strategy

Consumers Energy uses an implementation contractor to deliver key elements of the implementation strategy include:

- ***Coordination*** with local non-profit agencies including community-based organizations.
- ***Recruitment and Hiring of Private-Sector Contractors and Field Service Technicians:*** A competitive bidding process may be used to engage licensed, private sector contractors to manage work in areas where the local partner agencies are unable to manage the volume of homes receiving energy upgrades.
- ***Targeting*** owners of single family and manufactured homes with low-income residents to provide turnkey direct-install services. The Program specifically targets customers that have high energy usage, are recipients of utility bill assistance, such as the Consumers Affordable Resource for Energy (CARE) Program that receives funding provided by the Michigan Energy Assistance Program, or that participate in assistance programs such as Head Start, HUD rent assistance, and neighborhood resource groups.
- ***Initiatives:*** The Program provides energy education and EWR measures for income qualified single family and multifamily homes through a variety of initiatives to reach a wide range of income eligible populations.
- ***Training:*** Consumers Energy provides training to its partner agencies on outreach strategies to attract participants and the program benefits to both their organization and the customer. The implementation contractor also works with trade allies to establish best practices, familiarize them with the program, and set quality assurance standards.

The implementation contractor handles implementation-related administrative requirements, including the following:

- Administrative coordination with local agencies;
- Hiring and training of field service technicians;
- Competitive bid process to engage additional local contractors;
- Marketing strategy and materials;
- Payment processing;
- Data tracking and reporting;
- Investment tracking and reporting;
- Call center services;
- Managing public relations; and
- Customer satisfaction/problem resolution.

Marketing Strategy	Marketing messages for the program highlight the initiatives within the IQ portfolio to reach the target market for each initiative. Key methods include attendance at EWR education outreach events, advertising to engage customers in their daily routines (such as bill payment centers and neighborhood centers), and participation in neighborhood events. The program uses the following marketing collateral to engage customers and reinforce energy saving messages: ▪ Informational brochures; ▪ Targeted email campaigns; ▪ Bill inserts; ▪ Posters; ▪ Educational brochures; ▪ Yard signs; ▪ Press releases; ▪ Door hangers; ▪ Information for newsletters & articles; and ▪ Thank-you postcard.
EM&V Strategy & Requirements	All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year these evaluation contractors conduct appropriate program specific impact and/or process evaluations as well as review, audit and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified and that other appropriate adjustments such as net-to-gross ratios are properly applied.
Consumers Energy Administrative Requirements	Consumers Energy staff is responsible for general administrative oversight of the program portfolio including: ▪ Program leadership and management of the implementation contractor; ▪ Investment administration; ▪ Energy saving goal achievement; ▪ Customer EWR education; ▪ Coordination of marketing strategy/public relations; ▪ Development and placement of marketing materials and advertising;

- Management of quality assurance metrics;
- Ensuring high level of customer satisfaction;
- Data warehousing; and
- Program-related reconciliation.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$3,536,346	$5,715,411	$6,046,018	$5,310,769
Natural gas	$9,271,015	$9,921,089	$10,895,301	$11,942,055
Total	$12,807,360	$15,636,500	$16,941,318	$17,252,824

Savings Targets

	2020	2021	2022	2023
MWh	5,468	8,575	8,383	5,859
MW	0.5	0.7	0.7	0.5
MCF	79,502	86,262	94,433	103,297

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	0.37
Total Resource Cost Test	0.37
Participant Test	-
Rate Impact Measure	0.24

7.9 Insulation and Windows

Programs	Insulation and Windows
Objective	Increase the demand for energy-efficient insulation and windows improvements to produce long-term electricity and natural gas energy savings for Consumers Energy residential customers.
Target Market	Residential customers in single-family homes and duplexes who have an interest in installing new energy-efficient windows or insulation.
Program Duration	The program was originally included under the Existing Home Retrofit Program (now known as Home Performance with ENERGY STAR®). Beginning in January 2013, the Insulation and Windows program was launched as a separate program and is an ongoing element of the portfolio.
Program Description	The Insulation and Windows program uses incentives to encourage customers to install qualified energy-efficient insulation and windows. Customers can use the services of a contractor or perform improvements and apply for rebates themselves. This is particularly appealing for the do-it-yourself customers. Customers can purchase and install EWR improvements and apply for their rebate, all in one day.
Program Logic	The program seeks to stimulate demand by educating customers about the energy- and cost-saving benefits associated with energy-efficient products and by providing financial incentives to overcome the first cost barrier. The program also stimulates the energy-efficient window and insulation market by encouraging contractors to promote the program by offering collateral materials and educating them on the program's benefits and rebate application process. **Market Barrier** ▪ First cost of efficient equipment ▪ Lack of consumer information and awareness ▪ Lack of contractor information and awareness **Program Element** ▪ Financial incentives and information on lifecycle energy savings ▪ Website and marketing materials that highlight program benefits ▪ Provide contractors with program support, marketing materials, and training.
Incentive Strategy	The program offers incentives in the form of a check mailed to the customer. Applications can be submitted by the customer or contractor on the customer's behalf. Customers can submit their application online or submit a paper application via email or mail.

Eligible Measures, Efficiency Requirements, Energy Savings & Incentives

Program participants must hold a Consumers Energy electricity, natural gas, or combination account at a residential rate and submit their application within 30 days of project completion. Electricity-only customers must also have either central AC or electric heat to participate. Installations in garages are not eligible, and enclosed porches are only eligible if they have supply ducts. Insulation rebates are not available to customers residing in manufactured homes.

Incentive levels are tiered based on the efficiency level of the measure installed and fuel type. The program's eligible measures, measure qualifications, savings, and incentive levels are outlined below.

Measure	Efficiency Requirements	Incentive (Range)[1]
Roof (attic) Insulation	≥500 Square Feet	$150 - $200[2]
Wall Insulation	≥500 Square Feet	$50 - $125
Basement Wall Insulation	≥500 Square Feet	$50
Crawlspace Insulation	≥200 Square Feet	$10 - $50
Rim Joist Insulation	All accessible areas	$20 - $50
Window Replacement	U-factor ≤ 0.27[3]	$15 each
Door Replacement	U-factor ≤ 0.30[3]	$40 each
Made in Michigan Bonus	Roof (attic) insulation	$100
	Wall insulation	$50

[1] Incentive level based on fuel(s) delivered by Consumers Energy
[2] Tiered based on R-value: < 48, 49-59, and 60+
[3] Or ENERGY STAR rated for Northern Climate Zone.

Implementation Strategy

Consumers Energy uses an implementation contractor to deliver key elements of the implementation strategy, including:

- ***Contractor Education and Outreach:*** Consumers Energy's implementation contractor uses field representatives to recruit and educate participating contractors. The field representatives maintain regular contact with participating contractors to ensure:
  - Contractors, owners, sales staff, and service technicians are informed about the program offerings, rebate application process, and benefits of the energy-efficient qualifying products, as well as information about other incentives, such as applicable Federal and State tax credits or manufacturer rebates; and
  - Contractors' concerns and issues are addressed promptly.
- ***Incentive Coordination and Processing:*** The implementation contractor processes all incentive requests and manages prompt processing of incentive payments.

The following implementation-related administrative requirements are handled by the program's implementation contractor:

- Marketing strategy and materials;
- Rebate processing;
- Data tracking and reporting;
- Investment tracking and reporting;
- Call center services;
- Public relations and community outreach events; and
- Customer satisfaction and problem resolution.

Marketing Strategy

The program uses a variety of communications channels to develop and execute multifaceted campaigns to promote program awareness and encourage customer participation. Key elements of the marketing strategy include:

- ***Utility Bill Inserts:*** Strategically scheduled, seasonally-appropriate bill inserts feature the Insulations and Windows Program and promote home sealing upgrades to maximize home heating and cooling efficiency.
- ***Program Website:*** The program website promotes the availability of the program to interested customers.
- ***Email Marketing:*** Email blasts target those customers who have participated in other EWR programs.
- ***Paid Media (Traditional and Digital):*** Paid media may include print advertising, radio, or digital media.
- ***Participating Contractors' Communications and Marketing Support:*** Contractors are informed about the program and incentives through direct mail and periodic invitations to training sessions. Contractors are also supplied with program marketing materials to distribute to customers.
- ***Point-of-Purchase Materials:*** Consumers Energy uses point-of-purchase advertising at insulation and windows retail outlets.

EM&V Strategy & Requirements

All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year, these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.

Consumers Energy

Consumers Energy staff is responsible for general administrative

Administrative Requirements

oversight of the program portfolio including:

- Program leadership and management of the implementation contractor;
- Investment administration;
- Energy saving goal achievement;
- Customer EWR education;
- Coordination of marketing strategy/public relations;
- Development and placement of marketing materials and advertising;
- Management of quality assurance metrics;
- Ensuring a high level of customer satisfaction;
- Data warehousing; and
- Program-related reconciliation efforts.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$1,018,909	$1,108,959	$1,202,570	$1,243,600
Natural gas	$2,022,361	$2,058,613	$2,096,400	$2,152,204
Total	$3,041,271	$3,167,571	$3,298,970	$3,395,803

Savings Targets

	2020	2021	2022	2023
MWh	524	590	658	662
MW	0.3	0.4	0.4	0.4
MCF	54,417	54,734	55,060	55,806

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	1.57
Total Resource Cost Test	0.20
Participant Test	0.36
Rate Impact Measure	0.52

7.10 Residential Agriculture

Program	Residential Agriculture
Objective	The Residential Agriculture Program is designed to offer residential agriculture customers incentives for energy-saving measures. By utilizing the program structure from Consumers Energy's business program, the Residential Agriculture Program is able to offer the same level of rebates to residential farms that have industrial-grade equipment and operations.
Target Market	Residential electricity and/or natural gas customers on an eligible farm rate code, operating a full-time agricultural operation at the facility where the measures are being installed.
Program Duration	This program was piloted during the 2012 program year. Beginning in 2013, this program was a full program offering and will continue to be an ongoing element of the portfolio.
Program Description	This program provides participating customers the same level of rebates as the prescriptive and custom incentives from the Comprehensive Business Solutions Program. This program will continue to collaborate with Michigan State University's Farm Audit Program to offer incentives to customers who have a USDA Tier 2 audit completed at their facility. Program staff work with MSU to collect leads generated by the MSU Farm Audit Program, funded through the USDA Rural Energy for America Program (REAP). By having access to the audit reports of farms that participate in the MSU/REAP program, program staff is able to create a targeted approach to assist customers applying for incentives offered through the Comprehensive Business Solutions Program. By combining resources of the residential and commercial programs, the agriculture sector has greater access to participate in Consumers Energy's EWR programs.
Program Logic	Following is a list of the primary barriers in this market and the program elements that addressed them: **Market Barrier** ▪ Developing communication and trust with customers who operate specialized processes in a competitive environment, but are hard-to-reach ▪ Monetary resources and financing to pursue projects **Program Element** ▪ Utilizing industry stakeholder MSU and dedicated energy advisors with agriculture background and expertise to cultivate relationships through grassroots efforts ▪ Audit and EWR equipment incentives

Incentive Strategy	***Audit Incentive:*** The program will provide a rebate for the customer's portion of the energy audit performed by MSU/REAP. The requirements to receive the rebate include completion of a Rural Farm Energy Audit Agreement application, an invoice from the auditor, and submission of the summary of energy conservation measures from the audit. ***Measure Incentives:*** This program will continue to provide participating customers the same level of rebates as the prescriptive and custom incentives from the Business EWR Program.
Eligible Measures, Efficiency Requirements & Incentives	Cost-effective natural gas and electricity efficiency measures that improve on the program's baseline are eligible for consideration in the program. Fuel switching (electricity to alternative fuel) measures, hybrid fuel, and grid-connected renewable energy systems are not eligible for incentives through this program.
Implementation Strategy	The program team will provide dedicated staff to conduct program management, tracking, marketing, and implementation. Collaboration with MSU's REAP Audit Program is critical to the success of this program. A heavy focus on outreach is crucial to identify eligible residential agriculture customers. This program will also utilize the Business Account Manager (BAM) to recruit customers.
Marketing Strategy	Marketing will be accomplished using mass-marketing techniques as well as individual outreach by program staff. Marketing campaigns to segments such as dairy, cash crop, greenhouse, poultry, and grain processors can include direct mail postcards, print ads, and radio promotions throughout the Consumers Energy service territory to drive customer participation. Dedicated energy advisors from the Consumers Energy business programs will promote the program to all agricultural customer segments, trade allies and corporate account managers.
EM&V Strategy	All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. Every year, these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.

Consumers Energy Administrative Requirements

Consumers Energy is responsible for general administrative oversight of the program portfolio, including:

- Solicitation, selection, and management of the implementation contractor;
- Coordination of marketing strategy/public relations among programs and market sectors;
- Development and placement of marketing materials and advertising;
- Coordination of all educational services;
- Data warehousing;
- Solicitation, selection, and management of the evaluation contractor; and
- Goal achievement within investment and savings.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$128,252	$128,252	$128,252	$128,252
Natural gas	$5,327	$5,327	$5,327	$5,327
Total	$133,578	$133,578	$133,578	$133,578

	2020	2021	2022	2023
MWh	726	726	726	726
MW	0.2	0.2	0.2	0.2
MCF	372	372	372	372

Benefit-Cost Test	B/C Ratio
Utility Cost Test	4.69
Total Resource Cost Test	1.67
Participant Test	2.04
Rate Impact Measure	0.92

7.11 Residential New Construction

Program	New Construction
Objective	Produce long-term electricity and natural gas energy savings and accelerate market transformation in the residential sector by encouraging the construction of single-family homes that meet ENERGY STAR® Version 3.1 standards or achieve a minimum Home Energy Rating System (HERS) score.
Target Market	New home builders that do not consistently (or seldom) build homes to meet current ENERGY STAR® Version 3.1 standards and builders of affordable housing such as Habitat for Humanity.
Program Duration	The program was launched January 2012 and is an ongoing element of the portfolio.
Program Description	The Residential New Home Construction program creates long-term electricity energy and natural gas savings by encouraging the construction of single-family homes that meet ENERGY STAR® Version 3.1 standards or a minimum HERS score. Homes built to higher EWR standards create multiple benefits for homeowners when compared to homes built to lower energy standards, including lower long-term operating costs, better quality construction, greater comfort, and potentially higher housing value. The program identifies and recruits residential builders not consistently (or seldom) building homes to ENERGY STAR® Version 3.1 standards to participate. Recruitment efforts are conducted through various channels including builder and trade associations, realtors, raters, events, and through direct outreach to targeted home builders. Participating Builders are eligible for incentives based on the home type, level of efficiency achieved above the Michigan Uniform Energy Code, and fuel(s) delivered by Consumers Energy. Participating builders receive training on building practices designed to achieve ENERGY STAR® Version 3.1 standards. Builders are also trained on how to promote the value of energy-efficient homes to their customers.

Program Logic

The primary barriers to increased market penetration of high-performance homes in the new construction market include:

Market Barrier	Program Element
▪ Higher cost to meet ENERGY STAR® Version 3.1 standards or minimum HERS score.	▪ Rebates to offset cost
▪ Lack of confidence among consumers that the higher initial investment will be recouped from lower energy costs	
▪ Lack of awareness among homeowners of the benefits of energy-efficient homes	▪ Customer educational materials focused on long-term financial, comfort, and other benefits of energy-efficient homes
▪ Lack of awareness among builders and homeowners regarding energy efficient technologies & building practices	▪ Educational material(s) and builder training on high-performance building practices and technologies, as well as certification requirements to meet ENERGY STAR® Version 3.1 standards

Incentive Strategy

The program offers incentives to builders based on achieving ENERGY STAR® certification according to the current Version 3.1 standard or a minimum HERS score.

Eligible Measures, Efficiency Requirements, Energy Savings & Incentives

To participate in the Residential New Construction program, the new home or townhome must be built within Consumers Energy's electricity, natural gas, or combination territory. Incentive levels are based on the home type, achievement of ENERGY STAR® certification, HERS score, and fuel type.

The program's eligible measures, qualification standards, savings, and incentive levels are outlined below.

Measure	Qualifications	Fuel	Incentive
Single-Family Home	ENERGY STAR, HERS $\leq$ 56	Combo, Electricity/electricity heat	$2,000
		Combo/no AC, Gas	$1,400
	ENERGY STAR,	Combo,	$1,000

	HERS > 57	Electricity/electricity heat	
		Combo/no AC, Gas	$700
		Electricity	$300
	HERS ≤ 56	Combo, Electricity/electricity heat	$1,000
		Combo/no AC, Gas	$700
		Electricity	$600
Townhome (2-4 Units)	ENERGY STAR, HERS ≤ 56	Combo, Electricity/electricity heat	$1,000
	ENERGY STAR	Combo/no AC, Gas	$700
		Electricity	$300

Additional measure detail is found in Appendix A: Detailed Program Measures.

Implementation Strategy

Consumers Energy uses an implementation contractor to deliver key elements of the implementation strategy, including:

- ***Recruitment/Training of Home Energy Raters:*** Identifying existing resources with appropriate training and experience to conduct HERS ratings. Providing HERS training classes to increase the number of qualified HERS raters in Michigan and educating raters about the program.
- ***Outreach to Targeted Builders:*** Utilize experienced field representatives to meet with builders, promote the benefits of ENERGY STAR® homes, and generate interest in the program. Builders are recruited through various channels including builder associations, realtors, trades, raters, events, and through direct outreach to targeted home builders
- ***Conduct Builder Training on Marketing ENERGY STAR® Homes:*** Participating builder training efforts focus first on the benefits of energy-efficient homes from the customer perspective including improved efficiency, operating costs, quality, comfort, safety, and durability. Sales training provides information for each builder with methods to "up-sell" their customers on investing in high-performance homes. Builders are also educated regarding the opportunity to improve their business by differentiating themselves using the nationally recognized ENERGY STAR® brand.
- ***Conduct Builder Training on the ENERGY STAR® Performance***

Standard: The second phase of the training process focuses on the ENERGY STAR® standard and building practices designed to meet it. Other key topics include high-performance building techniques, such as constructing the building shell to minimize thermal loss and air infiltration, the thermal bypass checklist, and identifying high-efficiency equipment and the principals of proper installation.

- ***Coach and Mentor Participating Builders and Raters:*** Once the initial training is complete, the program provides technical assistance and market recognition to participating builders, their trade partners, and raters on an ongoing basis. To maintain trade ally satisfaction and continually improve the program, the implementation contractor will also work with participating trade allies to seek feedback on barriers, provide application support, resolve application issues, reserve rebates, and provide feedback on rebate reservation status.

Strategies to limit free-ridership and promote spillover include:

- To minimize free-ridership, the program targets builders who do not currently build to the ENERGY STAR® standard or a minimum HERS score. Secondary targets include builders who occasionally build to the ENERGY STAR® standard or a minimum HERS score, but only on a small percentage of homes.

Implementation-related administrative requirements included the following:

- Management of subcontractors;
- Investment tracking;
- Call center services;
- Data tracking and reporting;
- Onsite verification of incentive claims;
- Public relations;
- Management and oversight of procurement; and
- Supporting evaluation activities; and
- Other activities.

Marketing Strategy

The program is marketed to builders primarily through direct business-to-business contacts via program outreach staff and through participating HERS raters. The implementation contractor also presents information about the program at builder, realtor, rater, and other trade association meetings and secures placement of information in association newsletters. The program markets to customers at home shows, parade(s) of homes, and other events focused on residential home building.

EM&V Strategy & Requirements

All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. Every year, The Cadmus Group conducts appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.

Consumers Energy Administrative Requirements

Consumers Energy staff is responsible for general administrative oversight of the program portfolio, and address the following:

- Program leadership and management of the implementation contractor;
- Investment administration;
- Energy saving goal achievement;
- Customer EWR education;
- Coordination of marketing strategy/public relations;
- Development and placement of marketing materials and advertising;
- Management of quality assurance metrics;
- Ensuring a high level of customer satisfaction;
- Data warehousing; and
- Program-related reconciliation efforts.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$441,503	$447,149	$454,961	$460,943
Natural gas	$941,968	$946,399	$950,941	$955,596
Total	$1,383,471	$1,393,548	$1,405,901	$1,416,539

Savings Targets

	2020	2021	2022	2023
MWh	622	622	622	622
MW	0.6	0.6	0.6	0.6
MCF	23,040	23,040	23,040	23,040

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	2.24
Total Resource Cost Test	1.83
Participant Test	3.17
Rate Impact Measure	0.78

7.12 Think! Energy

Program	Think! Energy
Objective	Influence students and their families to take actions that can reduce their home energy use and increase efficiency.
Target Market	The Think! Energy program targets students in grade levels 4 and 6 in schools throughout the Consumers Energy combination and single-fuel service territories. In areas where Consumers Energy supplies only one fuel, the program is delivered in collaboration with the Lansing Board of Water & Light, DTE Energy, Efficiency United, and SEMCO.
Program Duration	The Think! Energy education program was launched in early 2010 and is an ongoing element of the portfolio.
Program Description	Providing energy education to students is a good way to influence families' energy use behaviors. The program provides students in grades 4 and 6 with education and a "take-home" kit that raises awareness about how individual actions and low-cost measures reduce electricity, natural gas, and water consumption. The take-home kit includes: ▪ LED bulbs; ▪ LED night light; ▪ Low-flow shower head; ▪ Bath faucet aerators; ▪ Kitchen aerator; ▪ Shower timer; ▪ Water flow rate test bag; ▪ Light switch stickers; ▪ Mercaptan scratch and sniff sticker; ▪ Pipe insulation (in joint DTE service territory); and ▪ Family Activity Guide. The program's educational components include posters, study guides, curricula, and presentations provided to participating teachers, as well as an activity guide for students to complete with their families. Students are given a Home Energy Worksheet to fill out and return to their teacher or submit online to indicate which measures from the kit they installed. In return for doing so, students receive a color-changing pencil customized for the program. The Michigan Department of Education has again provided their

enthusiastic endorsement for this program and utility collaborative efforts.

Program Logic

The program employs the following strategies to address market barriers.

Market Barrier	Program Element
▪ Low levels of EWR literacy in the schools ▪ Families too busy to learn about and/or undertake simple low-cost efficiency measures in the home	▪ Provide energy education materials and free energy-saving kits and motivate students to help families install the measures

Incentive Strategy

All educational materials and take-home EWR kits are offered free of charge to the schools and their students. Teachers are provided a mini-grant of $25 to $100 for returning program data. Teachers in the base program are given an EWR item as a thank you gift and incentive to sign up again in the following year. The program also offers workshops for teachers during the summer. Those who participate in a workshop receive education credits and a stipend for attending.

Eligible Measures, Efficiency Requirements, Energy Savings & Incentives

The program's eligible measures, qualification standards, savings, and incentive levels are outlined below.

Measure	Eligibil-ity	Gross Annual kWh Savings/ Unit	Gross Annual Mcf Savings/ Unit
LEDs (up to 2 per kit)[1]		28.5 each	-
LED Night Light		22.0	-
Low-Flow Showerhead	1.5 gpm	-	2.1
Bath Faucet Aerator	1.0 gpm	-	0.47
Bath Faucet Aerator	1.5 gpm		0.27
Kitchen Aerator	1.5 gpm	-	1.20
Low-Flow Showerhead	1.5 gpm		1.68
Pipe Insulation	R-3		

[1] Due to changing lighting standards Consumers Energy anticipates discontinuing LEDs in 2023.

Consumers Energy offers a $100 classroom mini-grant to participating schools for each classroom that turns in 80 percent of the home reports included in students' take-home kits. Reduced awards of $50 or $25 will be provided to teachers who return less than 80 percent of the home reports.

Implementation Strategy

Consumers Energy uses an implementation contractor to deliver key elements of the implementation including:

- ***Teacher Recruitment:*** The implementation contractor conducts direct outreach to schools within Consumers Energy territory to promote the program and recruit participating teachers.
- ***Student and Family Education:*** Through the family activity guide, students can complete educational activities with their families to learn about EWR and energy-saving behaviors.
- ***In-Class Education:*** Teachers are provided with several different kinds of materials to educate students on EWR. These materials include a teacher's guide, posters, and a presentation/curriculum that meets national and Michigan science education standards.
- ***Teacher and School Support:*** The implementation contractor maintains relationships with participating teachers and schools to ensure successful program implementation, customer and teacher satisfaction, and help troubleshoot problems that arise. In addition to direct contact through email, phone, or occasional visits, the program website is available as a resource for participants. The website hosts copies of program materials and additional support elements such as energy games, safety education, and further science, technology, engineering, and math education.

The implementation contractor will continue to handle implementation-related administrative requirements, including the following:

- Program administration;
- School recruitment;
- Data tracking and reporting;
- Investment tracking and reporting;
- Managing public relations;
- Customer satisfaction/problem resolution; and
- Ongoing teacher engagement through workshops.

Marketing Strategy

The program continues to be marketed through direct mail letters, follow-up calls, and emails sent to school districts and past participating teachers within Consumers Energy's service territory.

EM&V Strategy & Requirements

All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. Every year, The Cadmus Group conducts program impact and/or process evaluations as well as reviews, audits, and certifies each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.

Consumers Energy Administrative Requirements

Consumers Energy staff is responsible for general administrative oversight of the program portfolio, and address the following:

- Program leadership and management of the implementation contractor;
- Investment administration;
- Energy saving goal achievement;
- Customer EWR education;
- Coordination of marketing strategy/public relations;
- Development and placement of marketing materials and advertising;
- Management of quality assurance metrics;
- Ensuring a high level of customer satisfaction;
- Data warehousing;
- Program-related reconciliation efforts; and
- Goal achievement within investment.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$715,995	$719,125	$719,125	$520,882
Natural gas	$617,217	$619,916	$619,916	$635,414
Total	$1,333,212	$1,339,041	$1,339,041	$1,156,296

Savings Targets

	2020	2021	2022	2023
MWh	1,760	1,760	1,760	465
MW	0.2	0.2	0.2	-
MCF	51,381	51,381	51,381	51,381

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	1.41
Total Resource Cost Test	1.41
Participant Test	-
Rate Impact Measure	0.41

7.13 Residential Pilot Programs

Programs	Residential Pilots
Objective	To identify and learn about new energy waste reduction technologies and program strategies with potential to capture additional electricity and natural gas energy savings.
Target Market	Dependent on specific technology/program.
Program Duration	Since residential programs launched in July 2009, Consumers Energy has focused on the development of well-established pilot programs that have the potential to capture significant energy savings and that can be rolled into the overall program portfolio. Identification, evaluation, testing, and reporting of pilot programs will be an ongoing part of the portfolio.
Program Description	Consumers Energy has set aside a portion of the residential budget to pursue new initiatives and technology approaches that could capture additional energy savings within the residential sector. The Company has already worked with its implementation contractors to identify emerging strategies and technology applications that will support broader and more effective delivery of EWR services to customers. Potential pilot concepts either being tested or evaluated include: ***Fuel Switching (Heat Pumps)*** Beneficial electrification makes sense as an integral part of a utility's overall DSM strategy. In other Midwest markets, beneficial electrification programs provide the same key benefits as EWR portfolio programs – namely reductions in overall energy consumption, reduced emissions, improved system utilization, and new options for customers to manage their energy bills. Most relevant measures include ground source heat pumps, ductless heat pumps, cold-climate heat pumps, heat pump water heaters, and other combined heat and power (CHP) measures. By encouraging fuel switching, Consumers Energy can provide solutions that best serve customers' needs. Through this pilot, Consumers Energy will learn how to best overcome barriers to beneficial electrification and how to best capture savings from these kinds of programs. ***Smart Home*** As the integrated Smart Home market grows and becomes more competitive, utilities are uniquely positioned to support early market adoption through established relationships with product manufacturers, distributors, retailers, and potential customers in their territory. Through this pilot, customers will be able to purchase a smart home kit (or individual smart devices) that include technologies they can connect through a phone application giving them real-time information on their home's energy usage and the ability to control, manage, and even automate, their devices' energy usage. Further, these technologies offer demand management capabilities; with the customer's consent, it may be possible for Consumers Energy to remotely switch off appliances during

high-demand events or cycle between energy-intensive appliances (i.e., avoiding an air conditioning unit and pool pump operating at the same time). To make the most of this opportunity, Consumers Energy will use this pilot to explore the energy savings, customer engagement, and demand response potential of a fully integrated Smart Home program.

EM&V Strategy and Requirements

All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.

Consumers Energy Administrative Requirements

Consumers Energy staff is responsible for general administrative oversight of the pilots including:

- Program leadership and management of the implementation contractor;
- Investment administration;
- Energy saving goal achievement;
- Customer EWR education efforts;
- Coordination of marketing strategy;
- Development and placement of marketing materials and advertising;
- Management of quality assurance metrics;
- Ensuring a high level of customer satisfaction;
- Data warehousing; and
- Program-related reconciliation efforts.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$2,144,361	$2,325,867	$2,216,643	$1,939,312
Natural Gas	$1,943,177	$2,086,883	$2,214,235	$2,342,187
Total	$4,087,538	$4,412,750	$4,430,878	$4,281,499

Savings Targets

	2020	2021	2022	2023
MWh	8,734	8,169	7,516	5,381
MW	0	0	0	0
MCF	72,678	78,672	82,835	85,466

8 JOINT PROGRAMS

8.1 Income-Qualified Multifamily

Program	Income-Qualified Multifamily
Objective	The primary goal of this program is to produce immediate electricity and natural gas energy savings in income-qualified multifamily buildings through the direct installation of energy saving measures in the individual living units and common areas. A second program objective is to achieve deeper energy savings through the promotion of comprehensive high-efficiency equipment retrofit projects through prescriptive and custom measures.
Target Market	All property owners of multifamily buildings, which include apartments, condominiums, senior housing communities, and dormitories, with three or more living units and at least 66 percent or higher of tenants living at or under 200 percent of the federal poverty level are eligible to participate. Both residential and commercial metered properties meeting these criteria are eligible.
Program Duration	This program was launched in 2013 and will be an ongoing element of the portfolio.
Program Description	The Income-Qualified Multifamily program is designed to offer property owners a turnkey service for helping residents reduce energy use in their living units through the direct installation of various energy saving devices. The direct install service is provided at no cost to the property owners and the tenants. In addition to the products installed, educational materials are left in the individual units explaining the energy and money saving benefits associated with the energy efficient measures. The Income-Qualified Multifamily program also offers incentives to property owners who purchase specific high-efficiency measures to retrofit individual units and common areas within the property. By addressing the needs of both the residential and commercial spaces, the program is designed to encourage property owners to complete comprehensive energy improvements by following a whole property approach to address individual unit and common area energy savings for the entire apartment complex. Incentives to income-qualified customers will be offered at an increased rate as compared to the market-rate multifamily offering.

Program Logic

The Income-Qualified Multifamily program encounters market barriers from two groups: the property owner and the tenant. The following common barriers are described below, along with program strategies that are employed to address them:

Market Barrier	Program Element
For residents:	
▪ Hassle of researching how to reduce their energy bills	▪ Turnkey direct install service; work is done for them
▪ Hesitancy to invest in products that may stay with the unit when they leave	▪ Materials and installation are provided free to the resident
▪ Lack of information about potential energy savings	▪ Leave-behind educational materials are left for residents
For property owners:	
▪ Limited maintenance resources to make upgrades	▪ Simple turnkey services provided by program staff
▪ Lack of awareness regarding energy and non-energy benefits	▪ Marketing materials, case studies, website, and "good will" benefit of offering free measures to their residents
▪ Hesitancy to invest in products that are unfamiliar	▪ Products are demonstrated, and a sample is left behind for the owner to test
▪ Lack of capital to make comprehensive improvements	▪ Financial incentives to offset upfront capital cost

Incentive Strategy

Direct Install of In-Unit Measures: Property owners and tenants will be offered a free direct install service for reducing in-unit and common area energy use.

Prescriptive and Custom Measures: Common energy savings measures for multifamily complexes will be included in the program application, incentive amounts are based on deemed energy savings from the MEMD.

Eligible Measures: Direct Installation & Retrofit

Please see full list of measures in Appendix A.

Implementation Strategy

Key elements of the implementation strategy included:

Targeted Outreach to property owners: Energy advisors will concentrate on building relationships with property management companies, owners, associations and their members to recruit participation in the program. Energy advisors will assist customers as necessary to coordinate direct installations and complete rebate application requirements.

Targeted Outreach to Trade Allies: Energy advisors will inform and recruit trade allies to participate in the installation of prescriptive and custom measures for properties. Outreach efforts will include orientation meetings and training of trade allies to communicate program requirements and filling out applications.

In-Unit Direct Install: Energy advisors will identify interested property owners and schedule appointments for the free installation of energy-saving devices in the individual living units and common areas. Expanded measures will be offered to income-qualified multifamily customers. The direct install technicians are trained on the technical and educational aspects of the energy-saving devices installed and leave educational materials in each unit describing the work performed and promoting the energy-saving benefits.

Prescriptive and Custom: To help building owners continue to reduce their energy usage and costs, program representatives will conduct site assessments targeting high-efficiency retrofit opportunities. These opportunities will be presented to the building owner to demonstrate how they can receive incentives through the Income-Qualified Multifamily Program.

Collaboration Efforts: Consumers Energy and DTE will continue to coordinate programs in single fuel service territories. This effort will target direct installs in shared fuel territories.

Field Technology: Program implementation contractor will utilize an application to collect and record data while in the field. The digital application allows the efficient collection and reporting of information from the field and increases efficiency, offering a more cost-effective solution. A digital report can also be generated from this information and emailed to the customer onsite.

Program Operations: The implementation contractor handles implementation-related administrative requirements, including the following:

- Marketing and educational materials;
- Field services;
- Product ordering and inventory;
- Data tracking and reporting;
- Investment tracking and reporting;
- Application processing;
- Call center services;
- Trade ally and customer outreach/training; and
- Customer satisfaction/problem resolution.

Marketing Strategy

Recruitment efforts will target income-qualified property management companies to secure agreements to address multiple properties through a single point of contact before targeting owners and managers of individual properties.

A targeted marketing strategy with property owners and management companies increases awareness of Consumers Energy Multifamily program offerings. Marketing and outreach strategies include:

- In-person visits by energy advisors to income-qualified properties with three or more units;
- Walk-through energy assessments of properties to encourage participation in the direct installation and prescriptive and custom measures;
- Outreach to property management associations to recruit assistance in distributing information about the program through existing channels;
- Promotions utilizing the trade ally network; and
- Digital marketing efforts aimed at multifamily customers.

EM&V Strategy & Requirements

All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. Every year, these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.

Consumers Energy Administrative Requirements

Consumers Energy staff is responsible for general administrative oversight of the program portfolio, and address the following:

- Program leadership and management of the implementation contractor;
- Investment administration;
- Energy savings goal achievement;
- Leading customer EWR education efforts;
- Coordination of marketing strategy/public relations;
- Development and placement of marketing materials and advertising;
- Management of quality assurance metrics;
- Ensuring a high level of customer satisfaction;
- Data warehousing; and
- Leading program-related reconciliation efforts.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$4,009,732	$4,210,343	$4,449,721	$4,488,591
Natural gas	$3,524,549	$4,065,813	$4,709,719	$5,470,277
Total	$7,534,280	$8,276,156	$9,159,440	$9,958,867

Savings Targets

	2020	2021	2022	2023
MWh	4,850	5,167	5,571	5,102
MW	0.5	0.5	0.6	0.5
MCF	56,920	64,909	74,292	85,327

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	0.63
Total Resource Cost Test	0.64
Participant Test	2.66
Rate Impact Measure	0.34

8.2 Market-Rate Multifamily

Program	Market-Rate Multifamily
Objective	The primary goal of this program is to produce immediate electricity and natural gas energy savings in multifamily buildings through the direct installation of energy-saving measures in the individual living units and common areas. A second program objective is to achieve deeper energy savings through the promotion of high-efficiency equipment for prescriptive and custom retrofit projects.
Target Market	All property owners of multifamily buildings, which include apartments, condominiums, senior housing communities, and dormitories, with three or more living units are eligible to participate. The Market-Rate Multifamily program offers direct installation of energy savings devices and incentives for prescriptive and custom measures to both residential and commercial multifamily customers.
Program Duration	This program was launched in 2009 and will be an ongoing element of the portfolio.
Program Description	The Market-Rate Multifamily program is designed to offer property owners a turnkey service for helping residents reduce energy use in their living units through the direct installation of various energy saving devices. The direct install service is provided at no cost to the property owners and the tenants. In addition to the products installed, educational materials are left in the individual units explaining the energy and money saving benefits associated with the energy efficient measures. The Market-Rate Multifamily program also offers incentives to property owners who purchase specific high-efficiency measures to retrofit individual units and common areas within the property. By addressing the needs of both the residential and commercial spaces, the program is designed to encourage property owners to complete comprehensive energy improvements by following a whole property approach to address individual unit and common area energy savings for the entire apartment complex. All prescriptive and custom measure rebate application forms can be submitted by customers and trade allies for completed projects.

Program Logic

The Market-Rate Multifamily program encounters market barriers from two groups; the property owner and the tenant. The following common barriers are described below, along with program strategies that are employed to address them:

Market Barrier	Program Element
For residents:	
▪ Hassle of researching how to reduce their energy bills	▪ Turnkey direct install service; work is done for them
▪ Hesitancy to invest in products that may stay with the unit when they leave	▪ Materials and installation are provided free to the resident
▪ Lack of information about potential energy savings	▪ Leave-behind educational materials are left for residents
For property owners:	
▪ Limited maintenance resources to make upgrades	▪ Simple turnkey services provided by program staff
▪ Lack of awareness regarding energy and non-energy benefits	▪ Marketing materials, case studies, website, and "good will" benefit of offering free measures to their residents
▪ Hesitancy to invest in products that are unfamiliar	▪ Products are demonstrated, and a sample is left behind for the owner to test
▪ Lack of capital to make comprehensive improvements	▪ Financial incentives to offset upfront capital cost

Incentive Strategy

Direct Install of In-unit Measures: Property owners and tenants will be offered a free direct install service for reducing in-unit and common area energy use

Prescriptive and Custom Measures: Common energy savings measures for multifamily complexes will be included in the program application, incentive amounts are based on deemed energy savings from the MEMD.

Eligible Measures: Direct Installation & Retrofit

Please see full list of measures in Appendix A.

Implementation Strategy

Key elements of the implementation strategy included:

Targeted Outreach to Property Owners: Energy advisors will concentrate on building relationships with property management companies, owners, associations and their members to recruit participation in the program. Energy advisors will assist customers as necessary to coordinate direct installations and complete rebate application requirements.

Targeted Outreach to Trade Allies: Energy advisors will inform and recruit participation by trade allies for installation of prescriptive and custom measures for properties. Outreach efforts will include orientation meetings and training of trade allies to communicate program requirements and filling out applications.

In-Unit Direct Install: Energy advisors will identify interested property owners and schedule appointments for the free installation of energy saving devices in the individual living units and common areas. The direct install technicians are trained on the technical and educational aspects of the energy saving devices installed and leave educational materials in each unit describing the work performed and promoting the energy-saving benefits.

Prescriptive and Custom: To help building owners continue to reduce their energy usage and costs, program representatives will conduct site assessments targeting high-efficiency retrofit opportunities. These opportunities will be presented to the building owner to demonstrate how they can receive incentives through the Market-Rate Multifamily Program.

Collaboration Efforts: Consumers Energy and DTE will continue to coordinate programs in single fuel service territories. This effort will target direct installs in shared fuel territories.

Field Technology: The implementation contractor will utilize an application to collect and record data while in the field. The digital application allows the efficient collection and reporting of information from the field and increases efficiency, offering a more cost-effective solution. A digital report can also be generated from this information and emailed to the customer on site.

Program Operations: The implementation contractor handles implementation-related administrative requirements, including the following:

- Marketing and Educational materials;
- Field services;

- Product ordering and inventory;
- Data tracking and reporting;
- Investment tracking and reporting;
- Application processing;
- Call center services;
- Trade ally and customer outreach/training; and
- Customer satisfaction/problem resolution.

Marketing Strategy

Recruitment efforts will target property management companies to secure agreements to address multiple properties through a single point of contact before targeting owners and managers of individual properties.

A targeted marketing strategy with property owners and management companies increases awareness of Consumers Energy Multifamily program offerings. Marketing and outreach strategies include:

- In-person visits by energy advisors to properties with three or more units;
- Walk-through energy assessments of properties to encourage participation in the direct installation and prescriptive and custom measures;
- Targeted advertising in trade organization and association publications;
- Outreach to property management associations to recruit assistance in distributing information about the program through existing channels;
- Promotions utilizing the trade ally network; and
- Digital marketing efforts aimed at Multifamily customers.

EM&V Strategy & Requirements

All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. Every year these evaluation contractors conduct appropriate program specific impact and/or process evaluations as well as review, audit and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified and that other appropriate adjustments such as net-to-gross ratios are properly applied.

Consumers Energy Administrative Requirements

Consumers Energy staff is responsible for general administrative oversight of the program portfolio, and address the following:

- Program leadership and management of the implementation contractor;
- Investment administration;
- Energy saving goal achievement;
- Lead customer EWR education efforts;
- Coordination of marketing strategy/public relations;
- Development and placement of marketing materials and advertising;
- Management of quality assurance metrics;
- Ensure high level of customer satisfaction;
- Data warehousing; and
- Lead program-related reconciliation efforts.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($)

	2020	2021	2022	2023
Electricity	$2,341,100	$2,196,700	$2,113,148	$1,923,171
Natural gas	$2,000,057	$2,077,397	$2,161,438	$2,253,005
Total	$4,341,157	$4,274,096	$4,274,587	$4,176,176

Savings Targets

	2020	2021	2022	2023
MWh	5,210	4,218	3,568	2,242
MW	0.5	0.4	0.3	0.2
MCF	111,745	118,337	125,585	133,571

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	1.28
Total Resource Cost Test	0.73
Participant Test	2.39
Rate Impact Measure	0.42

9 BUSINESS PROGRAMS

9.1 Comprehensive Business Solutions Program

The Comprehensive Business Solutions program is a multi-faceted offering designed to meet the needs of various segments of the business community and includes the following options:

- The **Prescriptive Business Solutions Program** creates energy savings for business customers through the promotion of high-efficiency electricity and natural gas equipment. Cash-back mail-in incentives typically range from 20 percent to 60 percent of the incremental cost to purchase high-efficiency models.
- The **Custom Business Solutions Program** assists larger commercial and industrial customers with the analysis and selection of high-efficiency equipment or processes not covered under the prescriptive program. The program approach identifies more complex energy savings projects, provides economic analysis, and aids in the completion of the incentive application. Incentives are provided for installed measures, based on energy saved.
- **Specialty Programs**, first introduced in 2013, are designed to offer specialized services to customers beyond traditional rebates. Specialty programs provide additional information to customers on energy use and assist in identifying opportunities for energy waste reduction. To provide an easy and enjoyable experience that meets customers' needs, these programs are sometimes consolidated to provide a holistic approach for customers by technology or market sector. Examples of additional service offerings include ENERGY STAR® benchmarking, assessments, gap analysis, and audits. Current program offerings include, but are not limited to: Agriculture, Advanced Lighting Controls, ENERGY STAR® Programs, Industrial Energy Programs, New Construction, Smart Buildings, and Buy Michigan.

The following represents all components of the Comprehensive Business Solutions Program.

Estimated Participation

See estimated participation details in Appendix A.

Estimated Investment ($M)

	2020	2021	2022	2023
Electricity	$56,322,328.66	$70,043,243	$76,248,405	$84,202,052.62
Natural gas	$16,620,168	$14,166,091	$13,075,965	$12,217,891
Total	$72,942,496.73	$84,209,333.41	$89,324,370.27	$96,419,943.27

Savings Targets

	2020	2021	2022	2023
MWh	343,607	440,924	455,204	505,355
MW	52.2	66.7	68.6	76.5
MCF	1,066,425	931,876	861,700	824,132

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	4.06
Total Resource Cost Test	1.01
Participant Test	2.75
Rate Impact Measure	0.41

9.1.1 Comprehensive - Prescriptive

Programs	Prescriptive
Objective	The goal of this program is to continue to generate energy savings for all business customers through promotion of high-efficiency electricity and natural gas equipment. There are three primary objectives: ▪ To increase the market share of commercial-grade high-efficiency technologies sold through market channels; ▪ To increase the installation rate of high-efficiency technologies in business facilities by businesses that would not have done so in the absence of the program; and ▪ To reduce energy use and improve operating efficiency of existing long-life equipment to ensure peak operating efficiency for business customers.
Target Market	All business customers are eligible to participate in this prescriptive rebate program when they purchase qualifying equipment or services. The program is designed to offer cross-cutting technologies that address a variety of market sectors and industries. Targeted, proactive outreach efforts are utilized to influence specific market sector actors: ▪ Trade allies (wholesalers, distributors, contractor and retailers that market qualifying technologies); ▪ High-impact/high-need customer sectors (such as schools, municipal buildings, and hospitals); ▪ Commercial and industrial customers where the building load or process design would benefit from the introduction of energy efficient technology; and ▪ Midstream suppliers where incentives are paid/directed to the distributor level, with impacts passed to the contractor or to the self-install customer.
Program Duration	The program was launched in 2009 and will be an ongoing element of the program portfolio.

Program Description

The program is designed to offer incentives to customers who purchase specific high-efficiency measures that will deliver a predetermined level of deemed energy savings based upon the MEMD. Prescriptive rebate application forms are completed by customers and trade allies on projects they install.

The program is designed to work through existing market channels to affect the installation of targeted technologies. Regardless of the channel, each offers high-efficiency technology alternatives in addition to their standard equipment offerings.

The program encourages the purchase and installation of high-efficiency technologies through a combination of “push and pull” strategies that stimulate market demand while simultaneously increasing trade ally investment in stocking and promotion in defined market channels. Additionally, vendors who service and maintain existing high energy use equipment, such as HVAC technologies, will be tapped to secure energy savings of operational equipment not ready for retrofit or replacement. These services are offered in the market channel through which the respective equipment will be delivered to the market.

The program will significantly increase participation by educating business customers about the energy and money saving benefits associated with energy-efficient products and equipping trade allies to communicate those benefits directly to their customers. To address the first cost barrier for customers, the program utilizes financial incentives (i.e., cash-back, mail-in rebates) typically averaging 20 percent to 60 percent of the incremental cost of purchasing qualifying technologies.

The program stimulates trade ally investment in stocking and promoting efficient products through a targeted outreach effort. The program team employs field sales representatives to proactively train and equip trade allies to convey energy- and money-saving benefits, as well as environmental benefits to customers and to communicate equipment eligibility requirements. Further, the existence of cash-back incentives elevates efficiency to a competitive issue that naturally motivates trade allies to stock and promote targeted products. Additionally, the program provides a zero percent interest rate on qualifying EWR projects in conjunction with Michigan Saves to help customers who would not otherwise participate in the EWR program.

The program also educates business customers on the benefits from tune-up and corrective action to increase the efficiency of existing equipment (e.g., HVAC and compressed air) to improve operational performance. This includes items specifically related to boiler tune-ups, failed steam trap repair/replacement, etc. Trade allies educate customers about the importance and benefits of equipment maintenance. Field representatives also proactively train service providers on the merits of these activities as well as the incentives offered to perform them.

Consumers Energy will also recruit local suppliers offering energy-efficient equipment to contractors and customers. These participating suppliers will be compensated on a monthly basis for offering an instant discount for qualified products at the time of purchase. The program will offer the buy-down-type incentive on selected products that include light, heating ventilation & air conditioning (HVAC), and food service equipment.

Furthermore, the Company will examine the potential of an Upstream Program in 2020 to recruit and incentivize HVAC and food service equipment manufacturers to increase the sale of energy efficient equipment.

Program Logic

Business customers' decisions for capital investments are financially driven and often considered on a first-cost option basis. Their focus on project payback related to capital equipment often overlooks long-term operating costs when making choices to replace equipment. Traditionally, EWR equipment is not directly related to the capital investment strategies of business customers. Therefore, it is essential to continue to educate and provide financial incentives to overcome the following barriers to implementing EWR improvements:

Market Barrier	Program Element
▪ Higher first cost	▪ Financial incentives
▪ Lack of time to pursue comprehensive energy analysis	▪ Lifecycle/payback info
▪ Lack of awareness regarding energy and non-energy benefits	▪ Case studies, website and other collateral materials
▪ Corporate purchasing policies that emphasize first cost rather than lifecycle cost	▪ Easy-to-read lists of qualifying products
	▪ Deemed savings and incentive levels reducing/eliminating customized calculations
	▪ Fast and simple application or direct incentive process at point-of-sale
	▪ Implementer working one-on-one with decision makers in targeted sectors

	▪ Lack of immediate availability of efficient products ▪ Aggressive outreach to trade allies ▪ Increased demand generated by incentives encourages providers to stock qualifying product ▪ Risk aversion to new technologies ▪ Financial incentive strategies to mitigate risk ▪ Education and testimonials Strategies for increasing attribution through reduced free-ridership include: ▪ Incentive claims submitted within fixed time periods; ▪ Efficiency standards set well above baseline levels; and ▪ Incentive amounts sufficiently meaningful to influence purchase decisions.
Incentive Strategy	Cash-back mail-in incentives equal to 20 percent to 50 percent of the incremental cost to purchase energy efficient products will be offered. Tiered incentive approaches are designed to promote investment in premium-efficiency equipment and multi-measure projects.
Eligible Measures, Efficiency Requirements, Energy Savings & Incentives	The program targets measures where the unit energy savings can be reliably predicted and, therefore, standard per-measure savings ("deemed savings") and incentive levels are established. This simplifies the application process and reduces administrative costs.
Implementation Strategy	Key elements of the implementation strategy include: ▪ ***Outreach to Trade Allies:*** Field representatives inform and recruit participation by trade allies. Outreach includes orientation meetings and in-person visits aimed at training and equipping trade allies to communicate program information to customers. Field representatives ensure that providers have an updated stock of program materials. Key trade allies that are targeted include: o HVAC distributors and retail contractors and service providers o Lighting distributors, wholesalers o Variable frequency drive distributors o Compressed air retailers and service providers o Engineering firms ▪ ***Outreach to Targeted Customers:*** Consumers Energy Corporate Account Managers ("CAMs") will continue to make proactive contacts to larger business customers, targeting in-house energy managers, facility managers, building operators, and related personnel tied to facility operation. The program team and CAMs assist business customers in determining whether the prescriptive

incentives, the custom approach, or a combination of both programs would be most appropriate for their operations. The program team also assists customers as necessary to complete rebate application requirements. In addition, small and medium customers will be reached through direct mail, digital ads, Consumers Energy website, and other channels.

- ***Outreach to Distributors:*** Consumers Energy field representatives inform and recruit distributors to enter into a cooperative agreement to provide discounts on eligible efficient equipment. The distributor passes along the entire discount to the contractor or customer, increasing the likelihood customer's purchase more efficient equipment that would not otherwise apply for an incentive through the traditional program.
- ***Program Operations:*** The implementation contractor handles program-specific administrative requirements including the following:
  - Marketing strategy and materials (joint coordination with Consumers Energy);
  - Trade ally outreach, recruitment, and training;
  - Trade ally relations and problem resolution;
  - Product eligibility knowledge and communication;
  - Utility reporting (progress to goals, customer issues/resolution, trade ally outreach, issues, etc.);
  - Data warehousing and tracking;
  - Processing prescriptive applications; and
  - Customer relations (inquiries, complaint resolution, etc.).

Marketing Strategy

The program employs the following marketing strategies:

- ***Engage Trade Allies:*** Outreach and training is offered to a targeted group of trade allies who have business motivations for promoting prescriptive incentives to their customers. Active participating trade allies get their name, discipline, and website featured on Consumers Energy's website with the level of their activity in the program. They are equipped with marketing and promotional materials (e.g., product sheets, rebate forms) and training on program terms and conditions. Outreach activities include:
  - Mailing program materials;
  - Follow-up telephone calls;
  - Orientation meetings; and
  - In person visits by field representatives.
- ***Directly Market to Targeted Customers:*** A targeted marketing strategy with business customers increases awareness of Consumers Energy's EWR program efforts. Larger customers are directly contacted by their CAMs. Focus is placed on specific industry sectors, including schools, healthcare, municipal office buildings, retail, food service, and lodging. Outreach activities include:
  - In-person visits by Consumers Energy's CAMs to the largest business customers and in-person visits by field representatives to small and medium sized customers;
  - Walk-through energy assessments for business customers to identify opportunities for efficiency improvements;
  - Targeted advertising in trade and business publications;
  - Online static and banner ads thru M-live and The Free Press website
  - Outreach to trade and business associations to recruit their assistance in distributing information about programs through existing communication channels; and
  - Promotions by trade allies.
- ***Provide Complete Website Presence.*** The program is outlined in detail on the Consumers Energy website. Customers and trade allies are able to review qualifying measures and download incentive applications and important program documents including fact sheet case studies for various customer segments and technologies.

EM&V Strategy & Requirements

All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year, these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as

review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.

Consumers Energy Administrative Requirements

Consumers Energy staff are responsible for general administrative oversight of the program portfolio, including:

- Solicitation, selection, and management of the implementation contractor;
- Coordination of marketing strategy/public relations among programs and market sectors;
- Development and placement of marketing materials and advertising;
- Coordination of all educational services;
- Data warehousing;
- Solicitation, selection, and management of the evaluation contractor; and
- Goal achievement within investment.

9.1.2 Comprehensive - Custom

Program	Custom Business Solutions
Objective	Influence business customers to select and install high-efficiency measures, such as process improvements or projects involving multiple technologies, which are not addressed through the Prescriptive Business Solutions Program when considering equipment retrofits or other energy-saving improvements.
Target Market	Emphasis is placed on targeting large customers (minimum electricity demand greater than 300KW or natural gas usage greater than 10,000 Mcf) whose operations could most benefit from a custom approach to installing measures not covered by the Prescriptive Business Solutions Program incentives. Initial targeted markets include: ▪ Large manufacturing facilities; ▪ Hospitals; ▪ Municipalities; and ▪ Lodging/hospitality industry.
Program Duration	This program was launched in July 2009 and is an ongoing element of the program portfolio.
Program Description	The program helps customers and trade allies identify complex energy savings projects, analyze the economics of each project, and complete the incentive application. The program affects the purchase and installation of efficient technologies or implementation of process improvements. It achieves this by working directly with key end-use customers and trade allies. The program team, including the implementation contractor works with customers and trade allies on prospective projects to help complete custom engineering calculations that assess the energy savings potential, payback horizon, project eligibility (see measure characterization below), and incentive amounts. If projects qualify, customers are issued an approval letter accepting the project and asking them to complete the application form. Customers are given 30 days to sign an application to reserve funding. Upon receipt of the application by Consumers Energy, customers are provided 90 to 120 days to complete the project to qualify for reimbursement. Special circumstances and project lead times affect the ability to complete a project within the timeframe, and extensions are granted. Customers unable to complete a project, either within the original project time frame or the extension, can reapply at a future date. The program

team approves projects, referencing the original project scope, depending on investment availability within the program year. This protocol minimizes commitment of program incentives on projects not moving toward completion. Once projects are completed, the program team assists the customer in finalizing the rebate application. The program team ensures that all relevant documentation is provided supporting recommended high-efficiency equipment and processes incentive claims for payment. Large projects or subsets of projects are required to undergo pre- and post-inspection visits to verify equipment installation and operation.

As needed, expanded technical support is offered to help customers evaluate comprehensive EWR opportunities and increase participation. Such services include:

- Co-funding comprehensive audits and/or designing projects or studies to assist customers in identifying EWR opportunities and analyzing associated costs and savings, with potential reimbursement of costs if identified projects are implemented;
- Training and certification (i.e., energy team training, building operator certification, certified energy manager) opportunities at a reduced cost;
- Assistance in specifying projects and preparing bid requests; and
- Assistance securing other available funding and services supporting an energy-efficient project installation.

Program Logic

Large business customers typically have more complex mechanical equipment supporting facility operations and manufacturing processes. As a result, many barriers prevent projects from being implemented. The program is designed to help motivate and assist customers in taking the step from conceptual project to completed project.

Following is a list of the primary barriers in this market and the program elements that address them:

Market Barrier	Program Element
Risk aversion to new designs and technologies	Availability of case studies and access to demonstration sites
Higher first cost	Financial incentives to drive down payback and cover incremental costs
Lack of awareness regarding energy and non-energy benefits	Website, case studies, and other collateral materials Direct marketing to customers

	▪ Corporate purchasing policies that emphasize first cost rather than lifecycle cost ▪ Lack of resources to conduct initial feasibility analysis to identify energy-saving projects ▪ Lifecycle/payback info ▪ Assistance with identifying other funding sources such as federal grant programs ▪ Implantation Contractor energy advisors working one-on-one with decision makers in targeted sectors ▪ Co-funding (future years) for audits/feasibility studies
Incentive Strategy	The program uses the following criteria for offering financial incentives: ▪ Award incentives based on energy savings on a per kWh and/or per Mcf basis for installed measures not covered in the Prescriptive Business Solutions Program; and ▪ The incentive amount is calculated case by case for qualifying equipment or processes. The following criteria is used to determine incentive amounts: o Electricity customer incentive limit: $2,000,000/year; o Natural gas customer incentive limit: $1,000,000/year; o Minimum project payback: 1.0 year; and o Maximum percent of total project cost: 50 percent. The program team works closely with prospective customers to determine if projects qualify for incentives and assists them in completing an incentive application. Incentives and caps may be modified to meet program needs. Additional strategies include co-funded feasibility studies and investment-grade audits to assist customers in identifying energy savings opportunities A percentage of the cost can be refunded if projects are implemented. Consumers Energy will utilize an RFP process for larger projects exceeding project maximums listed above. In an RFP solicitation, customers or trade allies develop proposals and submit them for consideration. The incentive cost is included in the proposal and projects can be chosen based on cost-effectiveness or first-come/first-served basis.
Eligible Measures, Efficiency Requirements, Energy Savings & Incentives	The program is designed to address any cost-effective electricity or natural gas saving measures not available through the Prescriptive Business Solutions Program. Often these projects are more complex and address a system or process requiring unique technologies. Savings and incentives are determined when the project is specified. All technologies are subject to eligibility and verification of energy savings.

Implementation Strategy

By design, the Custom Business Solutions Program has the ability to control participation levels, program investment levels, and achievement of project goals. Program investment is managed by accepting applications on a first-come, first served basis. Key elements of the implementation strategy include:

- ***Outreach to Targeted Customers:*** In coordination with the CAMs, the program team targets high energy use customers. The CAMs identify key personnel with a vested interest in energy reduction strategies and recruit their participation. Such personnel include energy managers, energy teams, facility managers, financial and operations managers, chief engineers and facility/property managers, maintenance supervisors, and building operators.
- ***Outreach to Key Influencers:*** Presentations and seminars with appropriate trade associations (e.g., ASHRAE, Metro Detroit Bldg. Supt Association, West Michigan Association of Energy Engineers).
- ***Outreach to Trade Allies:*** Promotion of the custom option to key trade allies to solicit their support by providing referrals for potential custom incentive projects.
- ***Technical Assistance:*** The program team assists customers and trade allies with engineering support to identify and analyze the cost-effectiveness of energy saving opportunities. This involves a targeted energy audit and commissioning of a feasibility study to understand the potential impacts of proposed improvements. The program team works with the customer and trade ally to complete custom engineering calculations that assess the energy savings potential, payback horizon, project eligibility, and incentive amount. If the project is eligible, the program team assists the customer and trade ally in completing a Custom Solutions application.
- ***Quality Assurance:*** Incentive applications are subject to a quality assurance review by program technical staff to ensure accuracy of savings estimates and incentive calculations.
- ***Verification:*** The program team provides onsite post-installation verification for a statistically significant number of completed projects and also confirms proper installation and conformance with measure specifications.
- ***Measurement and Verification:*** The program team provides a method to perform a more rigorous QA/QC process for custom projects. Projects from a custom program have a higher risk of inaccuracies due to project size and non-standard design. Projects that do not have reliable information to accurately assess savings are required to undergo monitoring both before and after implementation to determine savings.

To minimize free-ridership, the program is designed to motivate trade allies and customers to (1) pursue projects they would otherwise not have implemented; (2) pursue projects sooner than they otherwise would have; and (3) implement equipment/measures at a higher efficiency level than they otherwise would have.

All program-specific administrative requirements are handled by the program team including:

- Trade ally outreach, recruitment and training;
- Quality assurance of project/technology eligibility;
- Co-development of marketing strategy and messaging;
- Incentive claim processing;
- Data tracking and reporting;
- Investment tracking and reporting;
- Managing public relations in coordination with Consumers Energy; and
- Customer satisfaction/problem resolution.

The program team also supports the implementation of the program by providing the following services:

- Outreach to customers that have assigned CAMs;
- Technical assistance to end-use customers (e.g., audits, specifying projects, savings calculations); and
- Administrative assistance to end-use customers in completing incentive applications.

Marketing Strategy

The marketing strategy involves a direct networking approach using CAMs, energy advisors and trade allies. Marketing via direct mail to trade allies, local economic development organizations, and other business associations is included in the effort. The program affects the purchase and installation of efficient technologies or implementation of process improvements by working directly with both key end-use customers to encourage their participation and trade allies to refer projects, identify potential projects, analyze the economics of each project, and complete an incentive application.

The program team has identified successful projects and innovative technologies that will be highlighted as case studies to promote EWR and increase the participation and market adoption of key technologies.

In addition to networking activities, the program is promoted through advertising in targeted media, including trade and business journals, press releases, and media outreach. Offering Web access to tools and best practices is also an effective way to prompt customers to action.

EM&V Strategy & Requirements	All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year, these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.
Consumers Energy Administrative Requirements	Consumers Energy staff are responsible for general administrative oversight of the program portfolio, including: ▪ Solicitation, selection, and management of the implementation contractor; ▪ Coordination of marketing strategy/public relations among programs and market sectors; ▪ Development and placement of marketing materials and advertising; ▪ Coordination of all educational services; ▪ Data warehousing; ▪ Solicitation, selection, and management of the evaluation contractor; and ▪ Goal achievement within investment.

9.1.3 Comprehensive - Specialty

Program	Business Specialty Programs
Objective	Specialty programs are designed to offer concierge services to customers beyond traditional rebates.
Target Market	Commercial electricity and/or natural gas customers on an eligible rate code, operating at the facility where the measures are being installed. Commercial customers seeking additional EWR assistance beyond rebates.
Program Duration	Programs were first introduced in 2013 and continuous transitions of pilots into Specialty Programs are ongoing throughout the program year.
Program Description	Specialty programs, first introduced in 2013, are designed to offer specialized services to customers beyond traditional rebates. Program elements provide additional deliverables and information to customers regarding energy use, analytics and EWR opportunity identification. To provide an easy and enjoyable experience that meets customer's needs, these programs are sometimes consolidated to provide a holistic approach for customers by technology or market sector. Some examples of additional service offerings include, but are not limited to, ENERGY STAR® Benchmarking, Assessments, Gap Analysis, and Audits. Current program offerings include, but are not limited to, Agriculture, Advanced Lighting Controls, ENERGY STAR® Programs, Industrial Energy Programs, New Construction, Smart Buildings, and Buy Michigan.
Incentive Strategy	Incentives utilized through the Specialty Programs are existing measure offerings presented in the Prescriptive and Custom programs.
Eligible Measures, Efficiency Requirements & Incentives	Cost-effective natural gas and electricity efficiency measures that improve on the program's baseline are eligible for consideration in the program. Fuel switching (electricity to alternative fuel) measures, hybrid fuel, and grid-connected renewable energy systems are not eligible for incentives through this program.
Implementation Strategy	All program elements, including management, tracking, marketing, and delivery will be executed by the selected implementation contractor.
Marketing Strategy	Marketing will be accomplished using mass-marketing techniques as well as individual outreach by program staff. Individual marketing campaigns may be offered based on market segment or technology to increase awareness and recruit customers and trade allies into these programs.

EM&V Strategy	All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. Every year, these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.
Consumers Energy Administrative Requirements	Consumers Energy is responsible for general administrative oversight of the program portfolio, including: ▪ Solicitation, selection, and management of the implementation contractor; ▪ Coordination of marketing strategy/public relations among programs and market sectors; ▪ Development and placement of marketing materials and advertising; ▪ Coordination of all educational services; ▪ Data warehousing; ▪ Solicitation, selection, and management of the evaluation contractor; and ▪ Goal achievement within investment and savings.

9.2 Business Pilot Programs

Program	Program Name
Objective	Consumers Energy's pilot programs test, validate, and integrate new energy saving approaches into the Comprehensive portfolio offerings.
Target Market	Consumers Energy business customers. Dependent on specific technology/program.
Program Duration	Since business programs launched in 2009, Consumers Energy has focused on the development of programs that have promise to capture significant energy savings, and that can be rolled into the overall program portfolio. Identification, evaluation, testing, and reporting of pilot programs will be an ongoing part of the portfolio.
Program Description	Each year, Consumers Energy has set aside up to 5 percent of the EWR budget to develop small scale offerings testing new technologies, segmentations, outreach methods, and education to increase business EWR participation and energy savings. This allows Consumers Energy to partner with its businesses to find new and innovative ways to save energy and money while making businesses more productive.
EM&V Strategy & Requirements	All evaluation activities will be conducted by a third-party contractor selected through a competitive bidding process. The objective of this pilot evaluation will be to provide program staff with the feedback needed to decide whether the pilot can be scaled into a full program. The evaluation will provide feedback on program design and delivery, as well as barriers to participation. The evaluation may include, but will not be limited to, the following activities: secondary research on similar programs, interviews with participants and near-participants, and interviews with trade allies. The evaluation plan will be finalized with program staff to meet research needs based upon pilot performance.
Consumers Energy Administrative Requirements	Consumers Energy is responsible for general administrative oversight of the program portfolio, including: ▪ Solicitation, selection, and management of the implementation contractor; ▪ Coordination of marketing strategy/public relations among programs and market sectors; ▪ Development and placement of marketing materials and advertising; ▪ Coordination of all educational services; ▪ Data warehousing; ▪ Solicitation, selection, and management of the evaluation

contractor;

- Goal achievement within investment; and
- Incentive processing.

Estimated Investment ($M)

	2020	2021	2022	2023
Electricity	$4,721,829	$5,533,207	$5,859,691	$6,278,862
Natural gas	$1,413,380	$1,231,222	$1,169,532	$1,115,885
Total	$6,135,209	$6,764,429	$7,029,223	$7,394,747

Savings Targets

	2020	2021	2022	2023
MWh	22,904	28,074	28,450	30,731
MW				
MCF	71,622	63,528	59,580	57,426

9.3 Small Business Solutions

Program	Small Business Solutions
Objective	Provide EWR offerings to small businesses and not-for-profit customers in electricity and/or natural gas territories that are typically considered "hard to reach" and who have limited resources to participate in standard prescriptive type business programs.
Target Market	Small business customers with an average annual electricity and natural gas usage at or below 400,000 kWh and 6,000 Mcf are eligible to participate in the program. Eligible participants are owner-occupied or tenant facilities (with owner permission). This includes businesses such as small retail, convenience and small grocery stores, small offices, service stations, restaurants and lodging, nonprofit organizations, small manufacturing. Customers with long hours of operation are ideal targets of the program.
Program Duration	Small Business Solutions was launched in July 2009 and is an ongoing element of the Business EWR Program portfolio.
Program Description	Small Business Solutions was designed as a "lever program" to be scaled back or ramped up depending on the overall business portfolio performance needs. These solutions consist of several programs targeting small, non-residential customers underserved by other EWR programs. These customers, often sole proprietorships, typically lack the technical and financial resources necessary to participate in EWR program offerings. To overcome these barriers, several subprogram offerings are available for this market: The **Small Business Assessment Program** provides an on-site energy assessment along with limited direct installation of products. The teams performing the work conduct the assessment, discuss EWR opportunities with the business owner and installing LEDs, showerheads, pipe wrap, and faucet aerators where applicable. As a follow-up to the assessment, customers receive a report via mail and email indicating the measures installed recommendations of products and tips on how they can save more energy. The **Small Business Direct Install Program** is designed to introduce EWR to small businesses. This program provides installation of products such as showerheads, faucet aerators, pre-rinse sprayers, pipe wrap, programmable and smart thermostats, and LEDs. The **Small Business Trade Ally Program** was designed to promote energy saving opportunities to small businesses through the installation of

common lighting and refrigeration measures by participating trade allies.

The trade allies are responsible for auditing the site, proposing EWR measures, specifying equipment, performing the installations, and providing required warrantees. The program team is responsible for conducting inspections to verify pre- and post-installation conditions and equipment, disbursing incentives, and overall program oversight. The program team also provides necessary program information and utilizes an internet web-based tool to enter, track, and receive approval and payment for projects.

A **lighting buy-down** is captured when customers purchase LEDs at participating retail locations that are discounted at the point-of-sale.

A new addition, **Small Business Marketplace** will be added in 2020. This program will be an online option designed to develop a scalable and innovative, self-service online store that acquires cost-effective savings. The Marketplace provides customers an instant incentive when purchasing energy-efficient products through this convenient online, one-stop shopping experience. The Marketplace is primarily marketed via email and targeted social media ads, with high-converting inbound traffic from blogs and other downloadable content.

Program Logic

Following is a list of the primary barriers in this market and the program elements used to address them:

Market Barrier	Program Element
Lack of funding and cash flow to invest in EWR improvements	Incentives that cover up to 100 percent of total project costs
Lack of time to pursue EWR efforts	Free energy assessment followed by direct installation of products
Lack of awareness regarding energy and non-energy benefits	Education materials and testimonials
Risk aversion to new technologies	Financial incentives to mitigate risk

Strategies for increasing attribution through reduced free-ridership include:

- Targeting small business customers not targeted by other programs and who seldom pursue improvements on their own initiative;
- Incentive amounts sufficiently meaningful to influence purchase

	decisions; ▪ Proactive solicitation of customers; and ▪ Direct installation of products.
Incentive Strategy	Assessments and direct installations of low-cost products are provided at no cost to the customer. Incentives for the Trade Ally Program are provided up to 100 percent of the project cost and energy bill reductions coupled with the measure incentives can yield an average payback of approximately 1 year. Lastly, Small Business Marketplace offers an easy, self-serve solution for online purchases of discounted EWR products.
Eligible Measures, Efficiency Requirements, Energy Savings & Incentives	Typical lighting measures include fluorescent lighting, compact fluorescent lighting, high-bay fluorescent lighting, occupancy sensors, LED and induction fixtures, and LED exit sign retrofit kits. In addition to lighting, this program offers refrigeration measures such as anti-sweat heater controls and ECM motors. The other Direct Install initiatives offer low-cost measures including programmable and smart thermostats, LEDs, showerheads, pipe wrap, and faucet aerators.

Implementation Strategy	The Small Business Solutions team is responsible for program design, procedural updates, and program refinements such as complaint resolution, managing marketing, oversight of trade-allies, providing staff to perform direct installations and assessments, managing online portals and other administrative activities. The strategy for installing measures may include: ▪ Assembling a network of program-approved trade allies (electrical and refrigeration contractors) to deliver product installation; ▪ Hiring individuals to install low-cost products that do not require licensing; and ▪ Hiring individuals to perform assessments to drive participation in other programs.
Marketing Strategy	The program team coordinates marketing outreach and provides training to the program-approved contractors (trade allies) to solicit small businesses to participate in the program. Marketing support for the program includes outreach through small business groups and community organizations, door-to-door sales, and other miscellaneous marketing techniques.
EM&V Strategy & Requirements	All evaluation activities will continue to be conducted by independent, third-party evaluation contractors. The Cadmus Group is the lead residential program evaluator and EMI Consulting is the lead business program evaluator. Every year, these evaluation contractors conduct appropriate program-specific impact and/or process evaluations as well as review, audit, and certify each program's annual reported savings. Annual certified savings for each program and each portfolio overall are included in an annual report provided to the MPSC by each evaluator. This annual certification process ensures that savings are properly reported, current MEMD values are being used, implementer data is verified, and that other appropriate adjustments, such as net-to-gross ratios, are properly applied.
Consumers Energy Administrative Requirements	Consumers Energy staff are responsible for general administrative oversight of the program, including: ▪ Solicitation, selection, and management of the implementation contractor; ▪ Coordination of marketing strategy and public relations opportunities; ▪ Oversight of marketing materials and advertising; ▪ Oversight of all educational offerings; ▪ Data warehousing; ▪ Selection and management of the third-party evaluation

	contractor; and ▪ Goal achievement within investment.
Estimated Participation	See estimated participation details in Appendix A.

Estimated Investment ($M)

	2020	2021	2022	2023
Electricity	$17,539,145	$18,299,820	$17,849,981	$17,929,126
Natural gas	$5,333,487	$4,912,109	$5,006,774	$4,958,634
Total	$22,872,632	$23,211,929	$22,856,754	$22,887,760

Savings Targets

	2020	2021	2022	2023
MWh	74,526	72,321	65,221	57,776
MW	7.0	7.7	6.2	5.9
MCF	184,174	169,795	167,323	165,259

Benefit-Cost Test Results

Benefit-Cost Test	B/C Ratio
Utility Cost Test	2.85
Total Resource Cost Test	0.92
Participant Test	1.85
Rate Impact Measure	0.57

9.4 Opt-In Options for Business Customers

Eligible customers may choose a one-time option to voluntarily opt-in to Consumers Energy's EWR programs for business. Opt-in customers are required to pay the full EWR surcharge for each enrolled account. Energy saving rebate applications are submitted through the normal business program process described in the preceding sections.

Electricity Municipal Lighting Opt-In Rate: Electricity municipal GML, GUL or GU-XL customers, using customer-owned lighting systems, may enroll in the program at any time, with EWR surcharges collected retroactively to the January billing cycle. Beginning in 2020, customers using Company-owned street lighting will move to an opt-in rate as well.

Electricity Rate GSG-2: Electricity self-generation rate GSG-2 customers are eligible to participate in the opt-in program. They may enroll in the program at any time, with EWR surcharges collected retroactively to the January billing cycle.

9.5 Opt-Out Option for Large Natural Gas Customers

Eligible large natural gas transportation business customers can "self-direct" and opt-out of Consumers Energy's EWR programs. However, customers opting out are still responsible for paying the low-income program surcharge. Customers opting out also need to design and plan their own projects and provide annual progress reports. Energy savings resulting from customers' self-directed programs count toward Consumers Energy's overall portfolio savings goals. Self-direct customers are required to implement savings that are equal to or greater than the minimum savings standard of 0.75 percent as set by 2008 PA 295.

Natural gas transportation customer account(s) using greater than 100,000 Mcf annually are eligible to participate in the opt-out option and may enroll at any time. Customers opting out of the program are responsible for providing Consumers Energy with annual reports of implemented projects, savings calculations, and measure life. Consumers Energy will review and evaluate the customer's annual reports to verify the inclusion of the required elements. Consumers Energy will also track savings and other program elements in order to meet annual reporting requirements.

Customers choosing to opt-out are not eligible to participate in Consumers Energy's natural gas EWR programs but may still participate in electricity EWR programs. A customer who has opted-out is eligible for a one-time return to the EWR program.

9.6 Self-Directed Option for Large Electricity Customers

Eligible large electricity business customers can "self-direct" and opt-out of Consumers Energy's EWR programs. However, customers opting out are still responsible for paying the low-income surcharge. Customers opting out also need to design and plan their own projects and provide annual progress reports. Energy savings resulting from customers' self-directed programs count toward Consumers Energy's overall portfolio savings goals. Self-directed projects are required to include savings that are equal to or greater than the minimum savings standard of 1.0 percent, as set by 2008 PA 295.

Customers opting out of the program are responsible for providing Consumers Energy with detailed plans, savings, costs, and timelines. Consumers Energy will review and evaluate the customer's plans, plan amendments, plan terminations, and annual reports to verify the inclusion of the required elements. Consumers Energy will also track savings and other program elements in order to meet annual reporting requirements.

Customers choosing to self-direct are not eligible to participate in Consumers Energy's electricity EWR programs but may still participate in natural gas EWR programs.

APPENDIX A: DETAILED PROGRAM MEASURES

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Appliance Recycling	Dehumidifier Recycling	E	8	Units	1,595	1,615	1,755	1,755	125.10	-
Appliance Recycling	Freezer Recycling	E	8	Units	5,500	5,775	6,065	6,065	637.20	-
Appliance Recycling	Freezer Recycling - Retailer	E	8	Units	200	300	480	480	637.20	-
Appliance Recycling	LED Bulb Replacing A-Line 60W - With Savings (Kit)-2020	E	3	Units	48,325	0	0	0	25.65	-
Appliance Recycling	LED Bulb Replacing A-Line 60W - With Savings (Kit)-2021	E	2	Units	0	48,960	0	0	25.65	-
Appliance Recycling	LED Bulb Replacing A-Line 60W - With Savings (Kit)-2022	E	1	Units	0	0	54,470	0	25.65	-
Appliance Recycling	LED Night Light - With Savings (Kit)	E	12	Units	48,325	48,960	54,470	0	18.41	-
Appliance Recycling	Refrigerator Recycling	E	8	Units	18,200	23,050	25,060	25,060	888.71	-
Appliance Recycling	Refrigerator Recycling - Retailer	E	8	Units	4,550	5,460	6,070	6,070	888.71	-
Appliance Recycling	Room Unit Air Conditioner Recycling	E	8	Units	1,595	1,615	1,755	1,755	101.70	-
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer - Combination Customers	E	11	Units	85	85	100	100	143.55	-
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer - Electric Customers	E	11	Units	155	155	155	155	143.55	-
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer - Combination Customers	E	11	Units	75	75	100	100	68.67	-
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer - Combination Customers	G	11	Units	75	75	100	100	-	0.29

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer - Electric Customers	E	11	Units	135	135	175	175	68.67	-
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer - Gas Customers	G	11	Units	140	140	140	140	-	0.29
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Gas water heater, Electric dryer - Combination Customers	E	11	Units	390	390	400	400	88.65	-
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Gas water heater, Electric dryer - Combination Customers	G	11	Units	390	390	400	400	-	0.23
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Gas water heater, Electric dryer - Electric Customers	E	11	Units	720	720	730	730	88.65	-
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Gas water heater, Electric dryer - Gas Customers	G	11	Units	740	740	740	740	-	0.23
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Gas water heater, Gas dryer - Combination Customers	E	11	Units	505	505	575	575	13.68	-
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Gas water heater, Gas dryer - Combination Customers	G	11	Units	505	505	575	575	-	0.48
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Gas water heater, Gas dryer - Electric Customers	E	11	Units	935	935	1,000	1,000	13.68	-
ENERGY STAR Appliances	Clothes Washer ENERGY STAR, Gas water heater, Gas dryer - Gas Customers	G	11	Units	960	960	960	960	-	0.48

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
ENERGY STAR Appliances	Energy Star Air Purifier	E	9	Units	800	800	800	800	263.70	-
ENERGY STAR Appliances	Energy Star Dehumidifier	E	12	Units	1,700	2,000	2,200	2,200	177.50	-
ENERGY STAR Appliances	Energy Star Room A C	E	15	Units	500	650	850	850	51.00	-
ENERGY STAR Appliances	Tier 1 Advanced Power Strips	E	5	Units	200	220	240	265	46.26	-
ENERGY STAR Appliances	Variable Speed Pool Pump	E	10	Units	350	350	0	0	972.90	-
ENERGY STAR Appliances	Wi-Fi Enabled Thermostat - Combination Customers	E	9	Units	1,750	1,840	1,930	2,025	111.41	-
ENERGY STAR Appliances	Wi-Fi Enabled Thermostat - Combination Customers	G	9	Units	1,750	1,840	1,930	2,025	-	6.05
ENERGY STAR Appliances	Wi-Fi Enabled Thermostat - Electric Customers	E	9	Units	1,100	1,155	1,215	1,275	118.68	-
ENERGY STAR Appliances	Wi-Fi Enabled Thermostat - Gas Customers	G	9	Units	1,950	2,050	2,155	2,265	-	5.96
ENERGY STAR Appliances	Wi-Fi Enabled Thermostat - Tier 3 - Combination Customers	E	9	Units	4,800	5,040	5,290	5,555	110.13	-
ENERGY STAR Appliances	Wi-Fi Enabled Thermostat - Tier 3 - Combination Customers	G	9	Units	4,800	5,040	5,290	5,555	-	5.96
ENERGY STAR Appliances	Wi-Fi Enabled Thermostat - Tier 3 - Electric Customers	E	9	Units	3,700	3,885	4,080	4,285	120.78	-
ENERGY STAR Appliances	Wi-Fi Enabled Thermostat - Tier 3 - Gas Customers	G	9	Units	6,700	7,035	7,385	7,755	-	5.97
ENERGY STAR Lighting	LED Bulb Replacing A-Line 100W (72W Halogen)-2020	E	3	Units	224,975	0	0	0	26.90	-
ENERGY STAR Lighting	LED Bulb Replacing A-Line 100W (72W Halogen)-2021	E	2	Units	0	168,725	0	0	26.90	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
ENERGY STAR Lighting	LED Bulb Replacing A-Line 100W (72W Halogen)-2022	E	1	Units	0	0	112,500	0	26.90	-
ENERGY STAR Lighting	LED Bulb Replacing A-Line 29W-2020	E	3	Units	31,100	0	0	0	11.17	-
ENERGY STAR Lighting	LED Bulb Replacing A-Line 29W-2021	E	2	Units	0	23,325	0	0	11.17	-
ENERGY STAR Lighting	LED Bulb Replacing A-Line 29W-2022	E	1	Units	0	0	15,550	0	11.17	-
ENERGY STAR Lighting	LED Bulb Replacing A-Line 43W-2020	E	3	Units	940,825	0	0	0	16.25	-
ENERGY STAR Lighting	LED Bulb Replacing A-Line 43W-2021	E	2	Units	0	705,600	0	0	16.25	-
ENERGY STAR Lighting	LED Bulb Replacing A-Line 43W-2022	E	1	Units	0	0	470,400	0	16.25	-
ENERGY STAR Lighting	LED Bulb Replacing A-Line 53W-2020	E	3	Units	139,075	0	0	0	19.72	-
ENERGY STAR Lighting	LED Bulb Replacing A-Line 53W-2021	E	2	Units	0	104,300	0	0	19.72	-
ENERGY STAR Lighting	LED Bulb Replacing A-Line 53W-2022	E	1	Units	0	0	69,550	0	19.72	-
ENERGY STAR Lighting	LED Candelabra-2020	E	4	Units	31,900	0	0	0	16.83	-
ENERGY STAR Lighting	LED Candelabra-2021	E	3	Units	0	26,600	0	0	16.83	-
ENERGY STAR Lighting	LED Candelabra-2022	E	2	Units	0	0	21,275	0	16.83	-
ENERGY STAR Lighting	LED Candelabra-2023	E	1	Units	0	0	0	15,950	16.83	-
ENERGY STAR Lighting	LED Connected Bulb Replacing A-Line 43W-2020	E	3	Units	2,000	0	0	0	16.25	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
ENERGY STAR Lighting	LED Connected Bulb Replacing A-Line 43W-2022	E	1	Units	0	0	2,400	0	16.25	-
ENERGY STAR Lighting	LED Downlight-2020	E	4	Units	447,900	0	0	0	31.24	-
ENERGY STAR Lighting	LED Downlight-2021	E	3	Units	0	373,250	0	0	31.24	-
ENERGY STAR Lighting	LED Downlight-2022	E	2	Units	0	0	298,600	0	31.24	-
ENERGY STAR Lighting	LED Downlight-2023	E	1	Units	0	0	0	223,950	31.24	-
ENERGY STAR Lighting	LED Flood PAR-2020	E	4	Units	313,600	0	0	0	38.34	-
ENERGY STAR Lighting	LED Flood PAR-2021	E	3	Units	0	261,350	0	0	38.34	-
ENERGY STAR Lighting	LED Flood PAR-2022	E	2	Units	0	0	209,075	0	38.34	-
ENERGY STAR Lighting	LED Flood PAR-2023	E	1	Units	0	0	0	156,800	38.34	-
ENERGY STAR Lighting	LED Globe-2020	E	4	Units	47,850	0	0	0	19.17	-
ENERGY STAR Lighting	LED Globe-2021	E	3	Units	0	39,875	0	0	19.17	-
ENERGY STAR Lighting	LED Globe-2022	E	2	Units	0	0	31,900	0	19.17	-
ENERGY STAR Lighting	LED Globe-2023	E	1	Units	0	0	0	23,925	19.17	-
ENERGY STAR Lighting	LED Outdoor Flood PAR-2020	E	4	Units	136,350	0	0	0	196.24	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
ENERGY STAR Lighting	LED Outdoor Flood PAR-2021	E	3	Units	0	113,625	0	0	196.24	-
ENERGY STAR Lighting	LED Outdoor Flood PAR-2022	E	2	Units	0	0	90,900	0	196.24	-
ENERGY STAR Lighting	LED Outdoor Flood PAR-2023	E	1	Units	0	0	0	68,175	196.24	-
Home Energy Analysis	Assessment Performed - Customer Refused DI (Combination Customer)	E	1	Units	26	26	26	26	-	-
Home Energy Analysis	Assessment Performed - Customer Refused DI (Combination Customer)	G	1	Units	26	26	26	26		
Home Energy Analysis	Assessment Performed - Customer Refused DI (Gas Customer)	G	1	Units	405	405	405	405		
Home Energy Analysis	Audit Education (Combo or Gas and Electric Measures - OTG)	E	1	Units	4,895	4,895	4,895	4,895	-	-
Home Energy Analysis	Audit Education (Combo or Gas and Electric Measures - OTG)	G	1	Units	4,895	4,895	4,895	4,895		
Home Energy Analysis	Audit Education (Gas Measures - OTG)	G	1	Units	5,970	5,970	5,970	5,970		
Home Energy Analysis	Dual Spray Kitchen Low Flow Aerator (1.5 gpm) - Gas Water Heater	G	10	Units	4,750	4,750	4,750	4,750	-	1.01
Home Energy Analysis	Dual Spray Kitchen Low Flow Aerator (1.5gpm) - Electric Water Heater	E	10	Units	185	185	185	185	234.28	-
Home Energy Analysis	Handheld Showerheads (1.5 gpm) - Electric water heater	E	10	Units	230	230	230	230	300.60	-
Home Energy Analysis	Handheld Showerheads (1.5 gpm) - Gas Water Heater	G	10	Units	6,750	6,750	6,750	6,750	-	1.29

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Energy Analysis	LED A-line <=6W Replacing 40W Equivalent-2020	E	3	Units	470	0	0	0	17.64	-
Home Energy Analysis	LED A-line <=6W Replacing 40W Equivalent-2021	E	3	Units	0	330	0	0	17.64	-
Home Energy Analysis	LED A-line <=6W Replacing 40W Equivalent-2022	E	3	Units	0	0	230	0	17.64	-
Home Energy Analysis	LED Bulb Replacing A-Line 60W-2020	E	3	Units	48,715	0	0	0	25.65	-
Home Energy Analysis	LED Bulb Replacing A-Line 60W-2021	E	2	Units	0	34,100	0	0	25.65	-
Home Energy Analysis	LED Bulb Replacing A-Line 60W-2022	E	1	Units	0	0	23,870	0	25.65	-
Home Energy Analysis	LED Candelabra Medium Base <= 5W-2020	E	4	Units	2,265	0	0	0	21.33	-
Home Energy Analysis	LED Candelabra Medium Base <= 5W-2021	E	3	Units	0	1,585	0	0	21.33	-
Home Energy Analysis	LED Candelabra Medium Base <= 5W-2022	E	2	Units	0	0	1,110	0	21.33	-
Home Energy Analysis	LED Candelabra Medium Base <= 5W-2023	E	1	Units	0	0	0	775	21.33	-
Home Energy Analysis	LED Candelabra Small Base <= 5W-2020	E	4	Units	7,390	0	0	0	21.33	-
Home Energy Analysis	LED Candelabra Small Base <= 5W-2021	E	3	Units	0	5,175	0	0	21.33	-
Home Energy Analysis	LED Candelabra Small Base <= 5W-2022	E	2	Units	0	0	3,620	0	21.33	-
Home Energy Analysis	LED Candelabra Small Base <= 5W-2023	E	1	Units	0	0	0	2,535	21.33	-
Home Energy Analysis	LED Exterior Fixture Lamp Replacement-2020	E	4	Units	6,130	0	0	0	72.90	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Energy Analysis	LED Exterior Fixture Lamp Replacement-2021	E	3	Units	0	4,290	0	0	72.90	-
Home Energy Analysis	LED Exterior Fixture Lamp Replacement-2022	E	2	Units	0	0	3,005	0	72.90	-
Home Energy Analysis	LED Exterior Fixture Lamp Replacement-2023	E	1	Units	0	0	0	2,105	72.90	-
Home Energy Analysis	LED Globe <= 8W-2020	E	4	Units	6,855	0	0	0	24.30	-
Home Energy Analysis	LED Globe <= 8W-2021	E	3	Units	0	4,800	0	0	24.30	-
Home Energy Analysis	LED Globe <= 8W-2022	E	2	Units	0	0	3,360	0	24.30	-
Home Energy Analysis	LED Globe <= 8W-2023	E	1	Units	0	0	0	2,350	24.30	-
Home Energy Analysis	LED Night Light	E	12	Units	21,520	21,520	21,520	21,520	18.33	-
Home Energy Analysis	Low Flow Showerheads (1.5 gpm) - Electric water heater	E	10	Units	240	240	240	240	273.85	-
Home Energy Analysis	Low Flow Showerheads (1.5 gpm) - Gas water heater	G	10	Units	5,695	5,695	5,695	5,695	-	1.17
Home Energy Analysis	Low Flow Showerheads (1.5 gpm) + Shower Start - Gas Water Heater	G	10	Units	20	20	20	20	-	1.29
Home Energy Analysis	Low Flow Showerheads (1.5 gpm) + Shower Start - Electric Water Heater	E	10	Units	1	1	1	1	300.60	-
Home Energy Analysis	Outdoor LED PAR Flood-2020	E	4	Units	3,715	0	0	0	248.76	-
Home Energy Analysis	Outdoor LED PAR Flood-2021	E	3	Units	0	2,600	0	0	248.76	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Energy Analysis	Outdoor LED PAR Flood-2022	E	2	Units	0	0	1,820	0	248.76	-
Home Energy Analysis	Outdoor LED PAR Flood-2023	E	1	Units	0	0	0	1,275	248.76	-
Home Energy Analysis	Pipe Wrap 0.50 Inch - Gas Water Heater	G	15	Linear Feet	8,855	8,855	8,855	8,855	-	0.23
Home Energy Analysis	Pipe Wrap 0.50 Inch - electric water heater	E	15	Linear Feet	130	130	130	130	45.90	-
Home Energy Analysis	Pipe Wrap 0.75 Inch - electric water heater	E	15	Linear Feet	1,745	1,745	1,745	1,745	45.90	-
Home Energy Analysis	Pipe Wrap 0.75 Inch - Gas Water Heater	G	15	Linear Feet	56,150	56,150	56,150	56,150	-	0.23
Home Energy Analysis	Setback thermostat - full setback - Combination Customers	E	9	Units	705	705	705	705	243.03	-
Home Energy Analysis	Setback thermostat - full setback - Combination Customers	G	9	Units	705	705	705	705	-	16.44
Home Energy Analysis	Setback thermostat - full setback - Gas Customer Only	G	9	Units	1,440	1,440	1,440	1,440	-	13.18
Home Energy Analysis	Shower Flow Optimizer (1.5gpm) - Electric Water Heater	E	10	Units	1	1	1	1	273.85	-
Home Energy Analysis	Shower Flow Optimizer (1.5gpm) - Gas Water Heater	G	10	Units	90	90	90	90	-	1.17
Home Energy Analysis	Shower Start (1.5 gpm) - Electric Water Heater	E	10	Units	1	1	1	1	354.60	-
Home Energy Analysis	Shower Start (1.5 gpm) - Gas Water Heater	G	10	Units	75	75	75	75	-	1.20
Home Energy Analysis	Std Low Flow Bath Aerator (1.0 gpm) - Electric Water Heater	E	10	Units	435	435	435	435	57.04	-
Home Energy Analysis	Std Low Flow Bath Aerator (1.0 gpm) - Gas Water Heater	G	10	Units	13,185	13,185	13,185	13,185	-	0.25

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Energy Analysis	Wifi Thermostat - Full Setback - Combination Customer	E	9	Units	560	560	560	560	244.83	-
Home Energy Analysis	Wifi Thermostat - Full Setback - Combination Customer	G	9	Units	560	560	560	560	-	16.48
Home Energy Analysis	Wifi Thermostat - Full Setback - Gas Customer Only	G	9	Units	775	775	775	775	-	16.50
Home Energy Check	Audit/Education (Electric Measures - OTG)	E	1	Units	2,500	7,000	7,500	7,500	-	-
Home Energy Check	Dual Spray Kitchen Low Flow Aerator (1.5gpm) - Electric Water Heater	E	10	Units	95	265	280	280	234.28	-
Home Energy Check	Handheld Showerheads (1.5 gpm) - Electric water heater	E	10	Units	115	330	350	350	300.60	-
Home Energy Check	LED A-line <=6W Replacing 40W Equivalent-2020	E	3	Units	240	0	0	0	17.64	-
Home Energy Check	LED A-line <=6W Replacing 40W Equivalent-2021	E	3	Units	0	470	0	0	17.64	-
Home Energy Check	LED A-line <=6W Replacing 40W Equivalent-2022	E	3	Units	0	0	350	0	17.64	-
Home Energy Check	LED Bulb Replacing A-Line 60W-2020	E	3	Units	24,880	0	0	0	25.65	-
Home Energy Check	LED Bulb Replacing A-Line 60W-2021	E	2	Units	0	48,765	0	0	25.65	-
Home Energy Check	LED Bulb Replacing A-Line 60W-2022	E	1	Units	0	0	36,575	0	25.65	-
Home Energy Check	LED Candelabra Medium Base <= 5W-2020	E	4	Units	1,160	0	0	0	21.33	-
Home Energy Check	LED Candelabra Medium Base <= 5W-2021	E	3	Units	0	2,275	0	0	21.33	-
Home Energy Check	LED Candelabra Medium Base <= 5W-2022	E	2	Units	0	0	1,705	0	21.33	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Energy Check	LED Candelabra Medium Base <= 5W-2023	E	1	Units	0	0	0	1,195	21.33	-
Home Energy Check	LED Candelabra Small Base <= 5W-2020	E	4	Units	3,775	0	0	0	21.33	-
Home Energy Check	LED Candelabra Small Base <= 5W-2021	E	3	Units	0	7,400	0	0	21.33	-
Home Energy Check	LED Candelabra Small Base <= 5W-2022	E	2	Units	0	0	5,550	0	21.33	-
Home Energy Check	LED Candelabra Small Base <= 5W-2023	E	1	Units	0	0	0	3,885	21.33	-
Home Energy Check	LED Exterior Fixture Lamp Replacement-2020	E	4	Units	3,130	0	0	0	72.90	-
Home Energy Check	LED Exterior Fixture Lamp Replacement-2021	E	3	Units	0	6,135	0	0	72.90	-
Home Energy Check	LED Exterior Fixture Lamp Replacement-2022	E	2	Units	0	0	4,600	0	72.90	-
Home Energy Check	LED Exterior Fixture Lamp Replacement-2023	E	1	Units	0	0	0	3,220	72.90	-
Home Energy Check	LED Globe <= 8W-2020	E	4	Units	3,500	0	0	0	24.30	-
Home Energy Check	LED Globe <= 8W-2021	E	3	Units	0	6,860	0	0	24.30	-
Home Energy Check	LED Globe <= 8W-2022	E	2	Units	0	0	5,145	0	24.30	-
Home Energy Check	LED Globe <= 8W-2023	E	1	Units	0	0	0	3,600	24.30	-
Home Energy Check	LED Night Light	E	12	Units	10,990	30,770	32,970	32,970	18.33	-
Home Energy Check	Low Flow Showerheads (1.5 gpm) - Electric water heater	E	10	Units	120	340	365	365	273.85	-
Home Energy Check	Low Flow Showerheads (1.5 gpm) + Shower Start - Electric Water Heater	E	10	Units	0	1	1	1	300.60	-
Home Energy Check	Outdoor LED PAR/Flood-2020	E	4	Units	1,900	0	0	0	248.76	-
Home Energy Check	Outdoor LED PAR/Flood-2021	E	3	Units	0	3,725	0	0	248.76	-
Home Energy Check	Outdoor LED PAR/Flood-2022	E	2	Units	0	0	2,795	0	248.76	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Energy Check	Outdoor LED PAR/Flood-2023	E	1	Units	0	0	0	1,955	248.76	-
Home Energy Check	Pipe Wrap 1/2" - electric water heater	E	15	Linear Feet	65	190	200	200	45.90	-
Home Energy Check	Pipe Wrap 3/4" - electric water heater	E	15	Linear Feet	890	2,495	2,675	2,675	45.90	-
Home Energy Check	Setback Thermostat - Full setback - Electric Customers	E	9	Units	265	740	795	795	243.03	-
Home Energy Check	Shower Flow Optimizer (1.5gpm) - Electric Water Heater	E	10	Units	1	1	1	1	273.85	-
Home Energy Check	Shower Start (1.5 gpm) - Electric Water Heater	E	10	Units	1	1	1	1	354.60	-
Home Energy Check	Std Low Flow Bath Aerator (1.0 gpm) - Electric Water Heater	E	10	Units	220	620	665	665	57.04	-
Home Energy Check	Wifi Thermostat - Full Setback - Electric Customer	E	9	Units	210	590	630	630	244.83	-
Home Energy Report	Track #11a - Electric Test_print report (2017 Start) - 2020	E	1	Units	36,371	0	0	0	108.93	-
Home Energy Report	Track #13 - Gas refill (2018 Start) - 2020	G	1	Units	21,244	0	0	0	-	0.71
Home Energy Report	Track #7b - New Gas (2016 Start) - 2020	G	1	Units	18,557	0	0	0	-	2.11
Home Energy Report	Track #7b - New Gas (2016 Start) - 2021	G	1	Units	0	17,444	0	0	-	1.41
Home Energy Report	Track #7b - New Gas (2016 Start) - 2022	G	1	Units	0	0	16,397	0	-	1.59
Home Energy Report	Track #8a - Expansion_Kent Genesee (average Electric usage) Combination (2016 Start) - 2020	E	1	Units	11,487	0	0	0	84.21	-
Home Energy Report	Track #9 - Refill Gas (2016 Start) - 2020	G	1	Units	10,401	0	0	0	-	1.71

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Energy Report	Track #9 - Refill Gas (2016 Start) - 2021	G	1	Units	0	9,777	0	0	-	1.15
Home Energy Report	Track #9 - Refill Gas (2016 Start) - 2022	G	1	Units	0	0	9,190	0	-	1.29
Home Energy Report	Track 14: New 2019 Electric Customers - 2020	E	1	Units	25,315	0	0	0	194.89	-
Home Energy Report	Track QQ: New 2022 Gas Customers - 2022	G	1	Units	0	0	75,000	0	-	-
Home Energy Report	Track QQ: New 2022 Gas Customers - 2023	G	1	Units	0	0	0	70,500	-	-
Home Energy Report	Track SS: New 2023 Gas Customers - 2023	G	1	Units	0	0	0	50,000	-	-
Home Energy Report	Track XX: New 2020 Elec Customers - 2020	E	1	Units	147,000	0	0	0	101.52	-
Home Energy Report	Track XX: New 2020 Elec Customers - 2021	E	1	Units	0	138,180	0	0	142.88	-
Home Energy Report	Track XX: New 2020 Elec Customers - 2022	E	1	Units	0	0	129,889	0	166.38	-
Home Energy Report	Track XX: New 2020 Elec Customers - 2023	E	1	Units	0	0	0	122,096	117.50	-
Home Energy Report	Track YY: New 2020 Gas Customers - 2020	G	1	Units	246,000	0	0	0	-	0.54
Home Energy Report	Track YY: New 2020 Gas Customers - 2021	G	1	Units	0	231,240	0	0	-	-
Home Energy Report	Track YY: New 2020 Gas Customers - 2022	G	1	Units	0	0	217,366	0	-	-
Home Energy Report	Track YY: New 2020 Gas Customers - 2023	G	1	Units	0	0	0	204,324	-	-
Home Performance with ENERGY STAR	Basement Wall Insulation - Combination Customer	E	25	Units	8	8	8	8	17.15	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Performance with ENERGY STAR	Basement Wall Insulation - Combination Customer	G	25	Units	8	8	8	8	-	4.32
Home Performance with ENERGY STAR	Basement Wall Insulation - Gas Customer	G	25	Units	4	4	4	4	-	4.65
Home Performance with ENERGY STAR	Crawlspace Insulation - Combination Customer	E	25	Units	58	60	64	68	(2.45)	-
Home Performance with ENERGY STAR	Crawlspace Insulation - Combination Customer	G	25	Units	58	60	64	68	-	2.40
Home Performance with ENERGY STAR	Crawlspace Insulation - Electric Customer	E	25	Units	8	8	8	8	5.54	-
Home Performance with ENERGY STAR	Crawlspace Insulation - Gas Customer	G	25	Units	62	66	70	74	-	1.45
Home Performance with ENERGY STAR	Duct Insulation and or Replacement - Combination Customer	E	20	Units	6	6	6	6	19.93	-
Home Performance with ENERGY STAR	Duct Insulation and or Replacement - Combination Customer	G	20	Units	6	6	6	6	-	4.47
Home Performance with ENERGY STAR	Duct Insulation and or Replacement - Electric Customer	E	20	Units	0	0	2	2	20.11	-
Home Performance with ENERGY STAR	Duct Insulation and or Replacement - Gas Customer	G	20	Units	40	40	40	40	-	3.66
Home Performance with ENERGY STAR	Duct Sealing 15% Reduction - Combination Customer	E	18	Units	94	100	104	104	29.89	-
Home Performance with ENERGY STAR	Duct Sealing 15% Reduction - Combination Customer	G	18	Units	94	100	104	104	-	1.29
Home Performance with ENERGY STAR	Duct Sealing 15% Reduction - Gas Customer	G	18	Units	16	24	30	30	-	2.81
Home Performance with ENERGY STAR	Duct Sealing 30% Reduction - Combination Customer	E	18	Units	54	58	60	60	75.95	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Performance with ENERGY STAR	Duct Sealing 30% Reduction - Combination Customer	G	18	Units	54	58	60	60	-	3.01
Home Performance with ENERGY STAR	Duct Sealing 30% Reduction - Electric Customer	E	18	Units	1	1	1	1	59.36	-
Home Performance with ENERGY STAR	Duct Sealing 30% Reduction - Gas Customer	G	18	Units	6	8	10	10	-	3.47
Home Performance with ENERGY STAR	Floor Insulation - Gas Customer	G	25	Units	18	18	18	18	-	6.03
Home Performance with ENERGY STAR	Floor Insulation- Combination Customer	E	25	Units	4	4	4	4	(8.31)	-
Home Performance with ENERGY STAR	Floor Insulation- Combination Customer	G	25	Units	4	4	4	4	-	3.03
Home Performance with ENERGY STAR	Gas Furnace 95% AFUE	G	15	Units	6	10	12	12	-	20.35
Home Performance with ENERGY STAR	Gas Furnace 96% AFUE	G	15	Units	62	94	112	112	-	18.64
Home Performance with ENERGY STAR	Gas Furnace 97% AFUE	G	15	Units	2	4	4	4	-	21.99
Home Performance with ENERGY STAR	Gas Furnace 98% AFUE	G	15	Units	62	94	110	110	-	24.76
Home Performance with ENERGY STAR	Infiltration Reduction of 20% - Combination Customer	E	13	Units	52	52	52	52	91.22	-
Home Performance with ENERGY STAR	Infiltration Reduction of 20% - Combination Customer	G	13	Units	52	52	52	52	-	6.55
Home Performance with ENERGY STAR	Infiltration Reduction of 20% - Electric Customer	E	13	Units	10	12	14	14	99.33	-
Home Performance with ENERGY STAR	Infiltration Reduction of 20% - Gas Customer	G	13	Units	166	166	166	166	-	6.65
Home Performance with ENERGY STAR	Infiltration Reduction of 30% - Combination Customer	E	13	Units	92	92	92	92	140.24	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Performance with ENERGY STAR	Infiltration Reduction of 30% - Combination Customer	G	13	Units	92	92	92	92	-	10.21
Home Performance with ENERGY STAR	Infiltration Reduction of 30% - Electric Customer	E	13	Units	1	1	1	1	172.73	-
Home Performance with ENERGY STAR	Infiltration Reduction of 30% - Gas Customer	G	13	Units	192	192	192	192	-	10.43
Home Performance with ENERGY STAR	Infiltration Reduction of 50% - Combination Customer	E	13	Units	80	80	80	80	266.48	-
Home Performance with ENERGY STAR	Infiltration Reduction of 50% - Combination Customer	G	13	Units	80	80	80	80	-	19.30
Home Performance with ENERGY STAR	Infiltration Reduction of 50% - Electric Customer	E	13	Units	1	1	1	1	297.29	-
Home Performance with ENERGY STAR	Infiltration Reduction of 50% - Gas Customer	G	13	Units	68	68	68	68	-	15.56
Home Performance with ENERGY STAR	Knee Wall Insulation - Combination Customers	E	20	Units	26	30	32	32	65.30	-
Home Performance with ENERGY STAR	Knee Wall Insulation - Combination Customers	G	20	Units	26	30	32	32	-	4.16
Home Performance with ENERGY STAR	Knee Wall Insulation - Electric Customers	E	20	Units	2	2	2	2	120.46	-
Home Performance with ENERGY STAR	Knee Wall Insulation - Gas Customers	G	20	Units	152	158	162	162	-	5.14
Home Performance with ENERGY STAR	MIM - Knee Wall Insulation - Combination Customers	E	20	Units	2	2	2	2	143.44	-
Home Performance with ENERGY STAR	MIM - Knee Wall Insulation - Combination Customers	G	20	Units	2	2	2	2	-	8.86
Home Performance with ENERGY STAR	MIM - Knee Wall Insulation - Gas Customers	G	20	Units	2	2	2	2	-	6.18
Home Performance with ENERGY STAR	MIM - Roof (attic) Insulation - Combination Customer	E	20	Units	16	16	16	16	68.70	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Performance with ENERGY STAR	MIM - Roof (attic) Insulation - Combination Customer	G	20	Units	16	16	16	16	-	4.66
Home Performance with ENERGY STAR	MIM - Roof (attic) Insulation - Electric Customer	E	20	Units	4	4	4	4	75.80	-
Home Performance with ENERGY STAR	MIM - Roof (attic) Insulation - Gas Customer	G	20	Units	94	98	102	108	-	4.87
Home Performance with ENERGY STAR	MIM - Wall Insulation - Combination Customer	E	25	Units	6	4	4	4	94.83	-
Home Performance with ENERGY STAR	MIM - Wall Insulation - Combination Customer	G	25	Units	6	4	4	4	-	6.18
Home Performance with ENERGY STAR	MIM - Wall Insulation - Electric Customer	E	25	Units	2	2	2	2	73.56	-
Home Performance with ENERGY STAR	MIM - Wall Insulation - Gas Customer	G	25	Units	2	2	2	2	-	3.42
Home Performance with ENERGY STAR	MIM - Window Replacement - Combination Customers	E	25	Square Feet	638	630	626	626	1.24	-
Home Performance with ENERGY STAR	MIM - Window Replacement - Combination Customers	G	25	Square Feet	638	630	626	626	-	0.05
Home Performance with ENERGY STAR	MIM - Window Replacement - Electric Customers	E	25	Square Feet	420	468	548	548	1.27	-
Home Performance with ENERGY STAR	MIM - Window Replacement - Gas Customers	G	25	Square Feet	2,894	3,086	3,188	3,188	-	0.05
Home Performance with ENERGY STAR	Operations and Maintenance HVAC Tune Up - Electric Customer	E	5	Units	1	1	1	1	64.38	-
Home Performance with ENERGY STAR	Operations and Maintenance HVAC Tune Up - Gas Customer	G	2	Units	62	66	70	74	-	4.86
Home Performance with ENERGY STAR	R-30 Roof (attic) Insulation - Combo	E	20	Units	42	44	46	48	41.15	-
Home Performance with ENERGY STAR	R-30 Roof (attic) Insulation - Combo	G	20	Units	42	44	46	48	-	2.86

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Performance with ENERGY STAR	R-30 Roof (attic) Insulation - Electric	E	20	Units	6	6	6	6	79.46	-
Home Performance with ENERGY STAR	R-30 Roof (attic) Insulation - Gas	G	20	Units	26	28	30	32	-	1.86
Home Performance with ENERGY STAR	Rim Joist Insulation - Combination Customers	E	25	Units	178	198	208	208	59.74	-
Home Performance with ENERGY STAR	Rim Joist Insulation - Combination Customers	G	25	Units	178	198	208	208	-	4.28
Home Performance with ENERGY STAR	Rim Joist Insulation - Electric Customers	E	25	Units	34	38	46	46	67.04	-
Home Performance with ENERGY STAR	Rim Joist Insulation - Gas Customers	G	25	Units	334	350	358	358	-	4.53
Home Performance with ENERGY STAR	Roof (attic) Insulation - Combination Customer	E	20	Units	42	44	46	48	143.85	-
Home Performance with ENERGY STAR	Roof (attic) Insulation - Combination Customer	G	20	Units	42	44	46	48	-	9.93
Home Performance with ENERGY STAR	Roof (attic) Insulation - Electric Customer	E	20	Units	6	6	6	6	100.01	-
Home Performance with ENERGY STAR	Roof (attic) Insulation - Gas Customer	G	20	Units	228	240	252	264	-	4.16
Home Performance with ENERGY STAR	Split System Central AC GT SEER 15	E	15	Units	48	50	52	0	245.98	-
Home Performance with ENERGY STAR	Split System Central AC GT SEER 15 - 2023 Standard	E	15	Units	0	0	0	54	122.99	-
Home Performance with ENERGY STAR	Split System Central AC GT SEER 16	E	15	Units	34	36	38	0	334.99	-
Home Performance with ENERGY STAR	Split System Central AC GT SEER 16 - 2023 Standard	E	15	Units	0	0	0	40	223.32	-
Home Performance with ENERGY STAR	Split System Central AC GT SEER 17	E	15	Units	24	26	28	0	456.23	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Performance with ENERGY STAR	Split System Central AC GT SEER 17 - 2023 Standard	E	15	Units	0	0	0	30	342.17	-
Home Performance with ENERGY STAR	Split System Central AC GT SEER 18	E	15	Units	4	4	4	0	367.96	-
Home Performance with ENERGY STAR	Split System Central AC GT SEER 18 - 2023 Standard	E	15	Units	0	0	0	4	294.37	-
Home Performance with ENERGY STAR	Split System Central AC GT SEER 19	E	15	Units	34	36	38	0	717.67	-
Home Performance with ENERGY STAR	Split System Central AC GT SEER 19 - 2023 Standard	E	15	Units	0	0	0	40	598.06	-
Home Performance with ENERGY STAR	Split System Central AC GT SEER 20	E	15	Units	38	40	42	0	464.79	-
Home Performance with ENERGY STAR	Split System Central AC GT SEER 20 - 2023 Standard	E	15	Units	0	0	0	44	398.39	-
Home Performance with ENERGY STAR	Split System Central AC GT SEER 21	E	15	Units	2	2	2	0	494.52	-
Home Performance with ENERGY STAR	Split System Central AC GT SEER 21 - 2023 Standard	E	15	Units	0	0	0	2	432.71	-
Home Performance with ENERGY STAR	Super High Efficiency Gas Water Heater - Gas or Combination Customers	G	13	Units	10	10	10	10	-	1.65
Home Performance with ENERGY STAR	Tankless Water Heater - Gas or Combination Customers	G	20	Units	9	9	9	9	-	5.93
Home Performance with ENERGY STAR	Tier 3 Thermostat - Combination	E	9	Units	154	162	170	178	126.87	-
Home Performance with ENERGY STAR	Tier 3 Thermostat - Combination	G	9	Units	154	162	170	178	-	6.68
Home Performance with ENERGY STAR	Tier 3 Thermostat - Electric Customer	E	9	Units	2	2	2	2	131.15	-
Home Performance with ENERGY STAR	Tier 3 Thermostat - Gas	G	9	Units	42	44	46	48	-	7.83

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Home Performance with ENERGY STAR	Wall Insulation - Combination Customer	E	25	Units	110	126	134	134	86.46	-
Home Performance with ENERGY STAR	Wall Insulation - Combination Customer	G	25	Units	110	126	134	134	-	5.93
Home Performance with ENERGY STAR	Wall Insulation - Electric Customer	E	25	Units	14	16	20	20	125.27	-
Home Performance with ENERGY STAR	Wall Insulation - Gas Customer	G	25	Units	128	138	142	142	-	4.48
Home Performance with ENERGY STAR	Wi-Fi Enabled Thermostat - Combination	E	9	Units	60	64	68	72	132.56	-
Home Performance with ENERGY STAR	Wi-Fi Enabled Thermostat - Combination	G	9	Units	60	64	68	72	-	6.97
Home Performance with ENERGY STAR	Wi-Fi Enabled Thermostat - Gas	G	9	Units	14	14	14	14	-	6.46
Home Performance with ENERGY STAR	Wi-Fi Enabled Thermostat (Full Setback) - Combination	E	9	Units	2	2	2	2	146.46	-
Home Performance with ENERGY STAR	Wi-Fi Enabled Thermostat (Full Setback) - Combination	G	9	Units	2	2	2	2	-	9.62
Home Performance with ENERGY STAR	Wi-Fi Enabled Thermostat (Full Setback) - Gas	G	9	Units	10	10	10	10	-	25.74
Home Performance with ENERGY STAR	Window Replacement - Combination Customers	E	25	Square Feet	1,678	1,822	1,898	1,898	1.32	-
Home Performance with ENERGY STAR	Window Replacement - Combination Customers	G	25	Square Feet	1,678	1,822	1,898	1,898	-	0.05
Home Performance with ENERGY STAR	Window Replacement - Electric Customers	E	25	Square Feet	4,240	6,176	7,218	7,218	1.27	-
Home Performance with ENERGY STAR	Window Replacement - Gas Customers	G	25	Square Feet	6,726	8,122	8,854	8,854	-	0.04
HVAC and Water Heating	Bonus Incentive - Electric	E	1	Units	1	1	1	1	-	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
HVAC and Water Heating	Bonus Incentive - Gas	G	1	Units	1	1	1	1		
HVAC and Water Heating	ECM Boiler Circulating Pump <500W - Electric	E	15	Units	300	400	500	500	410.40	-
HVAC and Water Heating	Heat Pump Water Heater	E	10	Units	40	50	60	70	1,242.45	-
HVAC and Water Heating	MIM Super High Efficiency Gas Water Heater EF Greater Than or Equal To 0.67	G	13	Units	85	100	120	120	-	1.65
HVAC and Water Heating	Natural gas boiler GT 92% AFUE	E	20	Units	10	0	0	0	(396.87)	-
HVAC and Water Heating	Natural gas boiler GT 92% AFUE	G	20	Units	14	0	0	0	-	24.18
HVAC and Water Heating	Natural gas boiler GT 92% AFUE	G	20	Units	10	0	0	0	-	24.18
HVAC and Water Heating	Natural gas boiler GT 92% AFUE-2021	E	20	Units	0	10	12	12	(317.50)	-
HVAC and Water Heating	Natural gas boiler GT 92% AFUE-2021	G	20	Units	0	16	16	16	-	19.34
HVAC and Water Heating	Natural gas boiler GT 92% AFUE-2021	G	20	Units	0	10	12	12	-	19.34
HVAC and Water Heating	Natural gas boiler GT 95% AFUE	E	20	Units	435	0	0	0	(515.93)	-
HVAC and Water Heating	Natural gas boiler GT 95% AFUE	G	20	Units	435	0	0	0	-	31.43
HVAC and Water Heating	Natural gas boiler GT 95% AFUE	G	20	Units	340	0	0	0	-	31.43
HVAC and Water Heating	Natural gas boiler GT 95% AFUE-2021	E	20	Units	0	475	690	690	(436.56)	-
HVAC and Water Heating	Natural gas boiler GT 95% AFUE-2021	G	20	Units	0	475	690	690	-	26.60

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
HVAC and Water Heating	Natural gas boiler GT 95% AFUE-2021	G	20	Units	0	370	185	185	-	26.60
HVAC and Water Heating	Natural Gas Furnace 95% AFUE	G	15	Units	3,170	3,755	3,925	3,925	-	16.29
HVAC and Water Heating	Natural Gas Furnace 96% AFUE	G	15	Units	13,465	15,945	16,655	16,655	-	18.66
HVAC and Water Heating	Natural Gas Furnace 97% AFUE	G	15	Units	1,000	1,185	1,235	1,235	-	21.58
HVAC and Water Heating	Natural Gas Furnace 98% OR GT AFUE	G	15	Units	1,360	1,615	1,685	1,685	-	22.66
HVAC and Water Heating	Operations and Maintenance HVAC Boiler Tune Up - Gas	G	2	Units	250	250	250	250	-	5.53
HVAC and Water Heating	Operations and Maintenance HVAC Furnace Tune Up - Gas	G	2	Units	5,500	6,500	6,500	6,500	-	5.10
HVAC and Water Heating	Operations and Maintenance HVAC Tune Up - Electric	E	5	Units	3,000	4,000	4,000	4,000	75.67	-
HVAC and Water Heating	SEER18 Minisplit Heat pump - Electric only	E	15	Units	20	20	30	30	1,533.67	-
HVAC and Water Heating	SEER19 Minisplit Heat pump - Electric only	E	15	Units	45	45	55	55	1,816.18	-
HVAC and Water Heating	SEER20 Minisplit Heat pump - Electric only	E	15	Units	45	45	55	55	2,070.45	-
HVAC and Water Heating	SEER21 Minisplit Heat pump - Electric only	E	15	Units	110	110	135	135	3,564.79	-
HVAC and Water Heating	Setback Thermostat - Combination	E	9	Units	1,500	900	540	325	107.03	-
HVAC and Water Heating	Setback Thermostat - Combination	G	9	Units	1,500	900	540	325	-	5.78
HVAC and Water Heating	Setback Thermostat - Electric	E	9	Units	1,600	960	575	345	118.48	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
HVAC and Water Heating	Setback Thermostat - Gas	G	9	Units	1,500	900	540	325	-	5.78
HVAC and Water Heating	Setback Thermostat (Full Setback) - Combination	E	9	Units	45	25	15	10	174.92	-
HVAC and Water Heating	Setback Thermostat (Full Setback) - Combination	G	9	Units	45	25	15	10	-	11.78
HVAC and Water Heating	Setback Thermostat (Full Setback) - Electric	E	9	Units	50	30	20	10	163.77	-
HVAC and Water Heating	Setback Thermostat (Full Setback) - Gas	G	9	Units	45	25	15	10	-	6.09
HVAC and Water Heating	Split System Central AC GT SEER 14.5	E	15	Units	135	150	160	0	133.32	-
HVAC and Water Heating	Split System Central AC GT SEER 14.5 - 2023 Standard	E	15	Units	0	0	0	0	44.44	-
HVAC and Water Heating	Split System Central AC GT SEER 15	E	15	Units	1,545	1,725	1,840	0	242.07	-
HVAC and Water Heating	Split System Central AC GT SEER 15 - 2023 Standard	E	15	Units	0	0	0	2,000	121.03	-
HVAC and Water Heating	Split System Central AC GT SEER 16	E	15	Units	1,750	1,955	2,085	0	329.20	-
HVAC and Water Heating	Split System Central AC GT SEER 16 - 2023 Standard	E	15	Units	0	0	0	2,085	219.47	-
HVAC and Water Heating	Split System Central AC GT SEER 17	E	15	Units	330	365	390	0	412.40	-
HVAC and Water Heating	Split System Central AC GT SEER 17 - 2023 Standard	E	15	Units	0	0	0	390	309.30	-
HVAC and Water Heating	Split System Central AC GT SEER 18	E	15	Units	80	85	90	0	351.65	-
HVAC and Water Heating	Split System Central AC GT SEER 18 - 2023 Standard	E	15	Units	0	0	0	90	281.32	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
HVAC and Water Heating	Split System Central AC GT SEER 19	E	15	Units	65	75	80	0	754.93	-
HVAC and Water Heating	Split System Central AC GT SEER 19 - 2023 Standard	E	15	Units	0	0	0	80	629.11	-
HVAC and Water Heating	Split System Central AC GT SEER 20	E	15	Units	100	115	120	0	542.02	-
HVAC and Water Heating	Split System Central AC GT SEER 20 - 2023 Standard	E	15	Units	0	0	0	120	464.59	-
HVAC and Water Heating	Split System Central AC GT SEER 21	E	15	Units	28	30	32	0	329.96	-
HVAC and Water Heating	Split System Central AC GT SEER 21 - 2023 Standard	E	15	Units	0	0	0	32	288.71	-
HVAC and Water Heating	Super High Efficiency Gas Water Heater EF GT or EQ 0.67	G	13	Units	525	620	745	745	-	1.65
HVAC and Water Heating	Tankless gas water htr. EF GT 0.82	G	20	Units	450	530	635	635	-	5.93
HVAC and Water Heating	Tier 1 ground source heat pump GT 17 EER	E	15	Units	5	7	8	10	1,723.96	-
HVAC and Water Heating	Tier 2 air source heat pump GT 15 SEER	E	15	Units	50	62	66	0	632.74	-
HVAC and Water Heating	Tier 2 air source heat pump GT 15 SEER - 2023 Standard	E	15	Units	0	0	0	0	-	-
HVAC and Water Heating	Tier 2 ground source heat pump GT 19 EER	E	15	Units	45	53	57	60	2,180.76	-
HVAC and Water Heating	Tier 3 air source heat pump GT 16 SEER	E	15	Units	26	34	34	0	907.50	-
HVAC and Water Heating	Tier 3 air source heat pump GT 16 SEER - 2023 Standard	E	15	Units	0	0	0	100	281.74	-
HVAC and Water Heating	Wi-Fi Enabled Thermostat - Combination	E	9	Units	1,225	1,585	1,765	1,875	131.72	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
HVAC and Water Heating	Wi-Fi Enabled Thermostat - Combination	G	9	Units	1,225	1,585	1,765	1,875	-	7.05
HVAC and Water Heating	Wi-Fi Enabled Thermostat - Electric	E	9	Units	940	1,315	1,510	1,625	137.48	-
HVAC and Water Heating	Wi-Fi Enabled Thermostat - Gas	G	9	Units	5,730	6,030	6,415	6,520	-	11.45
HVAC and Water Heating	Wi-Fi Enabled Thermostat (Full Setback) - Combination	E	9	Units	80	80	80	80	215.61	-
HVAC and Water Heating	Wi-Fi Enabled Thermostat (Full Setback) - Combination	G	9	Units	80	80	80	80	-	14.24
HVAC and Water Heating	Wi-Fi Enabled Thermostat (Full Setback) - Electric Customer	E	9	Units	65	65	65	65	203.27	-
HVAC and Water Heating	Wi-Fi Enabled Thermostat (Full Setback) - Gas	G	9	Units	320	320	320	320	-	12.12
HVAC and Water Heating	Wi-Fi Enabled Thermostat Tier 3 - Combination	E	9	Units	1,535	1,860	1,860	1,860	109.23	-
HVAC and Water Heating	Wi-Fi Enabled Thermostat Tier 3 - Combination	G	9	Units	1,535	1,860	1,860	1,860	-	5.98
HVAC and Water Heating	Wi-Fi Enabled Thermostat Tier 3 - Electric	E	9	Units	1,205	1,460	1,860	1,860	126.65	-
HVAC and Water Heating	Wi-Fi Enabled Thermostat Tier 3 - Gas	G	9	Units	5,035	6,110	6,110	6,110	-	6.51
Income Qualified Energy Assistance	Air Infiltration Reduction 10% - Gas Customer (NON-CAA)	G	13	Square Feet	83,670	92,035	101,240	111,365	-	0.00
Income Qualified Energy Assistance	Air Infiltration Reduction 15% - Gas Customer (NON-CAA)	G	13	Square Feet	37,040	40,745	44,820	49,300	-	0.00
Income Qualified Energy Assistance	Air Infiltration Reduction 20% - Gas Customer (CAA)	G	13	Square Feet	105,210	115,730	127,305	140,035	-	0.00
Income Qualified Energy Assistance	Air Infiltration Reduction 20% - Gas Customer (NON-CAA)	G	13	Square Feet	19,360	21,295	23,425	25,770	-	0.00

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Assistance	Air Infiltration Reduction 30% - Gas Customer (CAA)	G	13	Square Feet	95,485	105,035	115,540	127,095	-	0.01
Income Qualified Energy Assistance	Air Infiltration Reduction 30% - Gas Customer (NON-CAA)	G	13	Square Feet	4,490	4,940	5,435	5,980	-	0.01
Income Qualified Energy Assistance	Air Infiltration Reduction 50% - Gas Customer (CAA)	G	13	Square Feet	24,660	27,125	29,840	32,825	-	0.01
Income Qualified Energy Assistance	Air Infiltration Reduction GT or EQ 10% and LT 15% (Manufactured _ NON-CAA)	G	13	Square Feet	141,880	156,070	171,675	188,845	-	0.00
Income Qualified Energy Assistance	Air Infiltration Reduction GT or EQ 10% and LT 15% (MHI _ NON-CAA)	E	13	Square Feet	1,186,145	1,304,760	1,435,235	1,578,760	0.02	-
Income Qualified Energy Assistance	Air Infiltration Reduction GT or EQ 10% and LT 15% (MHI _ NON-CAA)	G	13	Square Feet	1,186,145	1,304,760	1,435,235	1,578,760	-	0.00
Income Qualified Energy Assistance	Air Infiltration Reduction GT or EQ 15% (Manufactured _ NON-CAA)	G	13	Square Feet	54,105	59,515	65,465	72,010	-	0.00
Income Qualified Energy Assistance	Air Infiltration Reduction GT or EQ 15% (MHI _ NON-CAA)	E	13	Square Feet	339,560	373,515	410,865	451,950	0.03	-
Income Qualified Energy Assistance	Air Infiltration Reduction GT or EQ 15% (MHI _ NON-CAA)	G	13	Square Feet	339,560	373,515	410,865	451,950	-	0.00
Income Qualified Energy Assistance	Attic Hatch Insulation (R-38 scuttle hole) (NON-CAA)	G	20	Units	30	35	40	45	-	0.80
Income Qualified Energy Assistance	Audit Education (Combo or Gas and Electric Measures - OTG)	E	1	Units	2,000	2,200	2,420	2,660	-	-
Income Qualified Energy Assistance	Audit Education (Combo or Gas and Electric Measures - OTG)	G	1	Units	2,000	2,200	2,420	2,660		
Income Qualified Energy Assistance	Audit Education (Gas Measures - OTG)	G	1	Units	2,500	2,750	3,025	3,330		

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Assistance	Band Joist - Insulate (MI Neighborhood Weatherization)	G	25	Square Feet	125	140	155	170	-	0.00
Income Qualified Energy Assistance	Band Rim Joist Insulation_Partial _GT or EQ 35% and LT 50%	G	25	Square Feet	18,555	20,410	22,450	24,695	-	0.00
Income Qualified Energy Assistance	Band Rim Joist Insulation_Partial_GT or EQ 50% and LT 65%	G	25	Square Feet	16,840	18,525	20,380	22,420	-	0.00
Income Qualified Energy Assistance	Boiler Replacement 95% (MI Neighborhood Weatherization)	E	15	Units	20	0	0	0	(573.26)	-
Income Qualified Energy Assistance	Boiler Replacement 95% (MI Neighborhood Weatherization)	G	15	Units	20	0	0	0	-	34.80
Income Qualified Energy Assistance	Boiler Replacement 95% (MI Neighborhood Weatherization)	G	15	Units	1	0	0	0	-	34.80
Income Qualified Energy Assistance	Boiler Replacement 95% (MI Neighborhood Weatherization)-2021	E	15	Units	0	20	20	20	(485.07)	-
Income Qualified Energy Assistance	Boiler Replacement 95% (MI Neighborhood Weatherization)-2021	G	15	Units	0	20	20	20	-	29.55
Income Qualified Energy Assistance	Boiler Replacement 95% (MI Neighborhood Weatherization)-2021	G	15	Units	0	1	1	1	-	29.55
Income Qualified Energy Assistance	Ceiling Insulation - Minimum of 10% Reduction (CAA)	G	13	Square Feet	173,345	190,680	209,750	230,725	-	0.00
Income Qualified Energy Assistance	Crawlspace Wall Insulation (CAA)	G	25	Square Feet	7,280	8,010	8,810	9,690	-	0.01
Income Qualified Energy Assistance	Door weatherstripping (Single Family) (NON-CAA)	G	5	Units	70	75	85	95	-	0.23

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Assistance	Duct sealing GT or EQ 15% and LT 20% leakage base (Manufactured _ NON-CAA)	G	18	Square Feet	1,690	1,860	2,045	2,250	-	0.00
Income Qualified Energy Assistance	Duct sealing GT or EQ 15% and LT 20% leakage base (MHI _ NON-CAA)	E	18	Square Feet	80,675	88,745	97,620	107,380	0.06	-
Income Qualified Energy Assistance	Duct sealing GT or EQ 15% and LT 20% leakage base (MHI _ NON-CAA)	G	18	Square Feet	80,675	88,745	97,620	107,380	-	0.00
Income Qualified Energy Assistance	Duct sealing GT or EQ 20% and LT 25%leakage base (Manufactured _ NON-CAA)	G	18	Square Feet	106,675	117,345	129,080	141,990	-	0.01
Income Qualified Energy Assistance	Duct sealing GT or EQ 20% and LT 25%leakage base (MHI _ NON-CAA)	E	18	Square Feet	926,885	1,019,575	1,121,535	1,233,690	0.09	-
Income Qualified Energy Assistance	Duct sealing GT or EQ 20% and LT 25%leakage base (MHI _ NON-CAA)	G	18	Square Feet	926,885	1,019,575	1,121,535	1,233,690	-	0.01
Income Qualified Energy Assistance	Duct sealing GT or EQ 25% and LT 30% leakage base (Manufactured _ NON-CAA)	G	18	Square Feet	34,910	38,400	42,240	46,465	-	0.01
Income Qualified Energy Assistance	Duct sealing GT or EQ 25% and LT 30% leakage base (MHI _ NON-CAA)	E	18	Square Feet	236,380	260,020	286,020	314,620	0.12	-
Income Qualified Energy Assistance	Duct sealing GT or EQ 25% and LT 30% leakage base (MHI _ NON-CAA)	G	18	Square Feet	236,380	260,020	286,020	314,620	-	0.01
Income Qualified Energy Assistance	Duct sealing GT or EQ 30% and LT 35% leakage base (Manufactured _ NON-CAA)	G	18	Square Feet	19,440	21,385	23,525	25,880	-	0.01

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Assistance	Duct sealing GT or EQ 30% and LT 35% leakage base (MHI _ NON-CAA)	E	18	Square Feet	100,925	111,020	122,120	134,330	0.19	-
Income Qualified Energy Assistance	Duct sealing GT or EQ 30% and LT 35% leakage base (MHI _ NON-CAA)	G	18	Square Feet	100,925	111,020	122,120	134,330	-	0.01
Income Qualified Energy Assistance	Duct sealing GT or EQ 35% and LT 40% leakage base (Manufactured _ NON-CAA)	G	18	Square Feet	10,215	11,235	12,360	13,595	-	0.01
Income Qualified Energy Assistance	Duct sealing GT or EQ 35% and LT 40% leakage base (MHI _ NON-CAA)	E	18	Square Feet	64,275	70,705	77,775	85,555	0.22	-
Income Qualified Energy Assistance	Duct sealing GT or EQ 35% and LT 40% leakage base (MHI _ NON-CAA)	G	18	Square Feet	64,275	70,705	77,775	85,555	-	0.01
Income Qualified Energy Assistance	Duct sealing GT or EQ 40% and LT 45% leakage base (Manufactured _ NON-CAA)	G	18	Square Feet	9,355	10,290	11,320	12,450	-	0.01
Income Qualified Energy Assistance	Duct sealing GT or EQ 40% and LT 45% leakage base (MHI _ NON-CAA)	E	18	Square Feet	45,595	50,155	55,170	60,685	0.25	-
Income Qualified Energy Assistance	Duct sealing GT or EQ 40% and LT 45% leakage base (MHI _ NON-CAA)	G	18	Square Feet	45,595	50,155	55,170	60,685	-	0.02
Income Qualified Energy Assistance	Duct sealing GT or EQ 45% and LT 50% leakage base (Manufactured _ NON-CAA)	G	18	Square Feet	1,955	2,150	2,365	2,600	-	0.02
Income Qualified Energy Assistance	Duct sealing GT or EQ 45% and LT 50% leakage base (MHI _ NON-CAA)	E	18	Square Feet	21,205	23,325	25,660	28,225	0.28	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Assistance	Duct sealing GT or EQ 45% and LT 50% leakage base (MHI _ NON-CAA)	G	18	Square Feet	21,205	23,325	25,660	28,225	-	0.02
Income Qualified Energy Assistance	Duct sealing GT or EQ 50% leakage base (Manufactured _ NON-CAA)	G	18	Square Feet	13,205	14,525	15,980	17,580	-	0.02
Income Qualified Energy Assistance	Duct sealing GT or EQ 50% leakage base (MHI _ NON-CAA)	E	18	Square Feet	60,465	66,510	73,160	80,475	0.32	-
Income Qualified Energy Assistance	Duct sealing GT or EQ 50% leakage base (MHI _ NON-CAA)	G	18	Square Feet	60,465	66,510	73,160	80,475	-	0.02
Income Qualified Energy Assistance	Energy Star Dehumidifier (NON-CAA)	E	12	Units	50	55	60	65	202.90	-
Income Qualified Energy Assistance	Energy Star Room A C	E	15	Units	50	55	60	65	56.67	-
Income Qualified Energy Assistance	Floor Insulation (CAA)	G	25	Square Feet	59,400	65,340	71,875	79,065	-	0.01
Income Qualified Energy Assistance	High efficiency 95% AFUE furnace (MI Neighborhood Weatherization)	G	15	Units	20	22	24	26	-	16.89
Income Qualified Energy Assistance	High efficiency 96 AFUE furnace without ECM (MI Neighborhood Weatherization)	G		Units						
Income Qualified Energy Assistance	High efficiency 96% AFUE furnace (MI Neighborhood Weatherization)	G	15	Units	520	545	600	660	-	18.34
Income Qualified Energy Assistance	High Efficiency Gas Water Heater 0.67 EF (CAA)	G	13	Units	220	240	260	280	-	1.83
Income Qualified Energy Assistance	High Efficiency Sump pumps (1/3 HP) - Efficiency ≥ 63%	E	15	Units	0	12	12	12	67.00	-
Income Qualified Energy Assistance	High Efficiency Sump pumps (1/4 HP) - Efficiency ≥ 63%	E	15	Units	0	12	12	12	33.50	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Assistance	Kneewall Insulation R0 to R19 (CAA)	G	20	Square Feet	2,715	2,985	3,285	3,615	-	0.03
Income Qualified Energy Assistance	LED A-line LT or EQ 6W Replacing 40W Equivalent-2020	E	3	Units	80	0	0	0	19.60	-
Income Qualified Energy Assistance	LED A-line LT or EQ 6W Replacing 40W Equivalent-2021	E	2	Units	0	70	0	0	19.60	-
Income Qualified Energy Assistance	LED A-line LT or EQ 6W Replacing 40W Equivalent-2022	E	1	Units	0	0	65	0	19.60	-
Income Qualified Energy Assistance	LED Bulb Replacing A-Line 60W (Base Incandescent)-2020	E	3	Units	37,340	0	0	0	28.50	-
Income Qualified Energy Assistance	LED Bulb Replacing A-Line 60W (Base Incandescent)-2021	E	2	Units	0	33,605	0	0	28.50	-
Income Qualified Energy Assistance	LED Bulb Replacing A-Line 60W (Base Incandescent)-2022	E	1	Units	0	0	30,245	0	28.50	-
Income Qualified Energy Assistance	LED Candelabra Medium Base LT or EQ 5W-2020	E	4	Units	405	0	0	0	23.70	-
Income Qualified Energy Assistance	LED Candelabra Medium Base LT or EQ 5W-2021	E	3	Units	0	365	0	0	23.70	-
Income Qualified Energy Assistance	LED Candelabra Medium Base LT or EQ 5W-2022	E	2	Units	0	0	330	0	23.70	-
Income Qualified Energy Assistance	LED Candelabra Medium Base LT or EQ 5W-2023	E	1	Units	0	0	0	295	23.70	-
Income Qualified Energy Assistance	LED Candelabra Small Base LT or EQ 5W-2020	E	4	Units	2,275	0	0	0	23.70	-
Income Qualified Energy Assistance	LED Candelabra Small Base LT or EQ 5W-2021	E	3	Units	0	2,050	0	0	23.70	-
Income Qualified Energy Assistance	LED Candelabra Small Base LT or EQ 5W-2022	E	2	Units	0	0	1,845	0	23.70	-
Income Qualified Energy Assistance	LED Candelabra Small Base LT or EQ 5W-2023	E	1	Units	0	0	0	1,660	23.70	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Assistance	LED Exterior Fixture Lamp Replacement-2020	E	4	Units	4,720	0	0	0	81.00	-
Income Qualified Energy Assistance	LED Exterior Fixture Lamp Replacement-2021	E	3	Units	0	4,250	0	0	81.00	-
Income Qualified Energy Assistance	LED Exterior Fixture Lamp Replacement-2022	E	2	Units	0	0	3,825	0	81.00	-
Income Qualified Energy Assistance	LED Exterior Fixture Lamp Replacement-2023	E	1	Units	0	0	0	3,445	81.00	-
Income Qualified Energy Assistance	LED Globe LT or EQ 8W-2020	E	4	Units	1,750	0	0	0	27.00	-
Income Qualified Energy Assistance	LED Globe LT or EQ 8W-2021	E	3	Units	0	1,575	0	0	27.00	-
Income Qualified Energy Assistance	LED Globe LT or EQ 8W-2022	E	2	Units	0	0	1,420	0	27.00	-
Income Qualified Energy Assistance	LED Globe LT or EQ 8W-2023	E	1	Units	0	0	0	1,280	27.00	-
Income Qualified Energy Assistance	LED Night Light (NON-CAA)	E	12	Units	4,000	4,400	4,840	5,320	22.00	-
Income Qualified Energy Assistance	Low Flow Bath Faucet Aerators - Electric 1.0gpm (NON-CAA)	E	10	Units	915	1,005	1,105	1,215	61.20	-
Income Qualified Energy Assistance	Low Flow Bath Faucet Aerators - Gas 1.0gpm (NON-CAA)	G	10	Units	5,670	6,235	6,860	7,545	-	0.26
Income Qualified Energy Assistance	Low Flow Kitchen Faucet Aerator - Electric 1.5gpm (NON-CAA)	E	10	Units	530	585	645	710	251.10	-
Income Qualified Energy Assistance	Low Flow Kitchen Faucet Aerator - Gas 1.5gpm (NON-CAA)	G	10	Units	3,230	3,555	3,910	4,300	-	1.08
Income Qualified Energy Assistance	Low Flow Showerhead - 1.5 gpm (NON-CAA)	E	10	Units	300	330	365	400	337.34	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Assistance	Low Flow Showerhead - 1.5 gpm (NON-CAA)	G	10	Units	2,108	2,318	2,550	2,806	-	1.45
Income Qualified Energy Assistance	Low Flow Showerhead - 1.5 gpm Handheld (NON-CAA)	E	10	Units	615	675	745	820	334.00	-
Income Qualified Energy Assistance	Low Flow Showerhead - 1.5 gpm Handheld (NON-CAA)	G	10	Units	3,644	4,008	4,408	4,848	-	1.43
Income Qualified Energy Assistance	Low Flow Showerheads (1.5 gpm) + Shower Start - Gas Water Heater (NON-CAA)	G	10	Units	10	10	10	10	-	1.70
Income Qualified Energy Assistance	Low Flow Showerheads + Shower Start - Electric Water Heater (NON-CAA)	E	10	Units	2	2	2	2	394.00	-
Income Qualified Energy Assistance	Mobile Home Belly Insulation (Floor Insulation) (CAA)	G	25	Square Feet	7,700	8,470	9,315	10,245	-	0.00
Income Qualified Energy Assistance	Natural gas boiler GT 95% AFUE (CAA)	G	15	Units	8	0	0	0	-	34.93
Income Qualified Energy Assistance	Natural gas boiler GT 95% AFUE (CAA)-2021	G	15	Units	0	9	10	11	-	29.55
Income Qualified Energy Assistance	Natural Gas Furnace 95% AFUE (CAA)	G	15	Units	70	75	85	95	-	17.55
Income Qualified Energy Assistance	Natural Gas Furnace 96% AFUE (CAA)	G	15	Units	25	30	35	40	-	10.51
Income Qualified Energy Assistance	NEST E Programmable Thermostats Tier 3 - Combination Service (NON-CAA)	E	9	Units	20	20	20	20	161.79	-
Income Qualified Energy Assistance	NEST E Programmable Thermostats Tier 3 - Combination Service (NON-CAA)	G	9	Units	20	20	20	20	-	7.86

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Assistance	NEST E Programmable Thermostats Tier 3 - Gas Only Service (NON-CAA)	G	9	Units	50	55	60	65	-	5.19
Income Qualified Energy Assistance	O and M Tuneup Boiler Only - Single Family (NON-CAA)	G	2	Units	50	50	50	50	-	9.46
Income Qualified Energy Assistance	O and M Tuneup Furnace Only - Direct Install (NON-CAA)	G	2	Units	858	858	858	858	-	4.70
Income Qualified Energy Assistance	Outdoor LED PAR Flood-2020	E	4	Units	1,285	0	0	0	276.40	-
Income Qualified Energy Assistance	Outdoor LED PAR Flood-2021	E	3	Units	0	1,155	0	0	276.40	-
Income Qualified Energy Assistance	Outdoor LED PAR Flood-2022	E	2	Units	0	0	1,040	0	276.40	-
Income Qualified Energy Assistance	Outdoor LED PAR Flood-2023	E	1	Units	0	0	0	935	276.40	-
Income Qualified Energy Assistance	Pipe Wrap - Electric (NON-CAA)	E	15	Linear Feet	3,815	4,195	4,615	5,075	47.94	-
Income Qualified Energy Assistance	Pipe Wrap - Gas (NON-CAA)	G	15	Linear Feet	24,900	27,390	30,130	33,145	-	0.24
Income Qualified Energy Assistance	Refrigerator - 15 cf -- Income Qualified Direct Install - ENERGY STAR	E	8	Units	75	85	95	105	1,175.80	-
Income Qualified Energy Assistance	Refrigerator - 18 cf -- Income Qualified Direct Install - ENERGY STAR	E	8	Units	260	285	315	345	1,175.80	-
Income Qualified Energy Assistance	Refrigerator - 21 cf -- Income Qualified Direct Install - ENERGY STAR	E	8	Units	15	20	25	30	1,175.80	-
Income Qualified Energy Assistance	Setback thermostat - full setback - Combination (MI Neighborhood Weatherization)	E	9	Units	75	85	95	105	207.29	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Assistance	Setback thermostat - full setback - Combination (MI Neighborhood Weatherization)	G	9	Units	75	85	95	105	-	11.85
Income Qualified Energy Assistance	Setback thermostat - full setback - Combination (NON-CAA)	E	9	Units	800	880	970	1,065	195.01	-
Income Qualified Energy Assistance	Setback thermostat - full setback - Combination (NON-CAA)	G	9	Units	800	880	970	1,065	-	11.16
Income Qualified Energy Assistance	Setback thermostat - full setback - Gas Only (MI Neighborhood Weatherization)	G	9	Units	60	65	70	75	-	18.67
Income Qualified Energy Assistance	Setback thermostat - full setback - Gas or Combination (NON-CAA)	G	9	Units	985	1,085	1,195	1,315	-	12.77
Income Qualified Energy Assistance	Setback Thermostat (5 2) (CAA)	G	9	Units	15	15	15	15	-	12.02
Income Qualified Energy Assistance	Shower Flow Optimizer (1.5gpm) - Gas Water Heater (NON-CAA)	G	10	Units	20	20	20	20	-	1.45
Income Qualified Energy Assistance	Shower Start Added to Existing Low Flow Showerhead (1.5 gpm) - Electric Water Heater (NON-CAA)	E	10	Units	2	2	2	2	60.00	-
Income Qualified Energy Assistance	Shower Start Added to Existing Low Flow Showerhead (1.5 gpm) - Gas Water Heater (NON-CAA)	G	10	Units	10	10	10	10	-	0.26
Income Qualified Energy Assistance	Split System Central AC GT SEER 14.5	E	15	Units	12	14	16	0	148.13	-
Income Qualified Energy Assistance	Split System Central AC GT SEER 16	E	15	Units	12	14	16	0	365.78	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Assistance	Split System Central AC GT SEER 16 - 2023 Standard	E	15	Units	0	0	0	36	243.86	-
Income Qualified Energy Assistance	Thermostatic Shower Head 1.5 gpm gas water heater (NON-CAA)	G	10	Units	2	2	2	2	-	1.69
Income Qualified Energy Assistance	Tier 1 Advanced Power Strips (NON-CAA)	E	5	Units	50	55	60	65	51.40	-
Income Qualified Energy Assistance	Wall Insulation - 4 Walls - No Partial (CAA)	G	25	Square Feet	65,100	71,610	78,770	86,645	-	0.01
Income Qualified Energy Check	Audit Education (Electric Measures - OTG)	E	1	Units	1,500	4,180	4,600	5,060	-	-
Income Qualified Energy Check	Energy Star Dehumidifier (NON-CAA)	E	12	Units	20	55	60	65	202.90	-
Income Qualified Energy Check	Energy Star Room A C	E	15	Units	20	55	60	65	56.67	-
Income Qualified Energy Check	High Efficiency Sump pumps (1/3 HP) - Efficiency ≥ 63%	E	15	Units	0	12	12	12	67.00	-
Income Qualified Energy Check	High Efficiency Sump pumps (1/4 HP) - Efficiency ≥ 63%	E	15	Units	0	12	12	12	33.50	-
Income Qualified Energy Check	LED A-line LT or EQ 6W Replacing 40W Equivalent-2020	E	3	Units	60	0	0	0	19.60	-
Income Qualified Energy Check	LED A-line LT or EQ 6W Replacing 40W Equivalent-2021	E	2	Units	0	150	0	0	19.60	-
Income Qualified Energy Check	LED A-line LT or EQ 6W Replacing 40W Equivalent-2022	E	1	Units	0	0	135	0	19.60	-
Income Qualified Energy Check	LED Bulb Replacing A-Line 60W (Base Incandescent)-2020	E	3	Units	28,005	0	0	0	28.50	-
Income Qualified Energy Check	LED Bulb Replacing A-Line 60W (Base Incandescent)-2021	E	2	Units	0	70,235	0	0	28.50	-
Income Qualified Energy Check	LED Bulb Replacing A-Line 60W (Base Incandescent)-2022	E	1	Units	0	0	63,210	0	28.50	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Check	LED Candelabra Medium Base LT or EQ 5W-2020	E	4	Units	305	0	0	0	23.70	-
Income Qualified Energy Check	LED Candelabra Medium Base LT or EQ 5W-2021	E	3	Units	0	765	0	0	23.70	-
Income Qualified Energy Check	LED Candelabra Medium Base LT or EQ 5W-2022	E	2	Units	0	0	690	0	23.70	-
Income Qualified Energy Check	LED Candelabra Medium Base LT or EQ 5W-2023	E	1	Units	0	0	0	620	23.70	-
Income Qualified Energy Check	LED Candelabra Small Base LT or EQ 5W-2020	E	4	Units	1,705	0	0	0	23.70	-
Income Qualified Energy Check	LED Candelabra Small Base LT or EQ 5W-2021	E	3	Units	0	4,275	0	0	23.70	-
Income Qualified Energy Check	LED Candelabra Small Base LT or EQ 5W-2022	E	2	Units	0	0	3,850	0	23.70	-
Income Qualified Energy Check	LED Candelabra Small Base LT or EQ 5W-2023	E	1	Units	0	0	0	3,465	23.70	-
Income Qualified Energy Check	LED Exterior Fixture Lamp Replacement-2020	E	4	Units	3,540	0	0	0	81.00	-
Income Qualified Energy Check	LED Exterior Fixture Lamp Replacement-2021	E	3	Units	0	8,880	0	0	81.00	-
Income Qualified Energy Check	LED Exterior Fixture Lamp Replacement-2022	E	2	Units	0	0	7,990	0	81.00	-
Income Qualified Energy Check	LED Exterior Fixture Lamp Replacement-2023	E	1	Units	0	0	0	7,190	81.00	-
Income Qualified Energy Check	LED Globe LT or EQ 8W-2020	E	4	Units	1,315	0	0	0	27.00	-
Income Qualified Energy Check	LED Globe LT or EQ 8W-2021	E	3	Units	0	3,300	0	0	27.00	-
Income Qualified Energy Check	LED Globe LT or EQ 8W-2022	E	2	Units	0	0	2,970	0	27.00	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Check	LED Globe LT or EQ 8W-2023	E	1	Units	0	0	0	2,675	27.00	-
Income Qualified Energy Check	LED Night Light (NON-CAA)	E	12	Units	3,000	8,360	9,200	10,120	22.00	-
Income Qualified Energy Check	Low Flow Bath Faucet Aerators - Electric 1.0gpm (NON-CAA)	E	10	Units	350	975	1,075	1,180	61.20	-
Income Qualified Energy Check	Low Flow Kitchen Faucet Aerator - Electric 1.5gpm (NON-CAA)	E	10	Units	250	695	765	845	251.10	-
Income Qualified Energy Check	Low Flow Showerhead - 1.5 gpm (NON-CAA)	E	10	Units	95	265	290	320	337.34	-
Income Qualified Energy Check	Low Flow Showerhead - 1.5 gpm Handheld (NON-CAA)	E	10	Units	40	112	122	134	334.00	-
Income Qualified Energy Check	Low Flow Showerheads + Shower Start - Electric Water Heater (NON-CAA)	E	10	Units	4	10	10	10	394.00	-
Income Qualified Energy Check	NEST E Programmable Thermostats Tier 3 - Electric Only Service (NON-CAA)	E	9	Units	40	112	122	134	110.26	-
Income Qualified Energy Check	Outdoor LED PAR Flood-2020	E	4	Units	965	0	0	0	276.40	-
Income Qualified Energy Check	Outdoor LED PAR Flood-2021	E	3	Units	0	2,420	0	0	276.40	-
Income Qualified Energy Check	Outdoor LED PAR Flood-2022	E	2	Units	0	0	2,180	0	276.40	-
Income Qualified Energy Check	Outdoor LED PAR Flood-2023	E	1	Units	0	0	0	1,960	276.40	-
Income Qualified Energy Check	Pipe Wrap - Electric (NON-CAA)	E	15	Linear Feet	1,500	4,180	4,600	5,060	47.94	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Income Qualified Energy Check	Refrigerator - 15 cf -- Income Qualified Direct Install - ENERGY STAR	E	8	Units	30	85	95	105	1,175.80	-
Income Qualified Energy Check	Refrigerator - 18 cf -- Income Qualified Direct Install - ENERGY STAR	E	8	Units	103	285	315	345	1,175.80	-
Income Qualified Energy Check	Refrigerator - 21 cf -- Income Qualified Direct Install - ENERGY STAR	E	8	Units	6	20	25	28	1,175.80	-
Income Qualified Energy Check	SEER18 Minisplit Heat pump - Electric only	E	15	Units	40	110	120	130	1,704.07	-
Income Qualified Energy Check	Setback thermostat - full setback -- Electric SINGLE FAMILY Customer Only (NON-CAA)	E	9	Units	75	210	230	255	197.22	-
Income Qualified Energy Check	Shower Start Added to Existing Low Flow Showerhead (1.5 gpm) - Electric Water Heater (NON-CAA)	E	10	Units	150	420	460	505	60.00	-
Income Qualified Energy Check	Split System Central AC GT SEER 14.5	E	15	Units	5	16	19	0	148.13	-
Income Qualified Energy Check	Split System Central AC GT SEER 16	E	15	Units	5	16	19	0	365.78	-
Income Qualified Energy Check	Split System Central AC GT SEER 16 - 2023 Standard	E	15	Units	0	0	0	44	243.86	-
Income Qualified Energy Check	Tier 1 Advanced Power Strips (NON-CAA)	E	5	Units	20	55	60	65	51.40	-
Insulation and Windows	Basement Wall Insulation-Combo	E	25	Units	85	85	85	85	22.88	-
Insulation and Windows	Basement Wall Insulation-Combo	G	25	Units	85	85	85	85	-	5.00

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Insulation and Windows	Basement Wall Insulation-Electric	E	25	Units	35	50	60	60	47.15	-
Insulation and Windows	Basement Wall Insulation-Gas	G	25	Units	110	110	110	110	-	4.38
Insulation and Windows	Crawlspace Insulation-Combo	E	25	Units	115	115	115	115	(1.69)	-
Insulation and Windows	Crawlspace Insulation-Combo	G	25	Units	115	115	115	115	-	2.06
Insulation and Windows	Crawlspace Insulation-Electric	E	25	Units	35	50	60	60	8.09	-
Insulation and Windows	Crawlspace Insulation-Gas	G	25	Units	115	115	115	115	-	1.60
Insulation and Windows	Door Replacement (Per Unit) - Combo	E	25	Units	625	625	625	625	52.15	-
Insulation and Windows	Door Replacement (Per Unit) - Combo	G	25	Units	625	625	625	625	-	1.93
Insulation and Windows	Door Replacement (Per Unit) - Electric	E	25	Units	370	485	605	605	53.15	-
Insulation and Windows	Door Replacement (Per Unit) - Gas	G	25	Units	2,095	2,095	2,095	2,095	-	1.73
Insulation and Windows	MIM - Roof (attic) Insulation R-30-Combo	E	20	Units	4	4	4	4	70.74	-
Insulation and Windows	MIM - Roof (attic) Insulation R-30-Combo	E	20	Units	4	4	4	4	32.69	-
Insulation and Windows	MIM - Roof (attic) Insulation R-30-Combo	G	20	Units	4	4	4	4	-	4.77
Insulation and Windows	MIM - Roof (attic) Insulation R-30-Combo	G	20	Units	4	4	4	4	-	2.18
Insulation and Windows	MIM - Roof (attic) Insulation R-30-Electric	E	20	Units	1	1	2	2	45.69	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Insulation and Windows	MIM - Roof (attic) Insulation R-30-Gas	G	20	Units	1	1	1	1	-	2.92
Insulation and Windows	MIM - Roof (attic) Insulation R-38-Combo	E	20	Units	4	4	4	4	52.33	-
Insulation and Windows	MIM - Roof (attic) Insulation R-38-Combo	G	20	Units	4	4	4	4	-	3.52
Insulation and Windows	MIM - Roof (attic) Insulation R-38-Gas	G	20	Units	475	485	495	520	-	2.61
Insulation and Windows	MIM - Roof (attic) Insulation R-49-Combo	E	20	Units	4	4	4	4	70.87	-
Insulation and Windows	MIM - Roof (attic) Insulation R-49-Combo	G	20	Units	4	4	4	4	-	4.80
Insulation and Windows	MIM - Roof (attic) Insulation R-49-Electric	E	20	Units	1	1	2	2	131.41	-
Insulation and Windows	MIM - Roof (attic) Insulation R-49-Gas	G	20	Units	10	10	10	10	-	4.31
Insulation and Windows	MIM - Roof (attic) Insulation R-60-Combo	E	20	Units	4	4	4	4	89.70	-
Insulation and Windows	MIM - Roof (attic) Insulation R-60-Combo	G	20	Units	4	4	4	4	-	6.07
Insulation and Windows	MIM - Roof (attic) Insulation R-60-Electric	E	20	Units	1	1	2	2	79.09	-
Insulation and Windows	MIM - Roof (attic) Insulation R-60-Gas	G	20	Units	1	1	1	1	-	5.52
Insulation and Windows	MIM - Wall Insulation - Combo	E	25	Units	20	20	20	20	94.09	-
Insulation and Windows	MIM - Wall Insulation - Combo	G	25	Units	20	20	20	20	-	6.29
Insulation and Windows	MIM - Wall Insulation - Electric	E	25	Units	3	4	4	4	139.64	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Insulation and Windows	MIM - Wall Insulation - Gas	G	25	Units	30	30	30	30	-	4.21
Insulation and Windows	Rim Joist Insulation - Combo	E	25	Units	230	230	230	230	57.47	-
Insulation and Windows	Rim Joist Insulation - Combo	G	25	Units	230	230	230	230	-	4.10
Insulation and Windows	Rim Joist Insulation - Electric	E	25	Units	85	115	145	145	68.86	-
Insulation and Windows	Rim Joist Insulation - Gas	G	25	Units	390	390	390	390	-	4.16
Insulation and Windows	Roof (attic) Insulation R-30-Combo	E	20	Units	10	10	10	10	36.11	-
Insulation and Windows	Roof (attic) Insulation R-30-Combo	G	20	Units	10	10	10	10	-	2.52
Insulation and Windows	Roof (attic) Insulation R-30-Electric	E	20	Units	7	9	11	12	33.60	-
Insulation and Windows	Roof (attic) Insulation R-30-Gas	G	20	Units	30	30	30	30	-	2.32
Insulation and Windows	Roof (attic) Insulation R-38-Combo	E	20	Units	275	285	290	305	56.48	-
Insulation and Windows	Roof (attic) Insulation R-38-Combo	G	20	Units	275	285	290	305	-	3.84
Insulation and Windows	Roof (attic) Insulation R-38-Electric	E	20	Units	140	190	240	250	61.16	-
Insulation and Windows	Roof (attic) Insulation R-38-Gas	G	20	Units	475	485	495	520	-	3.07
Insulation and Windows	Roof (attic) Insulation R-49 - Electric	E	20	Units	80	105	135	140	85.23	-
Insulation and Windows	Roof (attic) Insulation R-49 -Gas	G	20	Units	1,075	1,100	1,125	1,180	-	4.59

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Insulation and Windows	Roof (attic) Insulation R-49-Combo	E	20	Units	265	270	275	290	73.59	-
Insulation and Windows	Roof (attic) Insulation R-49-Combo	G	20	Units	265	270	275	290	-	4.99
Insulation and Windows	Roof (attic) Insulation R-60-Combo	E	20	Units	185	190	195	205	83.06	-
Insulation and Windows	Roof (attic) Insulation R-60-Combo	G	20	Units	185	190	195	205	-	5.71
Insulation and Windows	Roof (attic) Insulation R-60-Electric	E	20	Units	50	70	85	90	104.74	-
Insulation and Windows	Roof (attic) Insulation R-60-Gas	G	20	Units	570	580	595	625	-	5.42
Insulation and Windows	Wall Insulation-Combo	E	25	Units	315	315	315	315	69.15	-
Insulation and Windows	Wall Insulation-Combo	G	25	Units	315	315	315	315	-	4.66
Insulation and Windows	Wall Insulation-Electric	E	25	Units	100	130	165	165	84.54	-
Insulation and Windows	Wall Insulation-Gas	G	25	Units	450	450	450	450	-	4.48
Insulation and Windows	Window Replacement (Per Unit) - Combo	E	25	Units	13,055	13,055	13,055	13,055	15.45	-
Insulation and Windows	Window Replacement (Per Unit) - Combo	G	25	Units	13,055	13,055	13,055	13,055	-	0.58
Insulation and Windows	Window Replacement (Per Unit) - Electric	E	25	Units	8,455	11,175	14,000	14,000	16.74	-
Insulation and Windows	Window Replacement (Per Unit) - Gas	G	25	Units	33,065	33,065	33,065	33,065	-	0.61
Multifamily	4-Foot T12 to 4-Foot LED Tube Lights (common)	E	18	Units	38	42	46	50	45.63	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily	4-Foot T8 to 4-Foot LED Tube Lights (common)	E	18	Units	16	18	20	22	30.06	-
Multifamily	Alamps - kit-2020	E	3	Units	1,255	0	0	0	24.19	-
Multifamily	Alamps - kit-2021	E	2	Units	0	880	0	0	24.19	-
Multifamily	Alamps - kit-2022	E	1	Units	0	0	615	0	24.19	-
Multifamily	Boiler Controls	G	15	kBtu/h	2	2	2	2	-	0.04
Multifamily	Candelabra - kit-2020	E	4	Units	315	0	0	0	21.33	-
Multifamily	Candelabra - kit-2021	E	3	Units	0	220	0	0	21.33	-
Multifamily	Candelabra - kit-2022	E	2	Units	0	0	155	0	21.33	-
Multifamily	Candelabra - kit-2023	E	1	Units	0	0	0	110	21.33	-
Multifamily	Common Area -- LED Exit Signs (Retrofit Only)	E	15	Units	2	2	2	2	180.90	-
Multifamily	DHW Boiler Tune-up	G	2	MBH	7,020	7,020	7,020	7,020	-	0.05
Multifamily	DI - 1.5 gpm Kitchen Aerator - Electric	E	10	Units	930	1,025	1,130	1,245	177.44	-
Multifamily	DI - 1.5 gpm Kitchen Aerator - Gas	G	10	Units	4,415	4,855	5,340	5,875	-	0.76
Multifamily	DI - 1.5 gpm Showerhead - Electric	E	10	Units	725	800	880	970	277.26	-
Multifamily	DI - 1.5 gpm Showerhead - Gas	G	10	Units	3,615	3,975	4,375	4,815	-	1.22
Multifamily	DI - 1.5 gpm Showerhead - Handheld - Electric	E	10	Units	20	22	24	26	293.40	-
Multifamily	DI - 1.5 gpm Showerhead - Handheld - Gas	G	10	Units	2,042	2,246	2,470	2,718	-	1.29
Multifamily	DI - LED A-Line 60W Replacement-2020	E	3	Units	15,970	0	0	0	24.19	-
Multifamily	DI - LED A-Line 60W Replacement-2021	E	2	Units	0	11,180	0	0	24.19	-
Multifamily	DI - LED A-Line 60W Replacement-2022	E	1	Units	0	0	7,825	0	24.19	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily	DI - LED Candelabra Lamp (3-5W) - In Unit-2020	E	3	Units	765	0	0	0	21.33	-
Multifamily	DI - LED Candelabra Lamp (3-5W) - In Unit-2021	E	3	Units	0	535	0	0	21.33	-
Multifamily	DI - LED Candelabra Lamp (3-5W) - In Unit-2022	E	2	Units	0	0	375	0	21.33	-
Multifamily	DI - LED Candelabra Lamp (3-5W) - In Unit-2023	E	1	Units	0	0	0	265	21.33	-
Multifamily	DI - LED Globe - Common Area-2020	E	4	Units	7	0	0	0	77.13	-
Multifamily	DI - LED Globe - Common Area-2021	E	3	Units	0	5	0	0	77.13	-
Multifamily	DI - LED Globe - Common Area-2022	E	2	Units	0	0	4	0	77.13	-
Multifamily	DI - LED Globe - Common Area-2023	E	1	Units	0	0	0	3	77.13	-
Multifamily	DI - LED Globe - In Unit-2020	E	3	Units	5,975	0	0	0	24.30	-
Multifamily	DI - LED Globe - In Unit-2021	E	3	Units	0	4,185	0	0	24.30	-
Multifamily	DI - LED Globe - In Unit-2022	E	2	Units	0	0	2,930	0	24.30	-
Multifamily	DI - LED Globe - In Unit-2023	E	1	Units	0	0	0	2,050	24.30	-
Multifamily	DI - Low-Flow Showerhead - Common - 1.5gpm - Electric	E	10	Units	490	540	595	655	293.40	-
Multifamily	DI - Pipe Wrap - Electric DHW - In unit	E	15	Linear Feet	450	495	545	600	45.00	-
Multifamily	Electric Bath - kit	E	10	Units	112	124	130	130	61.49	-
Multifamily	Electric Kitchen - kit	E	10	Units	74	82	86	86	177.44	-
Multifamily	Electric Showerhead - kit	E	10	Units	86	96	100	100	277.26	-
Multifamily	Electric Showerhead HH - kit	E	10	Units	22	24	26	26	293.40	-
Multifamily	Energy Star Doors	G	20	Units	2,000	2,000	2,000	2,000	-	1.38
Multifamily	Energy Star Room A C	E	15	Units	60	66	72	80	51.00	-
Multifamily	Energy Star Window	G	25	Square Feet	41,250	41,250	41,250	41,250	-	0.03

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily	Exterior HID to LED (Per Watt Reduced)	E	16	Watts Removed	95,880	105,470	116,020	127,620	3.89	-
Multifamily	Flood - kit-2020	E	4	Units	625	0	0	0	48.60	-
Multifamily	Flood - kit-2021	E	3	Units	0	440	0	0	48.60	-
Multifamily	Flood - kit-2022	E	2	Units	0	0	310	0	48.60	-
Multifamily	Flood - kit-2023	E	1	Units	0	0	0	215	48.60	-
Multifamily	Furnace Replacement - 92% - In Unit	G	15	Units	45	45	45	45	-	7.51
Multifamily	Furnace Replacement - 95% - Common	G	15	Units	3	3	3	3	-	8.14
Multifamily	Furnace Replacement - 95% - In Unit	G	15	Units	500	500	500	500	-	10.15
Multifamily	Furnace Replacement - 98% - In Unit	G	15	Units	50	50	50	50	-	8.80
Multifamily	Furnace Tune-up (40-80 MBH) - Common	G	2	Units	38	38	38	38	-	2.37
Multifamily	Furnace Tune-up (80-120MBH) - Common	G	2	Units	10	10	10	10	-	4.37
Multifamily	Furnace Tune-up 40,000 - 80,000 BTU	G	2	Units	5,460	5,460	5,460	5,460	-	2.18
Multifamily	Furnace Tune-up 80,001 - 120,000 BTU	G	2	Units	270	270	270	270	-	3.73
Multifamily	Gas Bath - kit	G	10	Units	272	272	272	272	-	0.30
Multifamily	Gas Kitchen - kit	G	10	Units	215	215	215	215	-	0.76
Multifamily	Gas Showerhead - kit	G	10	Units	210	210	210	210	-	1.22
Multifamily	Gas Showerhead HH - kit	G	10	Units	52	52	52	52	-	1.29
Multifamily	Globe - kit-2020	E	4	Units	1,260	0	0	0	24.30	-
Multifamily	Globe - kit-2021	E	3	Units	0	880	0	0	24.30	-
Multifamily	Globe - kit-2022	E	2	Units	0	0	615	0	24.30	-
Multifamily	Globe - kit-2023	E	1	Units	0	0	0	430	24.30	-
Multifamily	High-efficiency Boiler - GT 90%	G	20	kBtu/h	5,770	5,770	5,770	5,770	-	0.26

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily	In-Direct Water Heater (84-90% Eff)	G	15	MBH	705	705	705	705	-	0.09
Multifamily	In-Direct Water Heater (e90% Eff)	G	15	MBH	4,460	4,460	4,460	4,460	-	0.22
Multifamily	Instant Hot Water Heater - Gas - Common	G	20	Units	205	205	205	205	-	14.61
Multifamily	Kit fee	E	0	Units	500	500	500	500	-	-
Multifamily	Kit fee	G	0	Units	500	500	500	500		
Multifamily	LED Candelabra Lamp (3-5W) - Common - 24 7 operation-2020	E	4	Units	40	0	0	0	222.30	-
Multifamily	LED Candelabra Lamp (3-5W) - Common - 24 7 operation-2021	E	3	Units	0	30	0	0	222.30	-
Multifamily	LED Candelabra Lamp (3-5W) - Common - 24 7 operation-2022	E	2	Units	0	0	20	0	222.30	-
Multifamily	LED Candelabra Lamp (3-5W) - Common - 24 7 operation-2023	E	1	Units	0	0	0	15	222.30	-
Multifamily	LED Candelabra Lamp (3-5W) - In-Unit-2020	E	4	Units	7,090	0	0	0	24.30	-
Multifamily	LED Candelabra Lamp (3-5W) - In-Unit-2021	E	3	Units	0	4,965	0	0	24.30	-
Multifamily	LED Candelabra Lamp (3-5W) - In-Unit-2022	E	2	Units	0	0	3,475	0	24.30	-
Multifamily	LED Candelabra Lamp (3-5W) - In-Unit-2023	E	1	Units	0	0	0	2,435	24.30	-
Multifamily	LED Downlight Fixture-2020	E	4	Units	70	0	0	0	127.35	-
Multifamily	LED Downlight Fixture-2021	E	3	Units	0	50	0	0	127.35	-
Multifamily	LED Downlight Fixture-2022	E	2	Units	0	0	35	0	127.35	-
Multifamily	LED Downlight Fixture-2023	E	1	Units	0	0	0	25	127.35	-
Multifamily	LED Fixture - Exterior - Common-2020	E	4	Units	40	0	0	0	148.77	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily	LED Fixture - Exterior - Common-2021	E	3	Units	0	28	0	0	148.77	-
Multifamily	LED Fixture - Exterior - Common-2022	E	2	Units	0	0	20	0	148.77	-
Multifamily	LED Fixture - Exterior - Common-2023	E	1	Units	0	0	0	14	148.77	-
Multifamily	LED Fixture - In Unit-2020	E	3	Units	135	0	0	0	39.60	-
Multifamily	LED Fixture - In Unit-2021	E	2	Units	0	95	0	0	39.60	-
Multifamily	LED Fixture - In Unit-2022	E	1	Units	0	0	65	0	39.60	-
Multifamily	LED Globe - Common Area-2020	E	4	Units	14	0	0	0	77.13	-
Multifamily	LED Globe - Common Area-2021	E	3	Units	0	10	0	0	77.13	-
Multifamily	LED Globe - Common Area-2022	E	2	Units	0	0	8	0	77.13	-
Multifamily	LED Globe - Common Area-2023	E	1	Units	0	0	0	6	77.13	-
Multifamily	LED Globe - In Unit-2020	E	4	Units	29,100	0	0	0	24.30	-
Multifamily	LED Globe - In Unit-2021	E	3	Units	0	20,370	0	0	24.30	-
Multifamily	LED Globe - In Unit-2022	E	2	Units	0	0	14,260	0	24.30	-
Multifamily	LED Globe - In Unit-2023	E	1	Units	0	0	0	9,980	24.30	-
Multifamily	LED Lamp - 50-80W Replacement - Common-2020	E	3	Units	440	0	0	0	39.21	-
Multifamily	LED Lamp - 50-80W Replacement - Common-2021	E	2	Units	0	310	0	0	39.21	-
Multifamily	LED Lamp - 50-80W Replacement - Common-2022	E	1	Units	0	0	215	0	39.21	-
Multifamily	LED Lamp - 60W Replacement - In Unit-2020	E	3	Units	90,915	0	0	0	24.19	-
Multifamily	LED Lamp - 60W Replacement - In Unit-2021	E	2	Units	0	63,640	0	0	24.19	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily	LED Lamp - 60W Replacement - In Unit-2022	E	1	Units	0	0	44,550	0	24.19	-
Multifamily	LED Lamp - Flood PAR - Common-2020	E	4	Units	40	0	0	0	130.95	-
Multifamily	LED Lamp - Flood PAR - Common-2021	E	3	Units	0	30	0	0	130.95	-
Multifamily	LED Lamp - Flood PAR - Common-2022	E	2	Units	0	0	20	0	130.95	-
Multifamily	LED Lamp - Flood PAR - Common-2023	E	1	Units	0	0	0	15	130.95	-
Multifamily	LED Lamp - PAR - In Unit-2020	E	3	Units	65	0	0	0	48.60	-
Multifamily	LED Lamp - PAR - In Unit-2021	E	3	Units	0	45	0	0	48.60	-
Multifamily	LED Lamp - PAR - In Unit-2022	E	2	Units	0	0	30	0	48.60	-
Multifamily	LED Lamp - PAR - In Unit-2023	E	1	Units	0	0	0	20	48.60	-
Multifamily	LED Replacing CFL - 50-79W - Common-2020	E	3	Units	28	0	0	0	10.18	-
Multifamily	LED Replacing CFL - 50-79W - Common-2021	E	2	Units	0	20	0	0	10.18	-
Multifamily	LED Replacing CFL - 50-79W - Common-2022	E	1	Units	0	0	14	0	10.18	-
Multifamily	Limited Time Bonus Gas (res)	G	0	Units	11,048,220	11,048,220	11,048,220	11,048,220		
Multifamily	Low Flow Bath Faucet Aerators - Prescriptive Electric	E	10	Units	515	565	600	600	36.01	-
Multifamily	Low Flow Bath Faucet Aerators 1.0gpm - Electric - DI	E	10	Units	1,145	1,260	1,385	1,525	61.49	-
Multifamily	Low Flow Bath Faucet Aerators 1.0gpm - Gas - DI	G	10	Units	5,650	6,220	6,840	7,520	-	0.27

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily	Low Flow Kitchen Faucet Aerators-Prescriptive Electric	E	10	Units	335	365	390	390	177.44	-
Multifamily	Low Flow Showerhead - 1.5 gpm - Prescriptive	G	10	Units	9,380	10,320	11,350	12,490	-	1.19
Multifamily	Low Flow Showerheads - Prescriptive Gas - 1.75gpm	G	10	Units	170	170	170	170	-	0.89
Multifamily	Low-Flow Bath Aerator - Gas	G	10	Units	9,130	9,130	9,130	9,130	-	0.15
Multifamily	Low-Flow Kitchen Aerator - Gas	G	10	Units	5,750	5,750	5,750	5,750	-	0.76
Multifamily	Low-Flow Showerhead - Electric - 1.5gpm	E	10	Units	720	790	835	835	277.26	-
Multifamily	NC - Energy Star Doors	G	20	Units	345	345	345	345	-	1.31
Multifamily	NC - Furnace Replacement - 92% - Common	G	15	Units	44	44	44	44	-	4.58
Multifamily	NC - Furnace Replacement - 92% - In Unit	G	15	Units	115	115	115	115	-	6.55
Multifamily	NC - Furnace Replacement - 95% - Common	G	15	Units	22	22	22	22	-	5.74
Multifamily	NC - Furnace Replacement - 95% - In Unit	G	15	Units	255	255	255	255	-	7.58
Multifamily	NC - High-efficiency Boiler - GT 90%	G	20	MBH	3,985	3,985	3,985	3,985	-	0.26
Multifamily	NC - Large High Efficiency Gas Water Heater	G	13	Units	200	200	200	200	-	27.03
Multifamily	NC - Low Flow Bath Faucet Aerator - Prescriptive Gas	G	10	Units	560	560	560	560	-	0.15
Multifamily	NC - Low Flow Showerheads - Prescriptive Gas - 1.75gpm	G	10	Units	8	8	8	8	-	0.89
Multifamily	Occupancy Sensors under 500 W	E	10	Units	2	2	2	2	259.43	-
Multifamily	Pipe Wrap - DHW - Gas - Common - DI	G	20	Linear Feet	29,850	32,840	36,120	39,730	-	0.19

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily	Pipe Wrap - Gas - DHW - In-Unit - DI	G	15	Linear Feet	76,500	84,150	92,570	101,830	-	0.20
Multifamily	Pipe Wrap - Space Heat - Common - DI	G	20	Linear Feet	62,190	68,410	75,250	82,780	-	0.35
Multifamily	Program Incentive Match	G	0	Units	137,000	137,000	137,000	137,000		
Multifamily	Roof Insulation	G	25	1000 Square Feet	70	70	70	70	-	2.05
Multifamily	SEER18 Minisplit Heat pump - Electric only	E	15	Units	120	130	145	160	907.37	-
Multifamily	Setback thermostat - moderate setback -- Prescriptive Gas or Combination	G	9	Units	225	225	225	225	-	1.05
Multifamily	Space Heating Boiler Tune-up	G	2	kBtu/h	3	3	3	3	-	0.05
Multifamily	Tier 1 Advanced Power Strips	E	5	Units	150	165	180	200	46.26	-
Multifamily Income Qualified	2-Foot T8 to 2-Foot LED Tube Light (common)	E	18	Units	130	155	185	220	23.00	-
Multifamily Income Qualified	4-Foot T12 to 4-Foot LED Tube Lights (common)	E	18	Units	1,950	2,340	2,810	3,370	50.70	-
Multifamily Income Qualified	4-Foot T8 to 4-Foot LED Tube Lights (common)	E	18	Units	2,290	2,750	3,300	3,960	33.40	-
Multifamily Income Qualified	Air Conditioner - LT 5.4 Tons (1 ph) - 14 SEER	E	15	Tons	515	620	745	895	236.11	-
Multifamily Income Qualified	Air Conditioner - LT 5.4 Tons (3 ph) - 14 SEER	E	15	Tons	100	120	145	175	44.75	-
Multifamily Income Qualified	ASHRAE Level II Audit - Electric	E	0	Square Feet	100,000,000	100,000,000	100,000,000	100,000,000	-	-
Multifamily Income Qualified	Boiler tune-up	G	2	kBtu/h	43,320	51,980	62,380	74,860	-	0.05
Multifamily Income Qualified	Common Area -- LED Exit Signs (Retrofit Only)	E	15	Units	125	150	180	215	201.00	-
Multifamily Income Qualified	DHW Boiler Tune-up	G	2	MBH	6,810	8,170	9,800	11,760	-	0.06

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily Income Qualified	DI - LED Candelabra Lamp (3-5W) - 24 7 operation-2020	E	4	Units	10	0	0	0	247.00	-
Multifamily Income Qualified	DI - LED Candelabra Lamp (3-5W) - 24 7 operation-2021	E	3	Units	0	10	0	0	247.00	-
Multifamily Income Qualified	DI - LED Candelabra Lamp (3-5W) - 24 7 operation-2022	E	2	Units	0	0	10	0	247.00	-
Multifamily Income Qualified	DI - LED Candelabra Lamp (3-5W) - 24 7 operation-2023	E	1	Units	0	0	0	10	247.00	-
Multifamily Income Qualified	DI - LED Candelabra Lamp (3-5W) - In-Unit-2020	E	4	Units	145	0	0	0	23.70	-
Multifamily Income Qualified	DI - LED Candelabra Lamp (3-5W) - In-Unit-2021	E	3	Units	0	130	0	0	23.70	-
Multifamily Income Qualified	DI - LED Candelabra Lamp (3-5W) - In-Unit-2022	E	2	Units	0	0	115	0	23.70	-
Multifamily Income Qualified	DI - LED Candelabra Lamp (3-5W) - In-Unit-2023	E	1	Units	0	0	0	105	23.70	-
Multifamily Income Qualified	DI - LED Candelabra Lamp (3-5W)-2020	E	4	Units	15	0	0	0	124.00	-
Multifamily Income Qualified	DI - LED Candelabra Lamp (3-5W)-2021	E	3	Units	0	15	0	0	124.00	-
Multifamily Income Qualified	DI - LED Candelabra Lamp (3-5W)-2022	E	2	Units	0	0	15	0	124.00	-
Multifamily Income Qualified	DI - LED Candelabra Lamp (3-5W)-2023	E	1	Units	0	0	0	15	124.00	-
Multifamily Income Qualified	DI - LED Globe - Common Area-2020	E	4	Units	12	0	0	0	85.70	-
Multifamily Income Qualified	DI - LED Globe - Common Area-2021	E	3	Units	0	11	0	0	85.70	-
Multifamily Income Qualified	DI - LED Globe - Common Area-2022	E	2	Units	0	0	10	0	85.70	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily Income Qualified	DI - LED Globe - Common Area-2023	E	1	Units	0	0	0	9	85.70	-
Multifamily Income Qualified	DI - LED Globe - In Unit-2020	E	4	Units	1,580	0	0	0	27.00	-
Multifamily Income Qualified	DI - LED Globe - In Unit-2021	E	3	Units	0	1,420	0	0	27.00	-
Multifamily Income Qualified	DI - LED Globe - In Unit-2022	E	2	Units	0	0	1,280	0	27.00	-
Multifamily Income Qualified	DI - LED Globe - In Unit-2023	E	1	Units	0	0	0	1,150	27.00	-
Multifamily Income Qualified	DI - LED Lamp - 60W Replacement - In Unit-2020	E	3	Units	33,650	0	0	0	26.88	-
Multifamily Income Qualified	DI - LED Lamp - 60W Replacement - In Unit-2021	E	2	Units	0	30,290	0	0	26.88	-
Multifamily Income Qualified	DI - LED Lamp - 60W Replacement - In Unit-2022	E	1	Units	0	0	27,260	0	26.88	-
Multifamily Income Qualified	DI - LED Lamp - Common-2020	E	3	Units	54	0	0	0	93.17	-
Multifamily Income Qualified	DI - LED Lamp - Common-2021	E	2	Units	0	48	0	0	93.17	-
Multifamily Income Qualified	DI - LED Lamp - Common-2022	E	1	Units	0	0	44	0	93.17	-
Multifamily Income Qualified	DI - Pipe Wrap - Electric DHW - Common	E	20	Linear Feet	255	280	310	340	54.96	-
Multifamily Income Qualified	DI - Tier 1 Advanced Power Strips	E	5	Units	150	180	215	260	51.40	-
Multifamily Income Qualified	Energy Star Room A C	E	15	Units	80	95	115	140	56.67	-
Multifamily Income Qualified	Energy Star Window	G	25	Square Feet	1,225	1,470	1,765	2,120	-	0.04

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily Income Qualified	Exterior HID to LED (24 7) (Per Watt Reduced)	E	16	Watts Removed	9,410	11,290	13,550	16,260	8.76	-
Multifamily Income Qualified	Exterior HID to LED (Per Watt Reduced)	E	16	Watts Removed	71,120	85,340	102,410	122,890	4.32	-
Multifamily Income Qualified	Exterior Occupancy Sensor (24 7)	E	8	Watts Controlled	1,845	2,215	2,660	3,190	1.73	-
Multifamily Income Qualified	Furnace Replacement - 92% - In Unit	G	15	Units	28	34	40	48	-	8.06
Multifamily Income Qualified	Furnace Replacement - 95% - In Unit	G	15	Units	685	820	985	1,180	-	6.84
Multifamily Income Qualified	Furnace Tune-up (40-80 MBH) - Common	G	2	Units	12	14	16	20	-	2.85
Multifamily Income Qualified	Furnace Tune-up (80-120MBH) - Common	G	2	Units	5	6	7	8	-	4.70
Multifamily Income Qualified	Furnace Tune-up 40,000 - 80,000 BTU	G	2	Units	1,510	1,810	2,170	2,600	-	2.60
Multifamily Income Qualified	Furnace Tune-up 80,001 - 120,000 BTU	G	2	Units	36	44	52	62	-	3.55
Multifamily Income Qualified	Furnace with Integrated Variable Speed Motor (ECM) - Common	E	20	Units	4	5	6	7	720.00	-
Multifamily Income Qualified	Furnace with Integrated Variable Speed Motor (ECM) - In Unit	E	10	Units	350	420	505	605	730.00	-
Multifamily Income Qualified	Furnace with Integrated Variable Speed Motor (ECM) - In Unit - Reduced	E	5	Units	70	85	100	120	730.00	-
Multifamily Income Qualified	High Efficiency Furnace Tune-up (40-80 MBH) - Common	G	2	Units	4	5	6	7	-	5.12
Multifamily Income Qualified	High-efficiency Boiler - GT 90%	G	20	kBtu/h	25,900	31,080	37,300	44,760	-	0.32

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily Income Qualified	HV207.75-NC-Space Heating Boiler Replacement GT or E 95 percent	G	20	MBH	6,220	7,460	8,950	10,740	-	0.45
Multifamily Income Qualified	HV207.75-Space Heating Boiler Replacement GT or E 95 percent	G	20	MBH	6,220	7,460	8,950	10,740	-	0.45
Multifamily Income Qualified	IQ Multifamily Custom - Electric	E	12	Units	12	14	16	20	33,960.90	-
Multifamily Income Qualified	IQ Multifamily Custom - Gas	G	15	Units	2	2	2	2	-	3,312.00
Multifamily Income Qualified	LED A-Lamp Replacement - In-Unit - Exterior-2020	E	3	Units	80	0	0	0	28.50	-
Multifamily Income Qualified	LED A-Lamp Replacement - In-Unit - Exterior-2021	E	2	Units	0	70	0	0	28.50	-
Multifamily Income Qualified	LED A-Lamp Replacement - In-Unit - Exterior-2022	E	1	Units	0	0	65	0	28.50	-
Multifamily Income Qualified	LED Candelabra Lamp (3-5W) - In-Unit-2020	E	4	Units	305	0	0	0	27.00	-
Multifamily Income Qualified	LED Candelabra Lamp (3-5W) - In-Unit-2021	E	3	Units	0	275	0	0	27.00	-
Multifamily Income Qualified	LED Candelabra Lamp (3-5W) - In-Unit-2022	E	2	Units	0	0	250	0	27.00	-
Multifamily Income Qualified	LED Candelabra Lamp (3-5W) - In-Unit-2023	E	1	Units	0	0	0	225	27.00	-
Multifamily Income Qualified	LED Downlight Fixture-2020	E	4	Units	330	0	0	0	141.50	-
Multifamily Income Qualified	LED Downlight Fixture-2021	E	3	Units	0	295	0	0	141.50	-
Multifamily Income Qualified	LED Downlight Fixture-2022	E	2	Units	0	0	265	0	141.50	-
Multifamily Income Qualified	LED Downlight Fixture-2023	E	1	Units	0	0	0	240	141.50	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily Income Qualified	LED Exit Signs - DI	E	15	Units	125	140	155	170	201.00	-
Multifamily Income Qualified	LED Fixture - Exterior - Common-2020	E	4	Units	230	0	0	0	165.30	-
Multifamily Income Qualified	LED Fixture - Exterior - Common-2021	E	3	Units	0	205	0	0	165.30	-
Multifamily Income Qualified	LED Fixture - Exterior - Common-2022	E	2	Units	0	0	185	0	165.30	-
Multifamily Income Qualified	LED Fixture - Exterior - Common-2023	E	1	Units	0	0	0	165	165.30	-
Multifamily Income Qualified	LED Fixture - In Unit-2020	E	4	Units	715	0	0	0	44.00	-
Multifamily Income Qualified	LED Fixture - In Unit-2021	E	3	Units	0	645	0	0	44.00	-
Multifamily Income Qualified	LED Fixture - In Unit-2022	E	2	Units	0	0	580	0	44.00	-
Multifamily Income Qualified	LED Fixture - In Unit-2023	E	1	Units	0	0	0	520	44.00	-
Multifamily Income Qualified	LED Globe - In Unit-2020	E	4	Units	2,000	0	0	0	27.00	-
Multifamily Income Qualified	LED Globe - In Unit-2021	E	3	Units	0	1,800	0	0	27.00	-
Multifamily Income Qualified	LED Globe - In Unit-2022	E	2	Units	0	0	1,620	0	27.00	-
Multifamily Income Qualified	LED Globe - In Unit-2023	E	1	Units	0	0	0	1,460	27.00	-
Multifamily Income Qualified	LED Lamp - 40W Replacement - In Unit-2020	E	3	Units	245	0	0	0	18.20	-
Multifamily Income Qualified	LED Lamp - 40W Replacement - In Unit-2021	E	2	Units	0	220	0	0	18.20	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily Income Qualified	LED Lamp - 40W Replacement - In Unit-2022	E	1	Units	0	0	200	0	18.20	-
Multifamily Income Qualified	LED Lamp - 50-80W Replacement - Common-2020	E	3	Units	1,380	0	0	0	43.57	-
Multifamily Income Qualified	LED Lamp - 50-80W Replacement - Common-2021	E	2	Units	0	1,240	0	0	43.57	-
Multifamily Income Qualified	LED Lamp - 50-80W Replacement - Common-2022	E	1	Units	0	0	1,120	0	43.57	-
Multifamily Income Qualified	LED Lamp - 60W Replacement - In Unit-2020	E	3	Units	14,290	0	0	0	26.88	-
Multifamily Income Qualified	LED Lamp - 60W Replacement - In Unit-2021	E	2	Units	0	12,860	0	0	26.88	-
Multifamily Income Qualified	LED Lamp - 60W Replacement - In Unit-2022	E	1	Units	0	0	11,570	0	26.88	-
Multifamily Income Qualified	LED Lamp - 75W Replacement - In Unit-2020	E	1	Units	1,320	0	0	0	31.68	-
Multifamily Income Qualified	LED Lamp - 75W Replacement - In Unit-2021	E	2	Units	0	1,190	0	0	31.68	-
Multifamily Income Qualified	LED Lamp - 75W Replacement - In Unit-2022	E	3	Units	0	0	1,070	0	31.68	-
Multifamily Income Qualified	LED Lamp - 80-100W Replacement - Common-2020	E	3	Units	2	0	0	0	150.97	-
Multifamily Income Qualified	LED Lamp - 80-100W Replacement - Common-2021	E	2	Units	0	2	0	0	150.97	-
Multifamily Income Qualified	LED Lamp - 80-100W Replacement - Common-2022	E	1	Units	0	0	2	0	150.97	-
Multifamily Income Qualified	LED Lamp - Flood PAR - Common-2020	E	4	Units	60	0	0	0	145.50	-
Multifamily Income Qualified	LED Lamp - Flood PAR - Common-2021	E	3	Units	0	55	0	0	145.50	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily Income Qualified	LED Lamp - Flood PAR - Common-2022	E	2	Units	0	0	50	0	145.50	-
Multifamily Income Qualified	LED Lamp - Flood PAR - Common-2023	E	1	Units	0	0	0	45	145.50	-
Multifamily Income Qualified	LED Lamp - PAR - In Unit-2020	E	4	Units	265	0	0	0	54.00	-
Multifamily Income Qualified	LED Lamp - PAR - In Unit-2021	E	3	Units	0	240	0	0	54.00	-
Multifamily Income Qualified	LED Lamp - PAR - In Unit-2022	E	2	Units	0	0	215	0	54.00	-
Multifamily Income Qualified	LED Lamp - PAR - In Unit-2023	E	1	Units	0	0	0	195	54.00	-
Multifamily Income Qualified	LED Replacing CFL - 50-79W - Common-2020	E	3	Units	16	0	0	0	11.32	-
Multifamily Income Qualified	LED Replacing CFL - 50-79W - Common-2021	E	2	Units	0	14	0	0	11.32	-
Multifamily Income Qualified	LED Replacing CFL - 50-79W - Common-2022	E	1	Units	0	0	12	0	11.32	-
Multifamily Income Qualified	Limited Time Bonus Ele (res)	G	0	Units	609,580	731,500	877,800	1,053,360		
Multifamily Income Qualified	Limited Time Bonus Gas (res)	G	0	Units	87,690	105,230	126,280	151,540		
Multifamily Income Qualified	Low Flow Bath Faucet Aerators - Prescriptive Electric	E	10	Units	55	65	80	95	40.02	-
Multifamily Income Qualified	Low Flow Bath Faucet Aerators 1.0gpm - Electric - DI	E	10	Units	660	725	800	880	68.32	-
Multifamily Income Qualified	Low Flow Bath Faucet Aerators 1.0gpm - Gas - DI	G	10	Units	7,630	8,390	9,230	10,150	-	0.29
Multifamily Income Qualified	Low Flow Kitchen Faucet Aerators - Gas - DI	G	10	Units	6,380	7,020	7,720	8,490	-	0.85

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily Income Qualified	Low Flow Kitchen Faucet Aerators-Electric - DI	E	10	Units	770	845	930	1,025	197.15	-
Multifamily Income Qualified	Low Flow Kitchen Faucet Aerators-Prescriptive Electric	E	10	Units	38	46	56	68	197.15	-
Multifamily Income Qualified	Low Flow Showerhead - 1.5 gpm - Prescriptive	G	10	Units	1,350	1,620	1,940	2,330	-	1.33
Multifamily Income Qualified	Low Flow Showerhead - 1.5 gpm Handheld - DI	E	10	Units	865	950	1,045	1,150	326.00	-
Multifamily Income Qualified	Low Flow Showerhead - 1.5 gpm Handheld - DI	G	10	Units	780	860	945	1,040	-	2.86
Multifamily Income Qualified	Low-Flow Bath Aerator - Gas	G	10	Units	1,650	1,980	2,380	2,860	-	0.17
Multifamily Income Qualified	Low-Flow Kitchen Aerator - Gas	G	10	Units	860	1,030	1,235	1,480	-	0.85
Multifamily Income Qualified	Low-Flow Showerhead - Electric - 1.5gpm	E	10	Units	56	68	82	98	308.07	-
Multifamily Income Qualified	LT405-Parking Garage Occupancy Sensor	E	8	Watt	390	470	560	670	1.31	-
Multifamily Income Qualified	NC - 2-Foot T8 to 2-Foot LED Tube Light (common)	E	18	Units	55	65	80	95	23.00	-
Multifamily Income Qualified	NC - Energy Star Doors	G	20	Units	75	90	110	130	-	0.61
Multifamily Income Qualified	NC - Furnace Replacement - 95% - In Unit	G	15	Units	32	38	46	56	-	9.12
Multifamily Income Qualified	NC - LED Lamp - 60W Replacement - In Unit-2020	E	3	Units	245	0	0	0	26.88	-
Multifamily Income Qualified	NC - LED Lamp - 60W Replacement - In Unit-2021	E	2	Units	0	220	0	0	26.88	-
Multifamily Income Qualified	NC - LED Lamp - 60W Replacement - In Unit-2022	E	1	Units	0	0	200	0	26.88	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily Income Qualified	NC - LED Replacing CFL - 50-79W - Common-2020	E	3	Units	46	0	0	0	12.00	-
Multifamily Income Qualified	NC - LED Replacing CFL - 50-79W - Common-2021	E	2	Units	0	42	0	0	12.00	-
Multifamily Income Qualified	NC - LED Replacing CFL - 50-79W - Common-2022	E	1	Units	0	0	38	0	12.00	-
Multifamily Income Qualified	NC - Limited Time Bonus - Gas	G	0	Units	40,220	48,260	57,910	69,490		
Multifamily Income Qualified	NC - Low Flow Bath Faucet Aerators - Prescriptive Electric	E	10	Units	26	32	38	46	39.04	-
Multifamily Income Qualified	NC - Low Flow Kitchen Faucet Aerators- Prescriptive Electric	E	10	Units	24	28	34	40	197.15	-
Multifamily Income Qualified	NC - Low-Flow Showerhead - Electric - 1.5gpm	E	10	Units	25	30	35	40	308.07	-
Multifamily Income Qualified	Occupancy Sensors under 500 W	E	10	Units	355	425	510	610	288.25	-
Multifamily Income Qualified	Pipe Wrap - DHW - Gas - Common - DI	G	20	Linear Feet	625	690	760	835	-	0.21
Multifamily Income Qualified	Pipe Wrap - Gas - DHW - In-Unit - DI	G	15	Linear Feet	27,430	30,170	33,190	36,510	-	0.22
Multifamily Income Qualified	Pipe Wrap - Space Heat - Common - DI	G	20	Linear Feet	115	125	140	155	-	0.39
Multifamily Income Qualified	Programmable Thermostat (In-Unit) - DI	G	9	Units	3,280	3,610	3,970	4,370	-	1.20
Multifamily Income Qualified	Refrigerator - 15 cf -- Income Qualfied Direct Install	E	12	Units	480	530	585	645	1,175.80	-
Multifamily Income Qualified	Refrigerator - 18 cf -- Income Qualfied Direct Install	E	12	Units	160	175	195	215	1,175.80	-
Multifamily Income Qualified	Refrigerator - 21 cf -- Income Qualfied Direct Install	E	12	Units	140	155	170	185	1,175.80	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Multifamily Income Qualified	SEER18 Minisplit Heat pump - Electric only	E	15	Units	120	145	175	210	1,008.19	-
Multifamily Income Qualified	Setback Thermostat - Common Area - Gas	G	9	Units	4	5	6	7	-	0.69
Multifamily Income Qualified	Setback thermostat - moderate setback -- Prescriptive Electric Customer	E	9	Units	68	82	98	118	233.89	-
Multifamily Income Qualified	Setback thermostat - moderate setback -- Prescriptive Gas or Combination	G	9	Units	780	935	1,120	1,345	-	1.15
Multifamily Income Qualified	Thermostatic Shower Head 1.5 gpm electric water heater-DI	E	10	Units	50	55	61	67	394.00	-
Multifamily Income Qualified	Thermostatic Shower Head 1.5 gpm gas water heater-DI	G	10	Units	220	240	265	290	-	1.69
Residential Agriculture	4-Foot T12 to 4-Foot LED Tube Lights	E	18	Units	650	650	650	650	50.58	-
Residential Agriculture	4-Foot T8 to 4-Foot LED Tube Lights	E	18	Units	170	170	170	170	35.24	-
Residential Agriculture	8-Foot T12 to Two 4-Foot LED Tube Lights	E	18	Units	120	120	120	120	93.75	-
Residential Agriculture	Ag Circulation, Exhaust, or Vent Fans (36 inch to 47 inch Fan blade diam)	E	7	Units	10	10	10	10	550.89	-
Residential Agriculture	Ag Circulation, Exhaust, or Vent Fans (48 inch to 71 inch Fan blade diam)	E	7	Units	50	50	50	50	988.91	-
Residential Agriculture	Buy Michigan (Incentives Only) (EO)	E	1	Units	1,710	1,710	1,710	1,710	-	-
Residential Agriculture	Dairy Refrigeration Tune-up	E	5	Units	124,050	124,050	124,050	124,050	0.09	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Residential Agriculture	Daylight Sensor Controls (Watts)	E	12	Watts Controlled	1,200	1,200	1,200	1,200	0.71	-
Residential Agriculture	Exterior LED Lighting Retrofit	E	16	Watts Removed	4,170	4,170	4,170	4,170	3.81	-
Residential Agriculture	Fan Thermostat Controller	E	15	HP	9	9	9	9	1,397.42	-
Residential Agriculture	Fan Thermostat Controller	E	15	HP	17	17	17	17	1,397.42	-
Residential Agriculture	Farm Energy Audit as Defined By USDA (Tier 2) (EG)	E	1	Units	1	1	1	1	-	-
Residential Agriculture	Greenhouse Infrared Film replacing single layer with double layer	G	4	Square Feet	2,880	2,880	2,880	2,880	-	0.04
Residential Agriculture	Interior LED Lighting (High Bay GT OR EQ 18 ft)	E	16	Watts Removed	21,070	21,070	21,070	21,070	3.67	-
Residential Agriculture	Interior LED Lighting (High Bay GT OR EQ 18 ft) (Effective until 2-13)	E	16	Watts Removed	7,470	7,470	7,470	7,470	3.67	-
Residential Agriculture	Interior LED Lighting (Low Bay LT 18 ft)	E	18	Watts Removed	11,470	11,470	11,470	11,470	2.35	-
Residential Agriculture	Interior LED Lighting (Low Bay LT 18 ft)	E	18	Watts Removed	4,550	4,550	4,550	4,550	2.35	-
Residential Agriculture	Lamp Removal - Remove 4-foot T12 fluorescent lamp (with T8 ballast retrofit)	E	15	Lamps Removed	6	6	6	6	62.38	-
Residential Agriculture	LED Grow Lights	E	11	Watts Removed	24,330	24,330	24,330	24,330	3.86	-
Residential Agriculture	LED Screw-in Replacing HID	E	16	Watts Removed	710	710	710	710	3.67	-
Residential Agriculture	Lighting Power Density	E	15	Watts Removed	19,990	19,990	19,990	19,990	2.35	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Residential Agriculture	Lighting Power Density	E	15	Watts Removed	27,050	27,050	27,050	27,050	2.35	-
Residential Agriculture	Lighting Power Density (Exterior)	E	12	Watts Removed	450	450	450	450	3.81	-
Residential Agriculture	Low-Energy Livestock Waterer	E	10	Units	13	13	13	13	1,406.24	-
Residential Agriculture	Lumens per Watt Improvement per Year, T5 HO fixtures to LED fixtures	E	18	Watts Removed	13,460	13,460	13,460	13,460	0.88	-
Residential Agriculture	Milk Pre-Cooler (Heat Exchanger, Chiller Savings)	E	15	Units	51,740	51,740	51,740	51,740	1.07	-
Residential Agriculture	New Linear LED Tube Fixture (High Bay GT OR EQ 15 ft)	E	16	Watts Removed	2,080	2,080	2,080	2,080	3.67	-
Residential Agriculture	New Linear LED Tube Fixture (Low Bay LT 15 ft)	E	18	Units	430	430	430	430	2.35	-
Residential Agriculture	Occupancy Sensors and Controls	E	10	Units	26	26	26	26	253.98	-
Residential Agriculture	Rollover Bonus (Electric Incentives)	E	1	Units	420	420	420	420	-	-
Residential Agriculture	Scroll Compressor for Dairy Refrigeration	E	15	Units	35,710	35,710	35,710	35,710	0.17	-
Residential Agriculture	Sprinkler to Drip Irrigation	E	15	Acre	55	55	55	55	163.00	-
Residential Agriculture	Variable Speed Controller for Vaccuum Pump	E	10	HP	2	2	2	2	526.72	-
Residential Agriculture	Variable Speed Controller on Milk Pump with Existing Milk Pre-Cooler	E	15	Per lb Milk	53,910	53,910	53,910	53,910	0.51	-
Residential Agriculture	Variable Speed Controller on Milk Pump with New Milk Pre-Cooler	E	15	Units	41,440	41,440	41,440	41,440	1.03	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Residential Agriculture	VFD on Ag Fans (GT 2,000) - Electric	E	15	HP	26	26	26	26	687.26	-
Residential Agriculture	VFD on Well Pumps	E	10	HP	5	5	5	5	171.81	-
Residential Agriculture	Water Pre-Heat Heat Exchanger Gas water heater	G	15	Units	40,800	40,800	40,800	40,800	-	0.01
Residential New Construction	ENERGY STAR Single Family HERS 56 or less - Combination	E	20	Units	120	120	120	120	1,260.00	-
Residential New Construction	ENERGY STAR Single Family HERS 56 or less - Combination	G	20	Units	120	120	120	120	-	36.00
Residential New Construction	ENERGY STAR Single Family HERS 56 or less - Combination Without AC	E	20	Units	2	2	2	2	630.00	-
Residential New Construction	ENERGY STAR Single Family HERS 56 or less - Combination Without AC	G	20	Units	2	2	2	2	-	36.00
Residential New Construction	ENERGY STAR Single Family HERS 56 or less - Electric	E	20	Units	50	50	50	50	1,260.00	-
Residential New Construction	ENERGY STAR Single Family HERS 56 or less - Electric Only Geothermal-ASHP	E	20	Units	1	0	1	0	2,610.00	-
Residential New Construction	ENERGY STAR Single Family HERS 56 or less - Gas	G	20	Units	120	120	120	120	-	36.00
Residential New Construction	ENERGY STAR Single Family HERS 57 or more - Combination	E	20	Units	80	80	80	80	990.00	-
Residential New Construction	ENERGY STAR Single Family HERS 57 or more - Combination	G	20	Units	80	80	80	80	-	27.00

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Residential New Construction	ENERGY STAR Single Family HERS 57 or more - Combination Without AC	E	20	Units	2	2	2	2	495.00	-
Residential New Construction	ENERGY STAR Single Family HERS 57 or more - Combination Without AC	G	20	Units	2	2	2	2	-	27.00
Residential New Construction	ENERGY STAR Single Family HERS 57 or more - Electric	E	20	Units	40	40	40	40	990.00	-
Residential New Construction	ENERGY STAR Single Family HERS 57 or more - Gas	G	20	Units	80	80	80	80	-	27.00
Residential New Construction	ENERGY STAR Townhouse - Combination Without AC	E	20	Units	2	2	2	2	450.00	-
Residential New Construction	ENERGY STAR Townhouse - Combination	E	20	Units	20	20	20	20	900.00	-
Residential New Construction	ENERGY STAR Townhouse - Combination	G	20	Units	20	20	20	20	-	22.50
Residential New Construction	ENERGY STAR Townhouse - Combination Without AC	G	20	Units	2	2	2	2	-	22.50
Residential New Construction	ENERGY STAR Townhouse - Electric	E	20	Units	8	8	8	8	900.00	-
Residential New Construction	ENERGY STAR Townhouse - Gas	G	20	Units	10	10	10	10	-	22.50
Residential New Construction	Single Family HERS 56 or less - Combination	E	20	Units	180	180	180	180	990.00	-
Residential New Construction	Single Family HERS 56 or less - Combination	G	20	Units	180	180	180	180	-	27.00
Residential New Construction	Single Family HERS 56 or less - Combination Without AC	E	20	Units	2	2	2	2	495.00	-
Residential New Construction	Single Family HERS 56 or less - Combination Without AC	G	20	Units	2	2	2	2	-	27.00

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Residential New Construction	Single Family HERS 56 or less - Electric	E	20	Units	80	80	80	80	990.00	-
Residential New Construction	Single Family HERS 56 or less - Electric - Electric Only Geothermal-ASHP	E	20	Units	0	1	0	1	2,340.00	-
Residential New Construction	Single Family HERS 56 or less - Gas	G	20	Units	160	160	160	160	-	27.00
Think! Energy	Elementary Education Kits - Materials, Box, Shower Timer, Flow Bag, Pipe Tape	E	1	Units	25,250	25,250	25,250	25,250	-	-
Think! Energy	Elementary Education Kits - Materials, Box, Shower Timer, Flow Bag, Pipe Tape	G	1	Units	32,875	32,875	32,875	32,875		
Think! Energy	LED Night Light	E	12	Units	25,250	25,250	25,250	25,250	18.41	-
Think! Energy	LED Replacing A-line 60W-2020	E	3	Units	50,500	0	0	0	25.65	-
Think! Energy	LED Replacing A-line 60W-2021	E	2	Units	0	50,500	0	0	25.65	-
Think! Energy	LED Replacing A-line 60W-2022	E	1	Units	0	0	50,500	0	25.65	-
Think! Energy	Low Flow Bath Faucet Aerators - Education (1.0 GPM) - Gas	G	10	Units	53,750	53,750	53,750	53,750	-	0.19
Think! Energy	Low Flow Bath Faucet Aerators - Education (1.5 GPM) – Gas	G	10	Units	0	0	0	0	-	0.11
Think! Energy	Low Flow Kitchen Faucet Aerators (1.5 GPM) - Gas	G	10	Units	26,875	26,875	26,875	26,875	-	0.42
Think! Energy	Low Flow Showerheads - Education (1.5 GPM) - Gas	G	10	Units	26,875	26,875	26,875	26,875	-	0.97
Think! Energy	Pipe Insulation R-3 (Gas)	G	15	Linear Feet	48,000	48,000	48,000	48,000	-	0.09

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Business Multifamily	2-Foot T8 to 2-Foot LED Tube Light (common)	E	18	Units	5	5	5	5	20.70	-
Business Multifamily	4-Foot T12 to 4-Foot LED Tube Lights (common)	E	18	Units	5	5	5	5	45.63	-
Business Multifamily	4-Foot T8 to 4-Foot LED Tube Lights (common)	E	18	Units	65	65	65	65	30.06	-
Business Multifamily	Air Conditioner - LT 5.4 Tons (1 ph) - 14 SEER	E	15	Tons	164	164	164	164	217.03	-
Business Multifamily	BE101b-ENERGY STAR Door (Electric)	E	20	Door	5	5	5	5	256.00	-
Business Multifamily	BE101b-NC-ENERGY STAR Door (Electric)	E	20	Door	5	5	5	5	256.00	-
Business Multifamily	BE104b-Duct Sealing (Electric)	E	18	1000 sq ft cond floor area	4	4	5	5	301.13	-
Business Multifamily	BE203b-Pipe Wrap-DHW-Common Area (Electric)	E	20	foot	24	24	24	24	44.74	-
Business Multifamily	Boiler Controls	G	15	mBtu	3,834	3,834	3,834	3,834	-	0.41
Business Multifamily	C_I Multifamily Custom - Electric	E	9	Units	13	13	13	13	15,639.99	-
Business Multifamily	C_I Multifamily Custom - Gas	G	13	Units	2	2	2	2	-	2,285.15
Business Multifamily	Common Area -- LED Exit Signs (Retrofit Only)	E	15	Units	149	149	149	149	180.90	-
Business Multifamily	DHW Boiler Tune-up	G	2	MBH	3,872	3,872	3,872	3,872	-	0.13
Business Multifamily	DI - 1.5 gpm Kitchen Aerator - Electric (Com)	E	10	Units	503	503	503	503	177.44	-
Business Multifamily	DI - 1.5 gpm Kitchen Aerator - Gas (Com)	G	20	Units	990	990	990	990	-	0.87
Business Multifamily	DI - 1.5 gpm Showerhead - Electric (Com)	E	10	Units	639	639	639	639	277.26	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Business Multifamily	DI - 1.5 gpm Showerhead - Gas (Com)	G	10	Units	365	365	365	365	-	12.96
Business Multifamily	DI - 1.5 gpm Showerhead - Handheld - Electric (Com)	E	10	Units	55	55	55	55	293.40	-
Business Multifamily	DI - 1.5 gpm Showerhead - Handheld - Gas (Com)	G	10	Units	1,071	1,071	1,071	1,071	-	12.96
Business Multifamily	DI - LED BR30 Flood Common 24 7 (Com)	E	4	Units	836	918	731	366	504.58	-
Business Multifamily	DI - LED BR30 Flood In-Unit (Com)	E	4	Units	218	218	191	95	48.60	-
Business Multifamily	DI - LED Candelabra Lamp (3-5W) - 24 7 operation (Com)	E	4	Units	223	223	195	98	222.30	-
Business Multifamily	DI - LED Candelabra Lamp (3-5W) - In Unit (Com)	E	4	Units	159	159	139	69	21.33	-
Business Multifamily	DI - LED Globe - In Unit	E	4	Units	1,075	1,180	940	470	24.30	-
Business Multifamily	Energy Star Doors	G	20	Units	8	8	8	8	-	0.20
Business Multifamily	Energy Star Room AC LT 8,000BTU hr	E	15	Units	2	2	2	2	22.68	-
Business Multifamily	Energy Star Window	G	25	Square Feet	244	244	244	244	-	0.04
Business Multifamily	Exterior HID to LED (24 7) (Per Watt Reduced)	E	16	Watts Removed	7,400	7,400	7,400	7,400	7.88	-
Business Multifamily	Exterior HID to LED (Per Watt Reduced)	E	16	Watts Removed	238,951	262,336	278,441	278,441	3.89	-
Business Multifamily	Furnace Replacement - 95% - In Unit	G	15	Units	5	5	5	5	-	7.01
Business Multifamily	Furnace Replacement (LT or EQ 200MBH) 95% Eff. - Common	G	15	Units	3	3	3	3	-	19.80
Business Multifamily	Furnace Tune-up (40-80 MBH) - Common	G	2	Units	5	5	5	5	-	4.23

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Business Multifamily	Furnace Tune-up 40,000 - 80,000 BTU	G	2	Units	1,560	1,560	1,560	1,560	-	2.38
Business Multifamily	Furnace Tune-up 80,001 - 120,000 BTU	G	2	Units	21	21	21	21	-	1.97
Business Multifamily	HV111-Steam Trap Repair or Replacement	G	5	trap	6	6	6	6	-	29.03
Business Multifamily	HV202.5-Furnace Replacement 98 percent	G	15	Units	93	93	93	93	-	16.04
Business Multifamily	HV202.5-NC-Furnace Replacement 98 percent	G	15	Units	93	93	93	93	-	16.04
Business Multifamily	HV207.5-NC-Space Heating Boiler Replacement ≥ 92 percent	G	20	MBH	387	387	387	387	-	0.38
Business Multifamily	HV207.5-Space Heating Boiler Replacement ≥ 92 percent	G	20	MBH	387	387	387	387	-	0.38
Business Multifamily	HV207.75-NC-Space Heating Boiler Replacement 95 percent	G	20	MBH	330	330	330	330	-	0.45
Business Multifamily	HV207.75-Space Heating Boiler Replacement ≥ 95 percent	G	20	MBH	330	330	330	330	-	0.45
Business Multifamily	HV301-Programmable T-stat-In-Unit-Air Conditioning and Natural Gas Space Heat (Combo)	E	9	Units	6	6	6	6	174.35	-
Business Multifamily	HV301-Programmable T-stat-In-Unit-Air Conditioning and Natural Gas Space Heat (Combo)	G	9	Units	6	6	6	6	-	0.70
Business Multifamily	In-Direct Water Heater (e90% Eff)	G	15	MBH	1,137	1,137	1,137	1,137	-	3.66
Business Multifamily	Interior Stairwell Controls	E	9	Watts Controlled	2,198	2,198	2,198	2,198	4.33	-
Business Multifamily	LED A-Lamp Replacement - Common Area - Exterior	E	3	Units	249	205	145	-	148.77	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Business Multifamily	LED Candelabra Lamp (3-5W) - Common	E	4	Units	156	156	137	68	111.60	-
Business Multifamily	LED Candelabra Lamp (3-5W) - In-Unit	E	4	Units	301	301	263	132	24.30	-
Business Multifamily	LED Candelabra Lamp (5-13W) - Common	E	4	Units	25	25	22	11	111.60	-
Business Multifamily	LED Downlight Fixture	E	15	Units	879	879	879	879	127.35	-
Business Multifamily	LED Fixture - Exterior - Common	E	3	Units	253	208	147	-	148.77	-
Business Multifamily	LED Fixture - Exterior - In-Unit	E	12	Units	161	161	161	161	72.90	-
Business Multifamily	LED Fixture - In Unit	E	15	Units	250	250	250	250	39.60	-
Business Multifamily	LED Globe - In Unit	E	4	Units	2,588	2,588	2,261	1,131	24.30	-
Business Multifamily	LED Lamp - 40W Replacement - In Unit	E	3	Units	260	215	152	-	16.38	-
Business Multifamily	LED Lamp - 50-80W Replacement - Common	E	3	Units	19	16	11	-	28.52	-
Business Multifamily	LED Lamp - 60W Replacement - In Unit (Com)	E	3	Units	12,107	9,969	7,054	-	23.85	-
Business Multifamily	LED Lamp - 60W Replacement - In Unit (Com) REDUCED	E	3	Units	6,405	5,274	3,732		25.65	-
Business Multifamily	LED Lamp - 80-100W	E	3	Units	52	44	31		135.88	-
Business Multifamily	LED Lamp - CFL Replacement - In Unit	E	3	Units	3,898	2,924	1,949	-	9.16	-
Business Multifamily	LED Lamp - Common - DI - (com)	E	3	Units	23	19	13	-	83.85	-
Business Multifamily	LED Lamp - Flood PAR - Common	E	4	Units	529	529	462	231	130.95	-
Business Multifamily	LED Lamp - In-Unit - DI - (com)	E	3	Units	5,163	4,252	3,009	-	23.85	-
Business Multifamily	LED Lamp - MR16 - Common	E	4	Units	25	25	22	11	34.29	-
Business Multifamily	LED Lamp - PAR - In Unit	E	4	Units	1,006	1,006	879	440	48.60	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Business Multifamily	LED Replacing CFL - 50-79W - Common	E	3	Units	160	132	93	-	10.80	-
Business Multifamily	LED Replacing CFL - 80-100W - Common	E	3	Units	5	5	3	-	9.63	-
Business Multifamily	LED Replacing CFL - PAR BR - Common	E	4	Units	3	3	2	1	10.80	-
Business Multifamily	Low Flow Bath Faucet Aerators - Prescriptive Gas	G	10	Units	50	50	50	50	-	0.18
Business Multifamily	Low Flow Bath Faucet Aerators 1.0gpm - Electric - DI	E	10	Units	1,131	1,131	1,131	1,131	61.49	-
Business Multifamily	Low Flow Bath Faucet Aerators 1.0gpm - Gas - DI	G	10	Units	271	271	271	271	-	0.30
Business Multifamily	Low Flow Kitchen Faucet Aerators- Prescriptive Gas	G	10	Units	515	515	515	515	-	1.13
Business Multifamily	Low Flow Showerheads - Prescriptive Gas - 1.75gpm	G	10	Units	188	188	188	188	-	9.72
Business Multifamily	Low-Flow Showerhead - 1.5gpm - Gas	G	10	Units	779	779	779	779	-	12.96
Business Multifamily	LT205.5-LED Lamp-Globe	E	4	lamp	13	13	11	6	85.70	-
Business Multifamily	LT403-NC-Exterior Occupancy Sensor	E	8	Watt	600	600	600	600	1.73	-
Business Multifamily	LT404-NC-Interior Stairwell Controls	E	8	Watt	216	216	216	216	4.81	-
Business Multifamily	LT405-NC-Parking Garage Occupancy Sensor	E	8	Watt	63,122	63,122	63,122	63,122	0.00	-
Business Multifamily	LT405-Parking Garage Occupancy Sensor	E	8	Watt	63,122	63,122	63,122	63,122	0.00	-
Business Multifamily	LT604-LED Fixture replacing Fluorescent Tube Fixture	E	18	Watt	389	389	389	389	2.67	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Business Multifamily	LT605-LED Fixture (24/7) replacing Fluorescent Tube Fixture	E	6	Watt	119	119	119	119	8.76	-
Business Multifamily	NC - 2-Foot T8 to 2-Foot LED Tube Light (common)	E	18	Units	420	420	420	420	20.70	-
Business Multifamily	NC - 4-Foot T8 to 4-Foot LED Tube Lights (common)	E	18	Units	44	44	44	44	30.06	-
Business Multifamily	NC - Furnace Replacement - 95% - In Unit	G	15	Units	61	61	61	61	-	6.60
Business Multifamily	NC - Furnace Replacement (LT or EQ 200MBH) 92% Eff. - Common	G	15	Units	43	43	43	43	-	8.77
Business Multifamily	NC - Furnace Replacement (LT or EQ 200MBH) 95% Eff. - Common	G	15	Units	5	5	5	5	-	6.60
Business Multifamily	NC - High-efficiency Boiler - GT 90%	G	20	kBtu/h	1,422	1,422	1,422	1,422	-	0.29
Business Multifamily	NC - In-direct Water Heater (90+% Eff)	G	15	MBH	1,209	1,209	1,209	1,209	-	0.24
Business Multifamily	NC - Large High Efficiency Gas Water Heater (Com)	G	6	Units	5	5	5	5	-	30.03
Business Multifamily	NC - LED Lamp - 60W Replacement - In Unit (Com)	E	3	Units	1,416	1,166	825	-	24.19	-
Business Multifamily	NC - LED Replacing CFL - 50-79W - Common	E	3	Units	118	97	69	-	10.80	-
Business Multifamily	NC - Low Flow Bath Faucet Aerator - Prescriptive Gas	G	10	Units	50	50	50	50	-	0.18
Business Multifamily	NC - Low Flow Showerheads - Prescriptive Gas - 1.75gpm	G	10	Units	40	40	40	40	-	9.72
Business Multifamily	NC - Low-Flow Showerhead - 1.5gpm - Electric	E	10	Units	50	50	50	50	277.26	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Business Multifamily	Occupancy Sensors under 500 W	E	10	Units	231	231	231	231	259.43	-
Business Multifamily	Pipe Wrap - DHW - Common - DI	G	10	Linear Feet	11,486	11,486	11,486	11,486	-	0.15
Business Multifamily	Pipe Wrap - Gas - DHW - In-Unit - DI	G	15	Linear Feet	7,665	7,665	7,665	7,665	-	0.15
Business Multifamily	Pipe Wrap - Space Heat - Common - DI	G	20	Linear Feet	12,639	12,639	12,639	12,639	-	0.41
Business Multifamily	Program Incentive Match	E	1	Units	834,800	834,800	834,800	834,800	-	-
Business Multifamily	Roof Insulation (Com) - Gas Heat	G	25	1000 Square Feet	12	12	12	12	-	1.10
Business Multifamily	Setback thermostat - moderate setback -- Prescriptive Gas or Combination	G	9	Units	36	36	36	36	-	0.89
Business Multifamily	Space Heating Boiler Tune-up	G	2	mBtu	29,076	29,076	29,076	29,076	-	0.05
Business Multifamily	Steam Traps	G	5	Units	154	154	154	154	-	29.03
Business Multifamily	Wi-Fi Programmable Thermostats - Gas - Common (Com)	G	9	Units	100	100	100	100	-	1.22
Business Multifamily	WT101.5a-Low-Flow Bath Aerator-1.0gpm-Natural Gas DHW	G	10	Units	271	271	271	271	-	0.30
Business Multifamily	WT101.5a-NC-Low-Flow Bath Aerator-1.0gpm-Natural Gas DHW	G	10	Units	271	271	271	271	-	0.30
Business Multifamily	WT101.5b-Low-Flow Bath Aerator-1.0gpm-Electric DHW	E	20	Units	15	15	15	15	70.00	-
Business Multifamily	WT205-Condenser Heat Recovery (for DHW offset)	G	15	Ton	11	11	11	11	-	14.81
Business Multifamily	WT206a-DI-Low-Flow Bath Aerator-Natural Gas DHW	G	18	Units	222	222	222	222	-	0.67

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Business Multifamily	WT206b-DI-Low-Flow Bath Aerator-Electric DHW	E	13	Units	7	7	7	7	165.18	-
Comprehensive Business Solutions	Custom Electric Program	E	16	Project	22	28	30	33	1,386,364	-
Comprehensive Business Solutions	Custom Gas Program	G	17	Project	20	18	16	15	-	21,470.00
Comprehensive Business Solutions	2 Speed RTU Supply Fan	E	10	Tons	453	592	793	842	241.74	-
Comprehensive Business Solutions	3 Shift RTO (Recuperative Regenerative Thermal Oxidizers) New Construction	G	20	CFM	17,832	15,211	13,702	12,000	-	1.58
Comprehensive Business Solutions	4-foot Standard T8 to Reduced Wattage T8 (lamp only)	E	5	Units	13,212	15,009	14,892	15,808	9.39	-
Comprehensive Business Solutions	4-Foot T5 to One (1) 4-Foot LED Tube Light	E	14	Units	-	-	-	-	13.78	-
Comprehensive Business Solutions	4-Foot T5 to One (1) 4-Foot LED Tube Light (High Bay GT or EQ 15 ft)	E	18	Units	25,112	28,134	27,914	29,631	120.79	-
Comprehensive Business Solutions	4-Foot T8 to One (1) 4-Foot LED Tube Light (High Bay GT or EQ 15 ft)	E	18	Units	213,733	350,474	328,679	376,744	45.63	-
Comprehensive Business Solutions	A C Reduction From Lighting Reduction (-20F to 0F)	E	12	Watts Removed	53,132	59,527	79,733	84,638	1.57	-
Comprehensive Business Solutions	A C Reduction From Lighting Reduction (20F to 40F)	E	12	Watts Removed	69,309	77,651	104,010	110,408	0.67	-
Comprehensive Business Solutions	AC GT 240,000 Btuh (20 tons) and LT or EQ 760,000 Btuh (63.3 tons)	E	15	Tons	215	241	323	343	33.65	-
Comprehensive Business Solutions	AC GT 760,000 Btuh (63.3 tons)	E	15	Tons	86	97	129	137	12.36	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	AC LT 65,000 Btuh (5.4 tons)	E	15	Tons	745	974	1,304	1,384	211.31	-
Comprehensive Business Solutions	AC Units GT 120,000 Btuh (10 tons) and LT or EQ 240,000 Btuh (20 tons)	E	15	Tons	215	241	323	343	20.83	-
Comprehensive Business Solutions	AC Units GT 65,000 Btuh (5.4 tons) and LT =120,000 Btuh (10 tons)	E	15	Tons	1,155	1,509	2,022	2,146	35.69	-
Comprehensive Business Solutions	Added Compressed Air Storage Tanks	E	25	HP	130	170	228	242	370.97	-
Comprehensive Business Solutions	Ag Circulation, Exhaust, or Vent Fans (24 inch to 35 inch Fan blade diam)	E	7	Units	208	238	318	338	326.55	-
Comprehensive Business Solutions	Ag Circulation, Exhaust, or Vent Fans (36 inch to 47 inch Fan blade diam)	E	7	Units	55	62	83	88	548.64	-
Comprehensive Business Solutions	Ag Circulation, Exhaust, or Vent Fans (48 inch to 71 inch Fan blade diam)	E	7	Units	389	442	593	629	984.87	-
Comprehensive Business Solutions	Ag High Volume, Low Speed (HVLS) fans (16-ft blade diameter)	E	10	Units	2	3	5	5	2,823.80	-
Comprehensive Business Solutions	Ag High Volume, Low Speed (HVLS) fans (18-ft blade diameter)	E	10	Units	2	3	5	5	4,333.10	-
Comprehensive Business Solutions	Ag High Volume, Low Speed (HVLS) fans (20-ft blade diameter)	E	10	Units	2	3	5	5	5,771.19	-
Comprehensive Business Solutions	Ag High Volume, Low Speed (HVLS) fans (22-ft blade diameter)	E	10	Units	2	3	5	5	7,496.78	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Ag High Volume, Low Speed (HVLS) fans (24-ft blade diameter)	E	10	Units	2	3	5	5	8,790.90	-
Comprehensive Business Solutions	Agriculture - Interior LED lighting	E	16	Watts Removed	2,329	2,610	2,589	2,749	5.44	-
Comprehensive Business Solutions	Air and Water-Cooled Chiller Tune-up	E	5	Tons	2	3	5	5	10,837.91	-
Comprehensive Business Solutions	Air and Water-Cooled Chiller Tune-up (150+ Tons)	E	5	Tons	36	42	56	59	16,815.28	-
Comprehensive Business Solutions	Air and Water-Cooled Chiller Tune-up (20-149 Tons)	E	5	Tons	15	20	27	29	10,310.07	-
Comprehensive Business Solutions	Air Compressor Outdoor Air Intake	E	20	HP	2,705	3,534	4,734	5,025	96.35	-
Comprehensive Business Solutions	Air Compressor Waste Heat Recovery	G	15	HP	1,435	1,281	1,154	1,084	-	3.56
Comprehensive Business Solutions	Air Side Economizer	E	15	Tons	897	1,020	1,366	1,450	65.64	-
Comprehensive Business Solutions	Air Side Economizer for CRAC or Telecom Applications	E	10	MBH	2,256	2,947	3,947	4,190	361.53	-
Comprehensive Business Solutions	Air-cooled Chiller - 1.04 kW ton IPLV	E	20	Tons	10,049	13,128	17,585	18,666	138.47	-
Comprehensive Business Solutions	Air-Cooled Condenser - Electric DWH - HVAC or Process Applications	E	15	Tons	2	3	5	5	3,355.56	-
Comprehensive Business Solutions	All-Electric Injection Mold Machines	E	20	Tons	7,882	8,831	11,829	12,557	207.97	-
Comprehensive Business Solutions	Anti-sweat Heater Controls	E	15	Units	1,255	1,406	1,883	1,999	1,175.33	-
Comprehensive Business Solutions	Auto Sash Closer (EO)	E	8	Linear Feet	16	21	29	30	527.76	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Automatic High Speed Doors (Between Cooler to Dock)	E	12	Square Feet	845	946	1,268	1,346	169.36	-
Comprehensive Business Solutions	Automatic High Speed Doors (Between Freezer to Cooler)	E	12	Square Feet	134	150	201	213	785.36	-
Comprehensive Business Solutions	Automatic High Speed Doors (Between Freezer to Dock)	E	12	Square Feet	436	488	654	695	1,594.42	-
Comprehensive Business Solutions	Barrel Wraps - Injection Molding and Extruders	E	5	Square Feet	2	3	5	5	1,061.78	-
Comprehensive Business Solutions	Battery Charger - 1 Shift Day	E	20	Units	2	3	5	5	1,281.15	-
Comprehensive Business Solutions	Battery Charger - 2 Shift Day	E	20	Units	9	12	17	18	2,358.72	-
Comprehensive Business Solutions	Battery Charger - Continuous	E	20	Units	9	12	17	18	3,192.35	-
Comprehensive Business Solutions	BOC (Combo Customer)	E	5	per participant of 194,500 SF	2	2	2	2	21,181.05	-
Comprehensive Business Solutions	BOC (Combo Customer)	G	5	per participant of 194,500 SF	2	1	1	1	-	137.10
Comprehensive Business Solutions	BOC (Electric Customer)	E	5	per participant of 194,500 SF	8	10	14	14	21,181.05	-
Comprehensive Business Solutions	BOC (Gas Customer)	G	5	per participant of 194,500 SF	12	11	10	9	-	137.10

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Boiler Modulating Burner Control 10 to 1 or 5 to 1 turn-down (retrofit)	G	15	Units	73,916	65,967	59,422	55,837	-	0.04
Comprehensive Business Solutions	Boiler Reset Control	G	15	MBH	28,972	25,856	23,290	21,886	-	0.05
Comprehensive Business Solutions	Boiler Tune-up Level 1 (GT or EQ 110 and 500 kbtu h)	G	2	kBTUh	76	68	61	57	-	17.71
Comprehensive Business Solutions	Boiler Tune-up Level 2 (GT or EQ 500 and	G	2	kBTUh	143	128	115	108	-	30.02
Comprehensive Business Solutions	Boiler Tune-up Level 3 (GT or EQ 1200 kbtu h)	G	2	kBTUh	466	397	336	336	-	61.69
Comprehensive Business Solutions	Buy Michigan (Incentives Only) (EG)	E	1	Units	71,891	93,089	93,214	98,517	-	-
Comprehensive Business Solutions	Buy Michigan (Incentives Only) (EO)	E	1	Units	176,594	228,666	309,112	326,701	-	-
Comprehensive Business Solutions	Buy Michigan (Incentives Only) (GO)	E	1	Units	468,637	739,013	740,001	782,108	-	-
Comprehensive Business Solutions	Case EC Motor	E	15	Units	2,849	3,192	4,276	4,539	723.06	-
Comprehensive Business Solutions	Central Lighting Control	E	12	Square Feet	1,520,866	1,703,917	1,690,608	1,794,606	0.73	-
Comprehensive Business Solutions	Chilled Water Circulation (500w to 1000w)	E	15	Units	2	3	5	5	1,119.69	-
Comprehensive Business Solutions	Chilled Water Circulation (GT 1000w)	E	15	Units	4	6	8	8	4,479.64	-
Comprehensive Business Solutions	Chilled Water Reset Retrofit (10 degrees) - Electric	E	5	Tons	9,127	12,740	16,130	18,489	473.43	-
Comprehensive Business Solutions	Chilled Water Reset Retrofit (5 degrees) - Electric	E	5	Tons	6,505	8,498	11,383	12,084	137.49	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Combination Boiler Oxygen Trim Control and Linkage-less Boiler Controls (HVAC)	G	5	MBH	50,336	44,923	40,465	38,024	-	0.05
Comprehensive Business Solutions	Combination Boiler Oxygen Trim Control and Linkage-less Boiler Controls (Process)	G	15	MBH	31,095	27,751	24,998	23,490	-	0.09
Comprehensive Business Solutions	Commercial Kitchen Ventilation Control (GO)	G	20	CFM	40,247	35,919	32,355	30,403	-	0.04
Comprehensive Business Solutions	Compressed Air Applications Replaced with Air Blowers	E	15	HP	100	131	175	186	4,903.21	-
Comprehensive Business Solutions	Compressed Air Dryer, Dewpoint Sensor Control	E	15	HP	8,006	10,459	14,010	14,872	58.12	-
Comprehensive Business Solutions	Compressed Air Energy Audit with Metered Flow - Electric	E	1	Units	129	145	194	206	12,000.00	-
Comprehensive Business Solutions	Compressed Air Engineered Nozzle (1,000 hours)	E	15	Units	2	3	5	5	989.82	-
Comprehensive Business Solutions	Compressed Air Pressure Flow Controller	E	10	HP	519	679	909	965	64.88	-
Comprehensive Business Solutions	Computer Room Air Conditioning - Glycol Economizer	E	15	MBH	215	241	323	343	290.45	-
Comprehensive Business Solutions	Computer Room Air Conditioning (GT 240 MBH)	E	15	MBH	215	241	323	343	154.44	-
Comprehensive Business Solutions	Computer Room Air Conditioning (LT or EQ 65 MBH)	E	15	MBH	2,336	3,053	4,089	4,340	133.38	-
Comprehensive Business Solutions	Constant Volume AHU to Hydronic Heat Pump Loop (Gas)	G	20	Square Feet	88,534	79,013	71,174	66,880	-	0.01
Comprehensive Business Solutions	Constant Volume AHU to VAV with Hydronic Reheat (Combo)	E	20	Square Feet	33,189	37,184	36,894	39,163	3.11	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Constant Volume AHU to VAV with Hydronic Reheat (Combo)	G	20	Square Feet	36,472	22,923	20,648	19,403	-	0.01
Comprehensive Business Solutions	Constant Volume AHU to VAV with Hydronic Reheat (Gas)	G	20	Square Feet	75,619	67,487	60,791	57,123	-	0.03
Comprehensive Business Solutions	Controls - Exterior Lighting Bilevel Control w Override, 150 to 1000 HID	E	10	Units	2	3	3	4	311.86	-
Comprehensive Business Solutions	Cool (White) Roof (Consumers Energy Combo)	G	20	Square Feet	2,603,954	2,143,639	1,930,945	1,814,463	-	(0.00)
Comprehensive Business Solutions	Cool (White) Roof (Consumers Energy Electric Customer Only)	E	20	Square Feet	2,369,570	3,477,326	3,450,167	3,662,403	0.11	-
Comprehensive Business Solutions	Correct Sizing Compressed Air System	E	25	HP	2	3	5	5	707.81	-
Comprehensive Business Solutions	Critical Zone Supply Air Reset Control (Combo)	G	15	Tons	914	574	517	486	-	6.45
Comprehensive Business Solutions	Critical Zone Supply Air Reset Control (EO)	E	15	Tons	2,541	2,847	3,814	4,048	209.41	-
Comprehensive Business Solutions	Dairy Refrigeration Tune-up	E	5	per lb of milk/day	756,801	847,889	1,135,709	1,205,572	0.10	-
Comprehensive Business Solutions	Demand Control Ventilation	G	15	Square Feet	740,659	661,008	595,422	559,504	-	0.03
Comprehensive Business Solutions	Demand Control Ventilation - Combination Customers	G	15	Square Feet	488,273	435,764	392,527	368,848	-	0.02
Comprehensive Business Solutions	Demand Control Ventilation - Electric Customers	E	15	Square Feet	21,549	24,142	32,338	34,327	0.46	-
Comprehensive Business Solutions	Demand Control Ventilation and Occupancy Sensors for HVAC - Air Conditioning and Natural Gas Heat (Combination)	E	15	Square Feet	14,217	15,929	15,804	16,776	0.75	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Demand Control Ventilation and Occupancy Sensors for HVAC - Air Conditioning and Natural Gas Heat (Combination)	G	15	Square Feet	15,624	9,819	8,845	8,312	-	0.01
Comprehensive Business Solutions	Demand Control Ventilation and Occupancy Sensors for HVAC - Natural Gas Heat (Gas-Only)	G	15	Square Feet	245,481	219,082	197,345	185,440	-	0.02
Comprehensive Business Solutions	Destratification Fans	G	15	Square Feet	238,720	213,048	191,909	180,332	-	0.01
Comprehensive Business Solutions	Dewpoint Sensor Control For Desiccant Plastic Dryer	E	15	Units	29	39	53	56	495.79	-
Comprehensive Business Solutions	Direct Fired Makeup	G	15	MBH	151,389	135,109	121,703	114,361	-	0.15
Comprehensive Business Solutions	Direct Fired Makeup Air Handling Units	G	15	MBH	39,200	34,984	31,513	29,612	-	0.16
Comprehensive Business Solutions	Domestic Hot Water Recirculation (500w to 1000w)	E	15	Units	3	5	6	6	4,394.52	-
Comprehensive Business Solutions	Domestic Hot Water Recirculation (GT 1000w)	E	15	Units	2	3	5	5	17,578.08	-
Comprehensive Business Solutions	Domestic Hot Water Recirculation (LT 500w)	E	15	Units	2	3	5	5	879.26	-
Comprehensive Business Solutions	Ductless Air Conditioning Unit or Heat Pump System	E	15	Tons	12	17	23	24	217.18	-
Comprehensive Business Solutions	EC Motors on Furnaces	E	20	HP	202	265	354	376	1,213.20	-
Comprehensive Business Solutions	ECM Fan Motor For Cold Storage Evaporator (Agriculture)	E	15	HP	2	3	5	5	471.31	-
Comprehensive Business Solutions	Electric Motors Replacing Pneumatic Motors	E	10	HP	2	3	5	5	1,167.48	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Electric Water Heater - Electric Dryer (EO)	E	7	Units	2	3	5	5	775.71	-
Comprehensive Business Solutions	Electric Water Heater - Gas Dryer (EO)	E	7	Units	2	3	5	5	376.45	-
Comprehensive Business Solutions	EMS for Manufacturing HVAC Fans	E	15	HP	2	3	5	5	1,927.87	-
Comprehensive Business Solutions	EnergyStar Certification Bonus (EG)	E	1	Units	2	3	3	4	-	-
Comprehensive Business Solutions	EnergyStar Certification Bonus (EO)	E	1	Units	2	3	5	5	-	-
Comprehensive Business Solutions	EnergyStar Certification Bonus (GO)	E	1	Units	2	3	3	3	-	-
Comprehensive Business Solutions	EnergyStar Steam Cookers - 3, 4, 5, or 6 Pan; Electric	E	12	Units	2	3	5	5	9,817.47	-
Comprehensive Business Solutions	EnergyStar Steam Cookers - 5 or 6 Pan; Gas	G	12	Units	1	1	1	1	-	175.45
Comprehensive Business Solutions	Engine Block Heater Controls	E	5	Units	37	43	57	61	505.44	-
Comprehensive Business Solutions	Enhanced Ventilation Control - Air Conditioning and Natural Gas Heat (Consumers Energy Electric and Natural Gas)	E	10	Tons	114	127	126	134	252.91	-
Comprehensive Business Solutions	Enhanced Ventilation Control - Air Conditioning and Natural Gas Heat (Consumers Energy Electric and Natural Gas)	G	10	Tons	125	79	71	66	-	8.20
Comprehensive Business Solutions	Enhanced Ventilation Control - Natural Gas Heat (Consumers Energy Natural Gas)	G	10	Tons	365	325	293	275	-	7.73

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Enthalpy Wheel Energy Recovery Unit (GO)	G	15	CFM	4,190	3,739	3,368	3,165	-	0.09
Comprehensive Business Solutions	Enthalpy Wheels ERUs	E	15	CFM	28,435	31,857	31,608	33,553	0.15	-
Comprehensive Business Solutions	Enthalpy Wheels ERUs	G	15	CFM	31,247	19,639	17,690	16,623	-	0.00
Comprehensive Business Solutions	Evaporator Fan Control (EC motor)	E	5	Units	122	140	187	198	289.58	-
Comprehensive Business Solutions	Evaporator Fan Control (PSC motor)	E	5	Units	2	3	5	5	698.49	-
Comprehensive Business Solutions	Evaporator Fan Control (SP motor)	E	5	Units	24	28	38	40	1,013.51	-
Comprehensive Business Solutions	Exterior Induction Lighting Retrofit	E	16	Watts Removed	11,223	12,574	12,476	13,244	3.79	-
Comprehensive Business Solutions	Exterior LED Lighting	E	16	Watts Removed	1,206,628	1,351,857	1,341,298	1,423,808	3.79	-
Comprehensive Business Solutions	Exterior LED Lighting Retrofit	E	16	Watts Removed	8,456,357	11,535,097	11,535,097	11,535,097	3.79	-
Comprehensive Business Solutions	Exterior Lighting Occupancy Sensors	E	10	Watts Controlled	30,296	33,943	33,677	35,749	3.04	-
Comprehensive Business Solutions	Exterior Multi-Step Dimming Controls	E	8	Watts Controlled	23,046	25,820	25,619	27,195	1.52	-
Comprehensive Business Solutions	Exterior Multi-Step Dimming Occ Sensor	E	8	Watts Controlled	8,339	9,342	9,269	9,839	1.52	-
Comprehensive Business Solutions	Fan Thermostat Controller	E	15	Units	828	928	1,243	1,319	1,391.72	-
Comprehensive Business Solutions	Farm Energy Audit as Defined By USDA (Tier 2) (EG)	E	1	Units	2	3	3	4	-	-
Comprehensive Business Solutions	Farm Energy Audit as Defined By USDA (Tier 2) (EO)	E	1	Units	2	3	5	5	-	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Farm Energy Audit as Defined By USDA (Tier 2) (GO)	E	1	Units	2	3	3	3	-	-
Comprehensive Business Solutions	Fiber Laser Cutting Replacing Carbon Dioxide Laser Cutting	E	20	Units	65	72	97	103	28,573.16	-
Comprehensive Business Solutions	Fixed-Plate Energy Recovery Unit (GO)	G	15	CFM	56,629	50,539	45,525	42,779	-	0.01
Comprehensive Business Solutions	Floating Suction Pressure Control	E	15	Tons	2,460	2,756	3,691	3,918	1,109.16	-
Comprehensive Business Solutions	Floating Suction Pressure Control (Grocery Store)	E	15	Tons	192	215	288	306	1,109.16	-
Comprehensive Business Solutions	Freezers - 15 to 30 Cubic Feet	E	12	Units	2	3	5	5	458.93	-
Comprehensive Business Solutions	Freezers - 30 to 50 Cubic Feet	E	12	Units	4	6	8	8	474.73	-
Comprehensive Business Solutions	Gas Furnace or RTU Tune-up (GT or EQ 300 MBH)	G	2	kBTUh	17	15	13	13	-	8.34
Comprehensive Business Solutions	Gas Furnace or RTU Tune-up (GT or EQ 40 and	G	2	kBTUh	89	79	71	67	-	3.38
Comprehensive Business Solutions	Gas tankless water heater	G	20	Units	3	3	3	2	-	14.37
Comprehensive Business Solutions	Gas Water Heater - Electric Dryer (EO)	E	7	Units	2	3	5	5	475.61	-
Comprehensive Business Solutions	Gas Water Heater - Gas Dryer (GO)	G	7	Units	32	29	26	24	-	2.61
Comprehensive Business Solutions	Gas Water Heater GT 80 gal	G	13	MBH	8,149	7,273	6,551	6,156	-	0.13
Comprehensive Business Solutions	Gas Water Heater LT or EQ 80 gal	G	13	Units	4	4	3	3	-	2.68
Comprehensive Business Solutions	GO Programmable Thermostat	G	9	Units	79	71	64	60	-	5.14

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	GO Web Based Programmable Thermostat	G	9	Units	33	30	27	25	-	3.72
Comprehensive Business Solutions	Grain Dryers	G	25	Units	1,039,247	927,486	835,459	785,061	-	0.00
Comprehensive Business Solutions	Grain Storage Temperature Moisture Controller	E	15	HP	39	45	60	64	306.25	-
Comprehensive Business Solutions	Greenhouse Environmental Controls	E	15	Square Feet	370,165	414,718	411,479	436,791	0.09	-
Comprehensive Business Solutions	Greenhouse Environmental Controls	G	15	Square Feet	406,779	255,658	230,291	216,399	-	0.02
Comprehensive Business Solutions	Greenhouse Heat Curtains	G	5	Square Feet	272,113	242,850	218,754	205,558	-	0.01
Comprehensive Business Solutions	Greenhouse In-Floor Heating System (Without Heat Curtains)	G	20	Square Feet	15,356	13,704	12,344	11,600	-	0.03
Comprehensive Business Solutions	Greenhouse Infrared Film replacing double layer with double layer	G	5	Square Feet	2,097,745	1,872,152	1,686,394	1,584,665	-	0.01
Comprehensive Business Solutions	Greenhouse Infrared Film replacing single layer with double layer	G	4	Square Feet	64,578	57,633	51,915	48,783	-	0.04
Comprehensive Business Solutions	Guestroom Energy Management Control (electric heat)	E	8	Units	810	921	1,233	1,309	977.54	-
Comprehensive Business Solutions	Heat Pump Domestic Water Heater - Tank Style (LT or EQ 55 Gallon; EF GT or EQ 2.2)	E	10	Units	2	3	5	5	4,015.44	-
Comprehensive Business Solutions	Heat Pump Domestic Water Heater (LT or EQ 50 MBH; COP GT or EQ 3.0)	E	15	Units	2	3	5	5	18,564.39	-
Comprehensive Business Solutions	Heated Blower Purge Desiccant CA Dryer	E	15	HP	3,043	3,977	5,327	5,654	28.52	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	High Eff Domestic Water Heater (84% to 89%)	G	15	MBH	26,567	23,710	21,357	20,069	-	0.09
Comprehensive Business Solutions	High Eff Domestic Water Heater (90%)	G	15	MBH	23,186	20,692	18,639	17,515	-	0.21
Comprehensive Business Solutions	High Efficiency Boiler with AFUE GT or EQ 86% and LT 90%	G	20	MBH	1,875	1,673	1,507	1,416	-	0.13
Comprehensive Business Solutions	High Efficiency Boiler with AFUE GT or EQ 90%	G	20	MBH	326,394	291,293	246,562	240,000	-	0.10
Comprehensive Business Solutions	High Efficiency Boilers, GT or EQ .90 Efficiency	G	20	MBH	3,741	3,338	3,007	2,826	-	0.14
Comprehensive Business Solutions	High Efficiency Furnace or Unit Heater (92-94% AFUE)	G	15	MBH	13,541	12,084	10,885	10,229	-	0.21
Comprehensive Business Solutions	High Efficiency Furnace or Unit Heater (GT 94% AFUE)	G	15	MBH	12,499	11,155	10,048	9,442	-	0.25
Comprehensive Business Solutions	High Efficiency Pool Heater .84+ EF	G	15	mBtu	3,504	3,127	2,817	2,647	-	0.21
Comprehensive Business Solutions	High Efficiency Process Boiler Replacement (Steam)	G	20	MBH	35,414	31,605	28,469	26,752	-	0.07
Comprehensive Business Solutions	High Efficiency Process Boiler Replacement (Water)	G	20	MBH	17,455	15,578	14,032	13,186	-	0.10
Comprehensive Business Solutions	High Performance Glazing in Windows (EO)	E	20	Square Feet	34,003	38,096	51,028	54,167	2.80	-
Comprehensive Business Solutions	High Performance Non-HEPA Filter	E	2	CFM	90,824	118,647	158,923	168,699	1.34	-
Comprehensive Business Solutions	High Performance or Reduced Wattage T8 - HP 4-foot lamp and ballast upgrade	E	15	Units	3,981	4,460	4,425	4,697	18.52	-
Comprehensive Business Solutions	High Volume, Low Speed Fans	E	10	Units	29	39	53	56	5,771.19	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	High-Efficiency Hand Dryer	E	10	Units	7	8	11	11	846.79	-
Comprehensive Business Solutions	Hot Holding Cabinet, Full Size (Energy Star)	E	12	Units	2	3	5	5	4,631.45	-
Comprehensive Business Solutions	HVAC Steam Boilers	G	20	MBH	31,247	27,887	25,120	23,605	-	0.06
Comprehensive Business Solutions	Hybrid Injection Mold Machines	E	20	Tons	39,141	54,460	54,460	79,033	183.40	-
Comprehensive Business Solutions	Hydronic Heating (500w to 1000w)	E	15	Units	17	23	30	32	2,002.46	-
Comprehensive Business Solutions	Hydronic Heating (GT 1000w)	E	15	Units	9	12	17	18	8,010.70	-
Comprehensive Business Solutions	Hydronic Heating (LT 500w)	E	15	Units	19	25	33	35	400.14	-
Comprehensive Business Solutions	Hydronic HVAC Pump Control (EO)	E	15	HP	941	1,054	1,412	1,499	2,674.28	-
Comprehensive Business Solutions	Infrared Heaters - Combination Customers	E	15	MBH	22,748	25,486	25,287	26,842	22.69	-
Comprehensive Business Solutions	Infrared Heaters - Combination Customers	G	15	MBH	24,998	15,711	14,152	13,298	-	0.37
Comprehensive Business Solutions	Infrared Heaters - Gas Customer Only	G	15	MBH	71,765	64,047	57,692	54,212	-	0.27
Comprehensive Business Solutions	Interior LED Lighting (High Bay GT OR EQ 18 ft)	E	16	Watts Removed	9,852,888	12,597,228	11,813,856	11,813,856	3.65	-
Comprehensive Business Solutions	Interior LED Lighting (Low Bay LT 15 ft) (Continuous Operation)	E	6	Watts Removed	374,991	425,971	422,643	448,642	7.02	-
Comprehensive Business Solutions	Interior LED Lighting (Low Bay LT 18 ft)	E	18	Watts Removed	6,595,814	8,926,002	8,370,929	9,595,064	2.34	-
Comprehensive Business Solutions	Interior Lighting Occupancy and Daylight Sensors Controls	E	10	Watts Controlled	42,817	48,639	48,259	51,228	0.89	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Interior Lighting Occupancy Sensors (Per Sensor)	E	10	Units	28,815	40,223	37,721	43,238	252.94	-
Comprehensive Business Solutions	Lamp Removal - Remove 4-foot T12 fluorescent lamp (with T8 ballast retrofit)	E	15	Lamps Removed	77,987	93,361	87,555	100,359	63.86	-
Comprehensive Business Solutions	Lamp Removal - Remove 8-foot T12 fluorescent lamp (with T8 ballast retrofit)	E	15	Lamps Removed	2,456	2,752	2,730	2,898	98.34	-
Comprehensive Business Solutions	Leaking Steam Trap Repair or Replacement -- Special Incentive	G	5	Units	933	832	750	705	-	25.70
Comprehensive Business Solutions	LED A-Series Replacing Incandescent A-Series	E	3	Units	998	838	554	-	86.70	-
Comprehensive Business Solutions	LED Grow Lights	E	11	Watts Removed	24,257	27,555	27,340	29,022	3.84	-
Comprehensive Business Solutions	LED High Bay (per kW reduced) - 24 7 operation	E	6	Watts Removed	3,202,295	4,441,331	4,841,331	6,441,331	7.69	-
Comprehensive Business Solutions	LED Lamps Replacing CFL	E	3	Units	259	221	146	-	10.53	-
Comprehensive Business Solutions	LED Lighting for Refrigeration Cases	E	16	Linear Feet	52,977	79,031	74,117	84,955	100.91	-
Comprehensive Business Solutions	LED MR16 Replacing Halogen MR16	E	4	Units	52	60	44	31	33.43	-
Comprehensive Business Solutions	LED or Induction fixture replacing 176W to 250W HID (Exterior)	E	12	Units	2	3	3	4	404.79	-
Comprehensive Business Solutions	LED or Induction fixture replacing 176W to 250W HID (Garage)	E	12	Units	2	3	3	4	821.34	-
Comprehensive Business Solutions	LED or Induction fixture replacing 251W to 400W HID (Exterior)	E	12	Units	2	3	3	4	698.14	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	LED or Induction fixture replacing 251W to 400W HID (Garage)	E	12	Units	2	3	3	4	1,416.29	-
Comprehensive Business Solutions	LED or Induction fixture replacing d175W HID (Garage)	E	12	Units	2	3	3	4	536.15	-
Comprehensive Business Solutions	LED Par Replacing Halogen Par	E	4	Units	138	181	135	95	127.68	-
Comprehensive Business Solutions	LED Replacing Incandescent BR-Series	E	4	Units	315	412	307	217	127.68	-
Comprehensive Business Solutions	LED Screw-in Replacing HID	E	16	Watts Removed	1,210,860	1,356,598	1,346,003	1,428,802	3.65	-
Comprehensive Business Solutions	LED, T-1, or Electroluminescent Exit Signs	E	15	Units	241	269	267	284	176.38	-
Comprehensive Business Solutions	Level 10 - Domestic Water Heater Tune-up (199-499 MBH)	G	2	Units	34	31	28	26	-	17.29
Comprehensive Business Solutions	Level 10 - Pool and Spa Boiler Tune-Up (300-499 MBH)	G	2	Units	4	4	3	3	-	58.17
Comprehensive Business Solutions	Level 11 - Domestic Water Heater Tune-up (500-1,999 MBH)	G	2	Units	35	31	28	27	-	39.53
Comprehensive Business Solutions	Level 11 - Pool and Spa Boiler Tune-Up (500-1,999 MBH)	G	2	Units	3	3	3	2	-	109.06
Comprehensive Business Solutions	Level 12 - Domestic Water Heater Tune-up (GT or EQ 1,200 MBH)	G	2	Units	12	11	10	9	-	59.35
Comprehensive Business Solutions	Level 12 - Pool and Spa Boiler Tune-Up (GT or EQ 1,200 MBH)	G	2	Units	2	2	2	2	-	174.64
Comprehensive Business Solutions	Level 6 - Process Boiler Tune-up (GT or EQ 1,200 MBH)	G	2	kBTUh	26	23	21	20	-	94.40

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Level 7 - Process Burner Tune-up (300-499 MBH)	G	2	Units	2	2	2	2	-	15.52
Comprehensive Business Solutions	Level 8 - Process Burner Tune-up (500-1,199 MBH)	G	2	Units	2	2	2	2	-	29.10
Comprehensive Business Solutions	Level 9 - Process Burner Tune-up (GT or EQ 1,200 MBH)	G	2	Units	5	5	4	4	-	46.60
Comprehensive Business Solutions	Light Commercial Building Automation Systems (EG)	E	15	Square Feet	12,035	13,483	13,378	14,201	0.77	-
Comprehensive Business Solutions	Light Commercial Building Automation Systems (EG)	G	15	Square Feet	13,225	8,312	7,487	7,035	-	0.04
Comprehensive Business Solutions	Light Commercial Building Automation Systems (EO)	E	15	Square Feet	3,188	3,622	4,852	5,150	0.77	-
Comprehensive Business Solutions	Light Commercial Building Automation Systems (GO)	G	15	Square Feet	26,789	23,909	21,536	20,237	-	0.04
Comprehensive Business Solutions	Lighting Occupancy Sensors	E	10	Watts Controlled	109,018	123,839	122,872	130,430	0.70	-
Comprehensive Business Solutions	Lighting Power Density	E	15	Watts Removed	12,033,819	17,078,728	14,016,670	18,358,890	2.34	-
Comprehensive Business Solutions	Lighting Power Density (Exterior)	E	12	Watts Removed	1,237,950	1,481,986	1,389,828	1,593,071	3.79	-
Comprehensive Business Solutions	Lighting Power Density (Parking Garage)	E	12	Watts Removed	78,641	102,732	101,930	108,200	7.69	-
Comprehensive Business Solutions	Linkage-less Boiler Control (Process)	G	15	MBH	3,808	3,399	3,062	2,877	-	0.06
Comprehensive Business Solutions	Linkage-less Boiler Controls	G	5	MBH	21,449	19,142	17,243	16,203	-	0.04
Comprehensive Business Solutions	Low-Energy Livestock Waterer	E	10	Units	25	33	44	46	1,400.49	-
Comprehensive Business Solutions	Low-Pressure Drop Air Filter	E	10	HP	2,374	3,102	4,155	4,411	56.77	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Milk Pre-Cooler (Heat Exchanger, Chiller Savings)	E	15	Units	49,296	55,999	75,008	79,622	1.06	-
Comprehensive Business Solutions	Modulating Burner Control (Process)	G	15	MBH	27,081	24,169	21,771	20,457	-	0.09
Comprehensive Business Solutions	Modulating Burner on Makeup Air Handling Unit (Continuous Operation)	G	20	MBH	10,416	9,296	8,373	7,868	-	0.32
Comprehensive Business Solutions	Modulating Burner on Makeup Air Handling Unit (GT 100 hrs week Operation)	G	20	MBH	2,459	2,195	1,977	1,858	-	0.26
Comprehensive Business Solutions	Modulating Burner on Makeup Air Handling Unit (GT 50 hrs week Operation)	G	20	MBH	419	374	337	317	-	0.13
Comprehensive Business Solutions	Neon to LED Sign Lighting Retrofit (Commercial Hours)	E	13	Watts Removed	35,978	46,999	46,632	49,501	2.34	-
Comprehensive Business Solutions	Neon to LED Sign Lighting Retrofit (Continuous Operation)	E	6	Watts Removed	36,825	48,107	47,731	50,667	7.69	-
Comprehensive Business Solutions	Network Power Management Software	E	4	PCs Controlled	25	29	39	42	118.46	-
Comprehensive Business Solutions	New Linear LED Tube Fixture (High Bay GT OR EQ 15 ft)	E	16	Watts Removed	680,566	762,478	756,523	803,060	3.65	-
Comprehensive Business Solutions	New Linear LED Tube Fixture (High Bay GT OR EQ 15 ft) (Continuous Operation)	E	6	Watts Removed	467	523	519	551	7.69	-
Comprehensive Business Solutions	New Linear LED Tube Fixture (Low Bay LT 15 ft)	E	18	Watts Removed	221,926	248,637	246,695	261,870	2.34	-
Comprehensive Business Solutions	New T8 T5 Fixture (Includes HID to Fluorescent conversions)	E	12	Watts Removed	76,871	86,123	85,451	90,707	3.65	-
Comprehensive Business Solutions	Night Covers	E	5	Linear Feet	2,406	2,705	3,660	3,885	14.40	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Night Covers (Combo)	E	5	Linear Feet	145	162	161	171	14.99	-
Comprehensive Business Solutions	Night Covers (Combo)	G	5	Linear Feet	159	100	90	85	-	0.15
Comprehensive Business Solutions	No Heat Reach-In Case Doors - Without Anti-Sweat Heater Control	E	15	Units	49	65	87	93	1,711.84	-
Comprehensive Business Solutions	Occupancy Sensor Controls on HVAC Units (Combo)	E	15	Square Feet	170,609	191,143	189,651	201,317	0.25	-
Comprehensive Business Solutions	Occupancy Sensor Controls on HVAC Units (Combo)	G	15	Square Feet	187,485	117,833	106,141	99,738	-	0.01
Comprehensive Business Solutions	Occupancy Sensor Controls on HVAC Units (Electric)	E	15	Square Feet	276,804	314,435	421,172	447,080	0.25	-
Comprehensive Business Solutions	Occupancy Sensor Controls on HVAC Units (Gas)	G	15	Square Feet	468,712	418,306	376,801	354,071	-	0.00
Comprehensive Business Solutions	Optimal Start Stop on Air Handling Units (Combo)	E	20	Square Feet	1,184,785	1,327,385	1,317,018	1,398,034	0.63	-
Comprehensive Business Solutions	Optimal Start Stop on Air Handling Units (Combo)	G	20	Square Feet	1,301,977	818,282	737,091	692,627	-	0.00
Comprehensive Business Solutions	Optimal Start Stop on Air Handling Units (EO)	E	20	Square Feet	2,007,233	2,248,823	3,012,199	3,197,494	1.92	-
Comprehensive Business Solutions	Optimal Start Stop on Air Handling Units (Gas)	G	20	Square Feet	2,532,052	2,259,753	2,035,538	1,912,746	-	0.00
Comprehensive Business Solutions	Optimal Start Stop on Air Handling Units (GO)	G	20	Square Feet	729,107	650,698	586,135	550,777	-	0.01
Comprehensive Business Solutions	Optimized Boiler Plant Sequencing	G	15	MBH	132,751	118,474	106,719	100,282	-	0.04
Comprehensive Business Solutions	Optimized Boiler Plant Sequencing (Process)	G	15	MBH	2,285	2,039	1,837	1,726	-	0.11

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Optimized Chiller Plant Sequencing	E	15	Tons	3,421	4,469	5,986	6,354	59.75	-
Comprehensive Business Solutions	Ozone Generation System	G	10	Pounds	259	231	208	196	-	3.63
Comprehensive Business Solutions	Packaged Terminal Air Conditioner or Heat Pump (PTAC or PTHP)	E	15	Tons	350	398	534	567	79.79	-
Comprehensive Business Solutions	Parking Garage Exhaust Fan Carbon Monoxide (CO) Control	E	15	HP	1	1	1	1	1,455.77	-
Comprehensive Business Solutions	Parking Garage Exhaust Fan Carbon Monoxide (CO) Control	G	15	HP	1	1	1	1	-	32.09
Comprehensive Business Solutions	Parking Garage Exhaust Fan Carbon Monoxide (CO) Control On Off Control (Combination Customers)	E	15	HP	1	1	1	1	2,779.04	-
Comprehensive Business Solutions	Parking Garage Exhaust Fan Carbon Monoxide (CO) Control On Off Control (Combination Customers)	G	15	HP	1	1	1	1	-	16.82
Comprehensive Business Solutions	Parking Garage Exhaust Fan Carbon Monoxide (CO) Control On Off Control (Electric Customers)	E	15	HP	2	3	5	5	2,779.04	-
Comprehensive Business Solutions	Parking Garage LED Lighting Retrofit	E	16	Watts Removed	172,360	193,105	258,656	274,567	7.69	-
Comprehensive Business Solutions	Pipe Wrap - Hydronic Space Heating	G	20	Linear Feet	1,789	1,597	1,438	1,351	-	0.35
Comprehensive Business Solutions	Pneumatic Air Tools Replaced with Electric Cordless Tools	E	10	Units	2	3	5	5	636.19	-
Comprehensive Business Solutions	Pneumatic Air Tools Replaced with Electric Tools	E	15	Units	2	3	5	5	1,251.32	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Poultry LED Lighting Systems	E	9	Watts Removed	53,880	61,206	81,982	87,026	5.12	-
Comprehensive Business Solutions	Process Boiler Stack Economizers (80-199 degrees)	G	15	Units	31,095	27,751	24,998	23,490	-	0.03
Comprehensive Business Solutions	Process Boiler Tune-up Level 4 (GT or EQ 300 and	G	2	kBTUh	2	2	2	2	-	39.30
Comprehensive Business Solutions	Process Boiler Tune-up Level 5 (GT or EQ 500 and	G	2	kBTUh	2	2	2	2	-	58.95
Comprehensive Business Solutions	Process Fan Ventilation Reduction	E	15	HP	2	3	5	5	2,070.90	-
Comprehensive Business Solutions	Process Steam Pipe Insulation - Unconditioned	G	20	Linear Feet	2,291	2,045	1,842	1,731	-	0.59
Comprehensive Business Solutions	Reach-In Refrigerated Case Door; Low Temp - Combination Customer	E	12	Linear Feet	171	191	190	201	1,275.89	-
Comprehensive Business Solutions	Reach-In Refrigerated Case Door; Low Temp - Combination Customer	G	12	Linear Feet	187	118	106	100	-	5.23
Comprehensive Business Solutions	Reach-In Refrigerated Case Door; Low Temp - Electric Customers	E	12	Linear Feet	94	123	164	174	1,275.89	-
Comprehensive Business Solutions	Reach-In Refrigerated Case Door; Medium Temp - Combination Customers	E	12	Linear Feet	218	244	242	257	503.69	-
Comprehensive Business Solutions	Reach-In Refrigerated Case Door; Medium Temp - Combination Customers	G	12	Linear Feet	240	151	136	127	-	4.30
Comprehensive Business Solutions	Reach-In Refrigerated Case Door; Medium Temp - Electric Customers	E	12	Linear Feet	893	1,001	1,341	1,423	503.69	-
Comprehensive Business Solutions	Reduced Optimized Air Change per hour (EG)	E	15	CFM	5,687	6,371	6,322	6,711	15.75	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Reduced Optimized Air Change per hour (EG)	G	15	CFM	6,249	3,928	3,538	3,325	-	0.23
Comprehensive Business Solutions	Refrigerated Cycling - Digital Scroll	E	10	SCFM	12,327	16,103	21,569	22,896	14.18	-
Comprehensive Business Solutions	Refrigerated Cycling - Variable Speed	E	10	SCFM	3,050	3,985	5,337	5,666	14.95	-
Comprehensive Business Solutions	Refrigerated Cycling Thermal Mass Air Dryer	E	10	SCFM	31,583	41,259	55,264	58,664	4.60	-
Comprehensive Business Solutions	Refrigeration Waste Heat Recovery Decreasing Domestic Water Heating	G	15	Tons	1	1	1	1	-	8.17
Comprehensive Business Solutions	Refrigeration Waste Heat Recovery Decreasing HVAC Heating Load	E	15	Tons	377	422	419	445	59.66	-
Comprehensive Business Solutions	Refrigeration Waste Heat Recovery Decreasing HVAC Heating Load	G	15	Tons	414	260	234	220	-	17.48
Comprehensive Business Solutions	Refrigeration Waste Heat Recovery Decreasing HVAC Heating Load (GO)	G	15	Tons	37	33	30	28	-	16.52
Comprehensive Business Solutions	Retrofit Grain Dryers	G	10	Units	6,636,265	5,922,595	5,334,948	5,013,124	-	0.00
Comprehensive Business Solutions	Return Air Ductwork Insulation (Exterior Space)	G	25	Square Feet	312	279	251	236	-	6.00
Comprehensive Business Solutions	Roof Insulation - Attic Roof	G	30	Square Feet	20,450	18,251	16,440	15,448	-	0.02
Comprehensive Business Solutions	Roof Insulation - Attic Roof (Combo)	E	30	Square Feet	3,791	4,248	4,214	4,474	0.18	-
Comprehensive Business Solutions	Roof Insulation - Attic Roof (Combo)	G	30	Square Feet	4,166	2,619	2,359	2,216	-	0.03

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Roof Insulation R10 to R18 (EG)	E	30	Square Feet	121,640	136,280	135,216	143,533	0.19	-
Comprehensive Business Solutions	Roof Insulation R10 to R18 (EG)	G	30	Square Feet	133,671	84,011	75,676	71,111	-	0.01
Comprehensive Business Solutions	Roof Insulation R10 to R18 (GO)	G	30	Square Feet	728,690	650,326	585,800	550,463	-	0.01
Comprehensive Business Solutions	Roof Insulation R10 to R18 (GO)	G	30	Square Feet	386,276	344,735	310,530	291,798	-	0.01
Comprehensive Business Solutions	Roof Insulation R12 to R18 (EG)	E	30	Square Feet	62,291	69,789	69,244	73,503	0.14	-
Comprehensive Business Solutions	Roof Insulation R12 to R18 (EG)	G	30	Square Feet	68,453	43,022	38,753	36,416	-	0.01
Comprehensive Business Solutions	Roof Insulation R12 to R18 (GO)	G	30	Square Feet	739,175	659,683	594,229	558,383	-	0.00
Comprehensive Business Solutions	Roof Insulation R14 to R18 (EG)	E	30	Square Feet	389,399	436,266	432,859	459,486	0.03	-
Comprehensive Business Solutions	Roof Insulation R14 to R18 (EG)	E	30	Square Feet	389,399	436,266	432,859	459,486	0.03	-
Comprehensive Business Solutions	Roof Insulation R14 to R18 (EG)	E	30	Square Feet	377,616	423,066	419,761	445,583	0.02	-
Comprehensive Business Solutions	Roof Insulation R14 to R18 (EG)	E	30	Square Feet	88,659	99,330	98,554	104,616	0.04	-
Comprehensive Business Solutions	Roof Insulation R14 to R18 (EG)	E	30	Square Feet	38,372	42,990	42,654	45,278	0.08	-
Comprehensive Business Solutions	Roof Insulation R14 to R18 (EG)	E	30	Square Feet	351,507	393,814	390,738	414,774	0.00	-
Comprehensive Business Solutions	Roof Insulation R14 to R18 (EG)	G	30	Square Feet	427,916	268,942	242,257	227,643	-	0.00
Comprehensive Business Solutions	Roof Insulation R14 to R18 (EG)	G	30	Square Feet	427,916	268,942	242,257	227,643	-	0.00

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Roof Insulation R14 to R18 (EG)	G	30	Square Feet	414,967	260,804	234,927	220,755	-	0.00
Comprehensive Business Solutions	Roof Insulation R14 to R18 (EG)	G	30	Square Feet	386,276	242,771	218,683	205,491	-	0.00
Comprehensive Business Solutions	Roof Insulation R14 to R18 (EG)	G	30	Square Feet	97,428	61,233	55,157	51,830	-	0.00
Comprehensive Business Solutions	Roof Insulation R14 to R18 (EG)	G	30	Square Feet	42,167	26,502	23,872	22,432	-	0.00
Comprehensive Business Solutions	Roof Insulation R14 to R18 (GO)	G	30	Square Feet	228,610	204,025	183,782	172,695	-	0.00
Comprehensive Business Solutions	Roof Insulation R16 to R18 (GO)	G	30	Square Feet	39,058	34,858	31,399	29,505	-	0.00
Comprehensive Business Solutions	Roof Insulation R18 to R20 (GO)	G	30	Square Feet	1,619,339	1,445,194	1,301,800	1,223,271	-	0.00
Comprehensive Business Solutions	Roof Insulation R20 to R22 (GO)	G	30	Square Feet	1,040,464	928,572	836,438	785,981	-	0.00
Comprehensive Business Solutions	Roof Insulation R22 to R24 (GO)	G	30	Square Feet	695,813	620,984	559,370	525,626	-	0.00
Comprehensive Business Solutions	RTO (Recuperative Regenerative Thermal Oxidizers) Retrofit 3 Shift	G	20	CFM	1	1	1	1	-	8.42
Comprehensive Business Solutions	Sash Stops (EO)	E	15	Linear Feet	16	21	29	30	284.64	-
Comprehensive Business Solutions	Scroll Compressor for Dairy Refrigeration	E	15	Units	64,550	73,325	98,216	104,258	0.17	-
Comprehensive Business Solutions	Scroll Compressor for Dairy Refrigeration (With Heat Exchange)	E	15	Units	123,896	140,740	188,515	200,111	0.43	-
Comprehensive Business Solutions	Snow Melt Controls	G	15	Square Feet	1,752	1,564	1,409	1,324	-	0.05

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Sprinkler to Drip Irrigation	E	15	Units	2	3	5	5	162.34	-
Comprehensive Business Solutions	Stairwell Lighting Controls	E	9	Watts Controlled	5,434	6,173	8,268	8,777	4.22	-
Comprehensive Business Solutions	Steam Condensate Space Heating	G	20	Linear Feet	37	33	30	28	-	0.43
Comprehensive Business Solutions	Steam Traps	G	5	Units	-	-	-	-	-	25.70
Comprehensive Business Solutions	Steam Traps (Express Application)	G	5	Units	33	30	27	25	-	25.70
Comprehensive Business Solutions	Strip Curtains (Cooler 40F)	E	4	Square Feet	3,865	5,050	6,764	7,180	74.59	-
Comprehensive Business Solutions	Strip Curtains (Freezer 0F)	E	4	Square Feet	643	840	1,125	1,194	398.39	-
Comprehensive Business Solutions	Supply Air Ductwork Insulation (Exterior Space)	G	25	Square Feet	1,405	1,254	1,129	1,061	-	0.31
Comprehensive Business Solutions	T8 or T12 2 or 3-Foot Lamp Removal	E	15	Lamps Removed	289	324	321	341	57.96	-
Comprehensive Business Solutions	Truck Loading Dock Leveler Ramp Seals	G	10	Units	1	1	1	1	-	22.60
Comprehensive Business Solutions	Truck Loading Dock Seals	G	10	Units	1	1	1	1	-	34.68
Comprehensive Business Solutions	Two Stage Rotary Screw Air Compressor (VSD VD LNL Type)	E	15	HP	585	764	1,024	1,087	236.40	-
Comprehensive Business Solutions	Variable Displacement (VD) Air Compressor	E	13	HP	208	271	363	386	387.86	-
Comprehensive Business Solutions	Variable Speed Controller for Vacuum Pump	E	10	HP	52	69	92	98	524.57	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Variable Speed Controller on Milk Pump with Existing Milk Pre-Cooler	E	15	Units	403,596	527,234	706,206	749,648	0.51	-
Comprehensive Business Solutions	VFD for CW HVAC Pumps - Fixed Speed, (54 hz or less)-Throttled	E	15	Units	89	117	157	166	251.84	-
Comprehensive Business Solutions	VFD for HVAC Fans - Fixed Speed (51hz or less)	E	15	HP	2	3	5	5	1,307.48	-
Comprehensive Business Solutions	VFD for HVAC Fans - Fixed Speed, (54 hz or less)	E	15	Units	22	29	39	42	984.56	-
Comprehensive Business Solutions	VFD for HW HVAC Pumps - Fixed Speed, (54 hz or less)-Bypass	E	15	Units	3	5	6	6	826.61	-
Comprehensive Business Solutions	VFD for HW HVAC Pumps - Fixed Speed, Tier 1 (54hz to 51hz)-bypass	E	15	HP	2	3	5	5	826.61	-
Comprehensive Business Solutions	VFD for HW HVAC Pumps - Fixed Speed, Tier 2 (51hz or less)- bypass	E	15	HP	2	3	5	5	1,098.63	-
Comprehensive Business Solutions	VFD for HW HVAC Pumps - Fixed Speed, Tier 2 (51hz or less)-throttled	E	15	HP	2	3	5	5	659.00	-
Comprehensive Business Solutions	VFD for Process Fan - Fixed Speed, (54 hz or less)	E	15	Units	120	158	211	224	584.17	-
Comprehensive Business Solutions	VFD for Process Fans - Fixed Speed, Tier 2 (51hz or less)	E	15	HP	2	3	5	5	810.28	-
Comprehensive Business Solutions	VFD for Process Pumping, LT or EQ 50 HP	E	15	HP	3,095	4,043	5,416	5,749	949.60	-
Comprehensive Business Solutions	VFD HVAC Fans and Pumps LT 100HP - Electric Customers	E	10	HP	2	3	5	5	742.54	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	VFD on Ag Fans (750 - 2,000) - Electric	E	15	HP	506	575	770	818	228.15	-
Comprehensive Business Solutions	VFD on Ag Fans (GT 2,000) - Electric	E	15	HP	337	441	591	627	684.45	-
Comprehensive Business Solutions	VFD on Ag Pumps (GT 2,000) - Electric	E	15	HP	2	3	5	5	380.84	-
Comprehensive Business Solutions	VFD on Computer Room Air Condition (CRAC) Units	E	15	HP	17	23	30	32	1,999.82	-
Comprehensive Business Solutions	VFD on Condenser Fan - Med Temp Refrigeration (33 Degrees F to 50 Degrees F)	E	15	HP	107	141	188	200	1,215.34	-
Comprehensive Business Solutions	VFD on Condenser Fan - HVAC	E	10	Tons	986	1,288	1,725	1,831	431.76	-
Comprehensive Business Solutions	VFD on Condenser Fan - Low Temp Refrigeration (Below 32 Degrees F)	E	15	HP	276	361	484	514	1,289.05	-
Comprehensive Business Solutions	VFD on Cooling Tower Fan	E	10	HP	776	1,014	1,358	1,442	281.35	-
Comprehensive Business Solutions	VFD on HVAC Chilled Water Pump up to 100 HP	E	10	Units	1,288	1,683	2,254	2,393	582.26	-
Comprehensive Business Solutions	VFD on HVAC Fans (LT 100 HP)	E	10	HP	2	3	5	5	558.97	-
Comprehensive Business Solutions	VFD on HVAC Hydronic Heating Water Pump up to 100 HP	E	10	Units	629	823	1,102	1,170	2,065.07	-
Comprehensive Business Solutions	VFD on HVAC Pumps (LT 100 HP)	E	10	HP	2	3	5	5	1,428.25	-
Comprehensive Business Solutions	VFD on HVAC Return Fan up to 100 HP	E	10	Units	535	699	936	994	507.29	-
Comprehensive Business Solutions	VFD on HVAC Supply Fan up to 100 HP	E	10	Units	3,763	4,916	6,584	6,989	583.65	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	VFD on Pool Circulation Pump	E	12	HP	4	6	8	8	1,250.44	-
Comprehensive Business Solutions	VFD on Process Fans (LT 50 HP)	E	15	HP	488	638	855	907	466.83	-
Comprehensive Business Solutions	VFD on Well Pumps	E	10	HP	669	875	1,171	1,244	171.11	-
Comprehensive Business Solutions	VFDs for Process Fixed Speed Control (LT or EQ 50 hz)	E	15	HP	2	3	5	5	731.40	-
Comprehensive Business Solutions	VFDs for Process Pump - Fixed Speed, (54 hz or less)	E	15	Units	50	66	89	94	480.87	-
Comprehensive Business Solutions	VSD Air Compressor	E	15	HP	8,000	11,048	11,048	16,032	1,219.73	-
Comprehensive Business Solutions	VSD Air Compressor (50 HP to 300 HP) (Multiple Air Compressor System)	E	15	HP	3,158	5,237	6,630	7,600	1,341.70	-
Comprehensive Business Solutions	VSD Air Compressor (50 HP to 300 HP) (Multiple Air Compressor System)(GT 4,000hr yr)	E	15	HP	565	738	989	1,050	952.09	-
Comprehensive Business Solutions	VSD Air Compressor (50 HP to 300 HP) (Single Air Compressor)(GT 2,000 hr yr)	E	15	HP	2,413	3,153	4,223	4,483	781.85	-
Comprehensive Business Solutions	VSD Air Compressor (Less than 50 HP)	E	15	HP	373	489	654	695	936.78	-
Comprehensive Business Solutions	VSD Air Compressor (Less than 50 HP) (Single Air Compressor System)(GT 2,000 hr yr)	E	15	HP	130	170	228	242	781.85	-
Comprehensive Business Solutions	VSD for Industrial Vacuum Pump Systems	E	10	HP	89	117	157	166	181.82	-
Comprehensive Business Solutions	VSD Injection Mold Machines	E	20	Tons	22,232	25,254	33,827	35,908	114.95	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	VSD on Ag Irrigation	E	10	HP	838	1,095	1,467	1,557	171.11	-
Comprehensive Business Solutions	VSD on Golf Course Irrigation Systems	E	10	HP	344	392	525	557	171.11	-
Comprehensive Business Solutions	VSD Retrofit Air Compressor (50 HP to 300 HP) (Multiple Air Compressor Systems)	E	10	HP	2	3	5	5	915.23	-
Comprehensive Business Solutions	VSD Retrofit Air Compressor (50 HP to 300 HP) (Single Air Compressor Systems)	E	10	HP	2	3	5	5	831.87	-
Comprehensive Business Solutions	Walk-In Cooler Evaporator Motor Reduction	E	15	Units	65	74	100	106	1,282.99	-
Comprehensive Business Solutions	Walk-in EC Motor replacing non-EC Motor	E	15	Units	804	901	1,207	1,282	1,197.79	-
Comprehensive Business Solutions	Walk-in EC Motor replacing PSC Motor	E	15	Units	2	3	5	5	509.83	-
Comprehensive Business Solutions	Walk-in EC Motor replacing SP Motor	E	15	Units	2	3	5	5	1,541.77	-
Comprehensive Business Solutions	Wall Insulation - Gas Customer	G	30	Square Feet	38,716	34,552	31,124	29,246	-	0.03
Comprehensive Business Solutions	Water Cooled Chillers- Centrifugal GT 300 tons and LT or EQ 600 tons, IPLV = 0.49	E	20	Tons	5,742	7,501	10,047	10,666	104.00	-
Comprehensive Business Solutions	Water Pre-Heat Heat Exchanger Electric water heater	E	15	Units	36,236	41,163	55,136	58,528	1.54	-
Comprehensive Business Solutions	Water-Cooled Chillers - Reciprocating GT 300 Tons, IPLV = 0.49	E	20	Tons	428	561	751	797	118.73	-
Comprehensive Business Solutions	Water-Cooled Chillers- Centrifugal GT 600 tons, IPLV =0.49	E	20	Tons	14,578	19,043	25,508	27,077	141.17	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Water-Cooled Condenser - Electric DWH - HVAC or Process Applications	E	15	Tons	2	3	5	5	2,851.00	-
Comprehensive Business Solutions	Water-Cooled Condenser - Gas DWH - HVAC or Process Applications	G	15	Tons	1	1	1	1	-	11.13
Comprehensive Business Solutions	Water-side Economizer - Air-cooled Chiller	E	15	Tons	389	508	680	722	1,389.08	-
Comprehensive Business Solutions	Water-side Economizer - Water-cooled Chiller	E	15	Tons	2	3	5	5	683.57	-
Comprehensive Business Solutions	Web Based Building Automatic Systems (BAS) EG	G	15	Square Feet	900,000	633,952	595,710	575,000	-	0.04
Comprehensive Business Solutions	Web Based Building Automatic Systems (BAS) EO	E	15	Square Feet	746,249	896,812	896,812	896,812	0.73	-
Comprehensive Business Solutions	Web Based Building Automatic Systems (BAS) GO	G	15	Square Feet	892,221	709,756	666,941	650,000	-	0.04
Comprehensive Business Solutions	Web Based Building Automatic Systems (BAS) Non-A C Schools EO	E	9	Square Feet	607,167	672,173	672,173	672,173	0.78	-
Comprehensive Business Solutions	Welder, Inverter Style	E	15	Units	4	6	8	8	1,318.88	-
Comprehensive Business Solutions	Window High Performance Film (EO)	E	10	Square Feet	3,006	3,415	4,574	4,856	0.67	-
Comprehensive Business Solutions	Window Reduction (Gas)	G	30	Square Feet	72,911	65,070	58,614	55,078	-	0.01
Comprehensive Business Solutions	Zero Loss Condensate Drain	E	5	Units	38	50	66	70	1,840.12	-
Comprehensive Business Solutions	Zero Loss Condensate Drain, Float Style	E	5	Units	17	23	30	32	1,840.12	-
Comprehensive Business Solutions	1L 2' LED tube replacing T5 1L 2'	E	18	per lamp	50	38	21	21	16.90	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	1L 4' LED Tube replacing T12 1L 4' lamp	E	18	per lamp	6,200	4,650	2,616	2,616	57.40	-
Comprehensive Business Solutions	1L 4' LED tube replacing T5 1L 4'	E	18	per lamp	500	375	211	211	30.40	-
Comprehensive Business Solutions	1L 4' LED Tube replacing T8 1L 4' lamp	E	18	per lamp	25,000	18,750	10,547	10,547	40.00	-
Comprehensive Business Solutions	1L 8' LED tube replacing T8 1L 8' lamp	E	18	per lamp	100	75	42	42	55.20	-
Comprehensive Business Solutions	2L 4' LED tube replacing T12 1L 8'	E	18	per lamp	250	188	106	106	106.40	-
Comprehensive Business Solutions	2L 4' LED tube replacing T8 1L 8'	E	18	per lamp	1,500	1,125	633	633	69.40	-
Comprehensive Business Solutions	Anti Sweat Heater Controls	E	12	per door	550	595	595	595	1,339.40	-
Comprehensive Business Solutions	Central Lighting Control	E	12	10,000 SF	25	50	100	100	8,340.63	-
Comprehensive Business Solutions	Combination Ovens Gas	G	12	per unit	2	3	4	4	-	38.86
Comprehensive Business Solutions	Commercial Smart thermostat	G	10	1000 sq ft cond floor area	415	415	415	415	-	9.23
Comprehensive Business Solutions	Condensing RTU	G	15	kBtu/hr input capacity	3	4	5	5	-	0.25
Comprehensive Business Solutions	Destratification Fan	E	15	1000 sq ft cond floor area	69	95	120	120	66.35	-
Comprehensive Business Solutions	Destratification Fan	G	15	1000 sq ft cond floor area	69	95	120	120	-	13.77

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Door Gaskets - Cooler and Freezer	E	4	per door	123	154	166	166	1,698.67	-
Comprehensive Business Solutions	Door Gaskets - Cooler and Freezer	E	4	per linear foot	123	154	166	166	98.00	-
Comprehensive Business Solutions	ECM Case Motors	E	15	per motor	1,500	1,624	1,624	1,624	824.00	-
Comprehensive Business Solutions	ECM Cooler and Freezer Motors - replacing all types	E	15	per motor	200	217	217	217	1,365.00	-
Comprehensive Business Solutions	ENERGY STAR Convection Ovens Gas	G	12	per unit	2	3	4	4	-	29.51
Comprehensive Business Solutions	ENERGY STAR Fryer	G	12	per unit	2	3	4	4	-	48.70
Comprehensive Business Solutions	Enhanced Ventilation Control	G	10	ton	20	28	36	36	-	6.90
Comprehensive Business Solutions	ES Dishwasher, High Temp, Gas Heat, Gas Booster, Door Type	G	15	per unit	2	3	4	4	-	44.46
Comprehensive Business Solutions	Evaporator Fan Motor Controls on ECM motors	E	5	per controller	20	22	22	22	330.00	-
Comprehensive Business Solutions	Evaporator Fan Motor Controls on S-P motors	E	5	per controller	20	22	22	22	1,155.00	-
Comprehensive Business Solutions	Exterior HID replacement 150 to 200W HID retrofit	E	18	per fixture	150	150	150	150	488.90	-
Comprehensive Business Solutions	Exterior HID replacement 50-100W HID retrofit	E	18	per fixture	25	25	25	25	174.10	-
Comprehensive Business Solutions	Flexible Batch Broiler	G	12	per unit	2	3	4	4	-	111.96
Comprehensive Business Solutions	Floating Head Pressure Control	E	16	per ton	50	54	54	54	1,888.05	-
Comprehensive Business Solutions	Gas Furnace 92 Et 81 Et Base	G	15	kBtu/hr input capacity	5	7	9	9	-	0.23

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Gas Furnace 95 Et 81 Et Base	G	15	kBtu/hr input capacity	25	35	45	45	-	0.29
Comprehensive Business Solutions	Head Pressure Control	E	15	per ton	50	54	54	54	1,264.00	-
Comprehensive Business Solutions	Illuminated Signs to LED - Exterior	E	6	per watt reduced	500	500	500	500	8.76	-
Comprehensive Business Solutions	Infrared Charbroiler	G	12	per unit	2	3	4	4	-	109.16
Comprehensive Business Solutions	Infrared Heaters	G	10	kBtu/hr per input capacity	50	71	91	91	-	0.24
Comprehensive Business Solutions	Infrared Rotisserie Oven	G	12	per unit	3	4	5	5	-	26.71
Comprehensive Business Solutions	Infrared Upright Broiler	G	12	per unit	2	3	4	4	-	90.36
Comprehensive Business Solutions	Large High Efficiency Gas Water Heater	G	12	per heater	15	21	27	27	-	29.73
Comprehensive Business Solutions	LED Refrigerator Case Lighting per Linear Foot	E	16	per linear foot	12,250	15,000	17,500	17,500	115.00	-
Comprehensive Business Solutions	LED Tube High Bay Replacement - Per Watt Reduced	E	18	per watt reduced	500	375	211	211	4.16	-
Comprehensive Business Solutions	LED Tube Non High Bay Replacement - Per Watt Reduced	E	18	per watt reduced	500	375	211	211	2.67	-
Comprehensive Business Solutions	Low Flow Faucet Aerator - Public Restroom - 0.5 gpm	G	10	per unit	150	150	200	200	-	7.07
Comprehensive Business Solutions	Night Covers	E	5	per LF	1,800	1,800	1,800	1,800	16.71	-
Comprehensive Business Solutions	Night Covers	G	15	per LF	1,800	1,949	1,949	1,949	-	0.15

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Occupancy Sensors for LED Refrigerator Lighting	E	16	per door	-	500	2,500	2,500	195.00	-
Comprehensive Business Solutions	Outdoor Air Damper Leakage Reduction Reseal	G	8	CFM	75	106	136	136	-	0.01
Comprehensive Business Solutions	Pipe Wrap - DWH 120F - Conditioned - gas water heater	G	10	per LF	2	2	3	3	-	0.10
Comprehensive Business Solutions	Pipe Wrap - DWH 140F - Conditioned - gas water heater	G	10	per LF	3	4	5	5	-	0.15
Comprehensive Business Solutions	Pre Rinse Sprayers	E	5	each	10	10	10	10	1,396.00	-
Comprehensive Business Solutions	Pre Rinse Sprayers	G	5	each	35	35	35	35	-	5.79
Comprehensive Business Solutions	Rack Oven Single Gas	G	12	per unit	2	3	4	4	-	99.71
Comprehensive Business Solutions	RCx Web enabled EMS	G	15	per 1000 sf conditioned space	20	28	36	36	-	19.79
Comprehensive Business Solutions	Reach-in Refrigerated display case door retrofit for Low Temp	E	12	linear ft	100	108	108	108	1,454.00	-
Comprehensive Business Solutions	Reach-in Refrigerated display case door retrofit for Low Temp	G	12	linear ft	100	108	108	108	-	5.85
Comprehensive Business Solutions	Reach-in Refrigerated display case door retrofit for Medium Temp	E	12	linear ft	1,300	1,407	1,407	1,407	574.00	-
Comprehensive Business Solutions	Reach-in Refrigerated display case door retrofit for Medium Temp	G	12	linear ft	1,300	1,407	1,407	1,407	-	4.81
Comprehensive Business Solutions	Refrigeration Suction and Liquid Pipe Insulation - Low Temp - Unconditioned Space	E	15	LF	400	500	540	540	35.45	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Refrigeration Suction and Liquid Pipe Insulation - Medium Temp - Unconditioned Space	E	15	LF	400	500	540	540	4.81	-
Comprehensive Business Solutions	Refrigeration Waste Heat Recovery - DWH	G	15	per ton	200	217	278	278	-	9.13
Comprehensive Business Solutions	Strip Curtains - Cooler	E	4	SQ Ft	21	26	28	28	2,380.00	-
Comprehensive Business Solutions	Strip Curtains - Cooler	E	4	per square foot	21	26	28	28	85.00	-
Comprehensive Business Solutions	Strip Curtains - Freezer	E	4	SQ Ft	14	18	19	19	12,712.00	-
Comprehensive Business Solutions	Strip Curtains - Freezer	E	4	per square foot	14	18	19	19	454.00	-
Comprehensive Business Solutions	Truck Loading Dock Seals	G	6	Per door	5	5	5	5	-	19.38
Comprehensive Business Solutions	Walk-in Cooler Evaporator Motor Reduction	E	15	per motor removed	50	54	54	54	1,462.09	-
Comprehensive Business Solutions	Waste Heat Recovery HVAC	G	15	ton	65	92	118	118	-	10.72
Comprehensive Business Solutions	Web Enabled EMS	G	10	per 1000 square foot	30	42	54	54	-	35.39
Comprehensive Business Solutions	Online Marketplace - 11W A19 LED (75W equiv) 2700K	E	3	Units	290	261	203	-	88.92	-
Comprehensive Business Solutions	Online Marketplace - 11W A19 LED (75W equiv) 4000K	E	3	Units	586	527	410	-	88.92	-
Comprehensive Business Solutions	Online Marketplace - 11W BR30D LED Flood (65W equiv) 2700K	E	4	Units	1,066	1,279	1,119	559	127.35	-
Comprehensive Business Solutions	Online Marketplace - 11W BR30D LED Flood (65W equiv) 4000K	E	4	Units	861	1,033	904	452	127.35	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Online Marketplace - 15W A19 LED (100W equiv) 2700K	E	3	Units	884	796	619	-	144.09	-
Comprehensive Business Solutions	Online Marketplace - 15W A19 LED (100W equiv) 4000K	E	3	Units	2,185	1,966	1,529	-	144.09	-
Comprehensive Business Solutions	Online Marketplace - 5W Candelabra LED (40W equiv) 2700K	E	4	Units	683	820	718	359	67.86	-
Comprehensive Business Solutions	Online Marketplace - 6W A19 LED (40W equiv) 2700K	E	3	Units	639	575	448	-	55.26	-
Comprehensive Business Solutions	Online Marketplace - 6W A19 LED (40W equiv) 4000K	E	3	Units	465	418	325	-	55.26	-
Comprehensive Business Solutions	Online Marketplace - 6W Globe LED (40W equiv) 2700K	E	4	Units	606	728	637	318	77.13	-
Comprehensive Business Solutions	Online Marketplace - 9W A19 LED (60W equiv) 2700K	E	3	Units	2,471	2,224	1,730	-	88.92	-
Comprehensive Business Solutions	Online Marketplace - 9W A19 LED (60W equiv) 4000K	E	3	Units	1,837	1,653	1,286	-	88.92	-
Comprehensive Business Solutions	Online Marketplace - Kitchen Faucet Aerator (black chrome)	G	10	Units	20	20	20	20	-	2.65
Comprehensive Business Solutions	Online Marketplace - Kitchen Faucet Aerator (chrome)	G	10	Units	53	53	53	53	-	2.65
Comprehensive Business Solutions	Online Marketplace - Pre-rinse spray valve	G	5	Units	226	226	226	226	-	15.77
Comprehensive Business Solutions	Online Marketplace - Red Exit Sign LED Retrofit Kit	E	15	Units	6	7	8	8	180.90	-
Comprehensive Business Solutions	Online Marketplace - Red LED Exit Sign	E	15	Units	168	201	235	235	180.90	-
Comprehensive Business Solutions	Online Marketplace - Smart Thermostat (EG)	E	15	Units	636	636	636	636	941.49	-
Comprehensive Business Solutions	Online Marketplace - Smart Thermostat (EG)	G	15	Units	636	636	636	636	-	16.38

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Online Marketplace - Smart Thermostat (EO)	E	15	Units	1,180	1,417	1,653	1,653	941.49	-
Comprehensive Business Solutions	Online Marketplace - Smart Thermostat (GO)	G	15	Units	765	765	765	765	-	16.38
Comprehensive Business Solutions	Online Marketplace - Standard Faucet Aerator (Bubble spray)	G	10	Units	113	113	113	113	-	4.54
Comprehensive Business Solutions	Online Marketplace - Standard Faucet Aerator (Needle spray)	G	10	Units	76	76	76	76	-	4.54
Comprehensive Business Solutions	Online Marketplace - Tier 1 Advanced Power Strip - Workstations	E	5	Units	100	150	200	200	64.13	-
Comprehensive Business Solutions	Online Marketplace - Tri-Max Faucet Aerator	G	10	Units	178	178	178	178	-	4.54
Comprehensive Business Solutions	Online Marketplace - Water Heater Pipe Insulation 1 2 inch wall	G	20	Units	449	449	449	449	-	0.56
Comprehensive Business Solutions	Online Marketplace - Water Heater Pipe Insulation 3 4 inch wall	G	20	Units	341	341	341	341	-	0.56
Comprehensive Business Solutions	2-Foot T12 to 2-Foot LED Tube Light	E	14	Units	1,818	1,927	1,927	1,927	36.50	-
Comprehensive Business Solutions	2-Foot T8 to 2-Foot LED Tube Light	E	14	Units	3,636	3,855	3,855	3,855	20.18	
Comprehensive Business Solutions	4-Foot T12 to 4-Foot LED Tube Lights	E	14	Units	54,545	57,818	57,818	57,818	44.49	-
Comprehensive Business Solutions	4-Foot T5 to One (1) 4-Foot LED Tube Light	E	14	Units	12,500	12,500	12,500	12,500	13.78	-
Comprehensive Business Solutions	4-Foot T8 to 4-Foot LED Tube Lights	E	14	Units	418,182	443,273	443,273	443,273	29.31	
Comprehensive Business Solutions	4-ft T12 to LED Tube Lights	E	15	Units	2,727	2,891	2,891	2,891	27.55	

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	8-Foot T12 to One 8-Foot LED Tube Light	E	14	Units	909	964	964	964	81.61	
Comprehensive Business Solutions	8-Foot T12 to Two 4-Foot LED Tube Lights	E	14	Units	9,091	9,636	9,636	9,636	81.61	-
Comprehensive Business Solutions	8-Foot T8 to One 8-Foot LED Tube Light	E	14	Units	909	964	964	964	49.14	-
Comprehensive Business Solutions	8-Foot T8 to Two 4-Foot LED Tube Lights	E	14	Units	4,545	4,818	4,818	4,818	49.14	-
Comprehensive Business Solutions	Bonus Electric	E	1	Units	69,467	73,635	99,408	99,408	-	-
Comprehensive Business Solutions	Bonus Gas	E	1	Units	13,636	19,364	19,364	19,364	-	-
Comprehensive Business Solutions	Clothes Dryer ENERGY STAR - Gas	G	7	Units	14	14	14	14	-	2.43
Comprehensive Business Solutions	Clothes Dryer ENERGY STAR, Electric	E	7	Units	1	2	2	2	847.80	-
Comprehensive Business Solutions	Clothes Washer ENERGY STAR, Electric Water heater	E	7	Units	1	2	2	2	603.90	-
Comprehensive Business Solutions	Clothes Washer ENERGY STAR, Gas Water heater	G	7	Units	14	14	14	14	-	2.27
Comprehensive Business Solutions	Combination Ovens Electric	E	12	Units	5	6	8	8	16,588.80	-
Comprehensive Business Solutions	Combination Ovens Gas	G	12	Units	18	18	18	18	-	35.33
Comprehensive Business Solutions	Commercial Conveyor Oven, large, greater than 25 in total conveyor width	G	12	Units	9	9	9	9	-	77.49
Comprehensive Business Solutions	Commercial Conveyor Oven, less than or equal to 25 in total conveyor width	G	12	Units	9	9	9	9	-	64.25

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Convection Ovens	G	12	Units	27	27	27	27	-	26.82
Comprehensive Business Solutions	Daylight sensors (40 Watts Reduced)	E	9	Units	455	482	482	482	28.80	-
Comprehensive Business Solutions	Drinking Water Cooler Misers	E	5	Units	1	2	2	2	544.50	-
Comprehensive Business Solutions	Energy Efficient Ice Machines (1001 to 1500 lbs)	E	9	Units	2	2	3	3	1,372.50	-
Comprehensive Business Solutions	Energy Efficient Ice Machines (500 to 1000 lbs)	E	9	Units	1	1	1	1	1,069.20	-
Comprehensive Business Solutions	Energy Efficient Ice Machines (LT 500 lbs)	E	9	Units	12	13	17	17	450.90	-
Comprehensive Business Solutions	ENERGY STAR Commercial Glass Door Freezers less than 15 cu. ft.	E	12	Units	1	1	1	1	384.30	-
Comprehensive Business Solutions	ENERGY STAR Commercial Glass Door Refrigerators less than 15 cu. ft.	E	12	Units	5	6	8	8	153.00	-
Comprehensive Business Solutions	ENERGY STAR Commercial Glass Door Refrigerators 15 to 30 cu. ft.	E	12	Units	2	2	3	3	292.50	-
Comprehensive Business Solutions	ENERGY STAR Commercial Glass Door Refrigerators 31 to 50 cu. ft.	E	12	Units	2	2	3	3	486.00	-
Comprehensive Business Solutions	ENERGY STAR Convection Ovens	E	12	Units	6	7	9	9	1,691.10	-
Comprehensive Business Solutions	Energy Star Dishwasher-Commercial	G	20	Units	16	16	16	16	-	15.60
Comprehensive Business Solutions	Energy Star Dishwasher-Under Counter	G	10	Units	14	14	14	14	-	3.94

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	ENERGY STAR® Commercial Solid Door Freezers (15 - 30 cu ft)	E	12	Units	3	3	4	4	470.70	-
Comprehensive Business Solutions	ENERGY STAR® Commercial Solid Door Freezers (30 - 50 cu ft)	E	12	Units	49	52	70	70	486.90	-
Comprehensive Business Solutions	ENERGY STAR® Commercial Solid Door Freezers (GT 50 cu ft)	E	12	Units	2	2	3	3	607.50	-
Comprehensive Business Solutions	ENERGY STAR® Commercial Solid Door Freezers (LT 15 cu ft)	E	12	Units	1	1	1	1	190.80	-
Comprehensive Business Solutions	ENERGY STAR® Commercial Solid Door Refrigerators (15 - 30 cu ft)	E	12	Units	5	5	7	7	224.10	-
Comprehensive Business Solutions	ENERGY STAR® Commercial Solid Door Refrigerators (30 - 50 cu ft)	E	12	Units	9	10	13	13	220.50	-
Comprehensive Business Solutions	ENERGY STAR® Commercial Solid Door Refrigerators (GT 50 cu ft)	E	12	Units	1	1	1	1	355.50	-
Comprehensive Business Solutions	ENERGY STAR® Fryer	G	12	Units	45	45	45	45	-	44.27
Comprehensive Business Solutions	ENERGY STAR® Griddles	G	12	Units	2	2	2	2	-	13.06
Comprehensive Business Solutions	ENERGY STAR® Hot Holding Cabinets (Full Size)	E	12	Units	14	14	20	20	4,750.20	-
Comprehensive Business Solutions	ENERGY STAR® Steam Cookers (5 Pan, Gas)	G	12	Units	11	11	11	11	-	178.30
Comprehensive Business Solutions	ENERGY STAR® Steam Cookers (6 Pan, Gas)	G	12	Units	14	14	14	14	-	182.68

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Exit Sign	E	15	Units	409	434	434	434	180.90	-
Comprehensive Business Solutions	Gas Tank-Style Domestic Water Heater and #8804; 140 gal, GT 75 MBH	G	13	Units	18	18	18	18	-	27.03
Comprehensive Business Solutions	Gas Tank-Style Domestic Water Heater and #8805; 55 gal, and #8804;75 MBH, .80 Energy Factor	G	13	Units	18	18	18	18	-	2.72
Comprehensive Business Solutions	Gas Tank-Style Domestic Water Heater up to 55 gal, and #8804;75 MBH, .67 Energy Factor	G	13	Units	18	18	18	18	-	5.69
Comprehensive Business Solutions	Gas Tank-Style Domestic Water Heater up to 55 gal, and #8804;75 MBH, .80 Energy Factor	G	13	Units	18	18	18	18	-	13.61
Comprehensive Business Solutions	Gas-fired Tankless Water Heaters .82 EF	G	20	Units	2	2	2	2	-	14.61
Comprehensive Business Solutions	High Efficiency Furnace or Unit Heater (92-94.99% AFUE) d120	G	15	kBtu/h	182	182	182	182	-	21.91
Comprehensive Business Solutions	High Efficiency Furnace or Unit Heater (92-94.99% AFUE) GT 120	G	15	kBtu/h	182	182	182	182	-	35.05
Comprehensive Business Solutions	High Efficiency Furnace or Unit Heater (GT or EQ 95% AFUE) d 120	G	15	kBtu/h	182	182	182	182	-	23.48
Comprehensive Business Solutions	High Efficiency Furnace or Unit Heater (GT or EQ 95% AFUE) GT 120	G	15	kBtu/h	182	182	182	182	-	37.57

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Infrared Charbroiler	G	12	Units	9	9	9	9	-	99.23
Comprehensive Business Solutions	Infrared Rotisserie Oven	G	12	Units	9	9	9	9	-	24.28
Comprehensive Business Solutions	Infrared Salamander Broiler	G	12	Units	9	9	9	9	-	29.89
Comprehensive Business Solutions	Infrared Upright Broiler	G	12	Units	9	9	9	9	-	82.14
Comprehensive Business Solutions	Large Vat Fryer	G	12	Units	22	22	22	22	-	50.58
Comprehensive Business Solutions	LED A-line 450-799 Lumen output replacing CFL	E	3	Unit	4,091	3,252	2,168	-	4.31	-
Comprehensive Business Solutions	LED A-Series	E	3	Units	131,818	104,795	69,864	-	67.23	-
Comprehensive Business Solutions	LED BR-Series	E	4	Units	23,636	22,549	16,912	11,275	70.88	-
Comprehensive Business Solutions	LED Candelabra and Globe	E	4	Units	6,364	6,745	5,059	3,373	40.52	-
Comprehensive Business Solutions	LED MR16	E	4	Units	2,727	2,891	2,168	1,445	34.29	-
Comprehensive Business Solutions	LED PAR	E	4	Units	10,909	11,564	8,673	5,782	70.88	-
Comprehensive Business Solutions	New Gas Measure 1	G	10	Units	9,091	9,091	9,091	9,091	-	1.00
Comprehensive Business Solutions	Omni Directional	E	6	Units	125	133	133	133	67.23	-
Comprehensive Business Solutions	Pasta Cooker	G	12	Units	9	9	9	9	-	122.90
Comprehensive Business Solutions	Pool Cover - Automatic 2,401 - 4,600 sqft	G	10	Units	1	1	1	1	-	270

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Pool Cover - Automatic 4,601 - 6,800 sqft	G	10	Units	1	1	1	1	-	440
Comprehensive Business Solutions	Pool Cover - Automatic 400 - 2,400 sqft	G	10	Units	1	1	1	1	-	108
Comprehensive Business Solutions	Pool Cover - Automatic 6,801 - 9,000 sqft	G	10	Units	1	1	1	1	-	609
Comprehensive Business Solutions	Pool Cover - Automatic 9,001 - 10,000 sqft	G	10	Units	1	1	1	1	-	733
Comprehensive Business Solutions	Pool Cover - Manual 2,401 - 4,600 sqft	G	10	Units	1	1	1	1	-	270
Comprehensive Business Solutions	Pool Cover - Manual 4,601 - 6,800 sqft	G	10	Units	1	1	1	1	-	440
Comprehensive Business Solutions	Pool Cover - Manual 400 - 2,400 sqft	G	10	Units	1	1	1	1	-	108
Comprehensive Business Solutions	Pool Cover - Manual 6,801 - 9,000 sqft	G	10	Units	1	1	1	1	-	609
Comprehensive Business Solutions	Pool Cover - Manual 9,001 - 10,000 sqft	G	10	Units	1	1	1	1	-	733
Comprehensive Business Solutions	Pre-Rinse Sprayers	G	5	Units	2	2	2	2	-	5.26
Comprehensive Business Solutions	Pre-Rinse Sprayers (electric water heat)	E	5	Units	1	1	1	1	1,256.40	-
Comprehensive Business Solutions	Programmable Thermostats - Electric Customers	E	9	Units	18	19	26	26	260.00	-
Comprehensive Business Solutions	Programmable Thermostats - Gas Customers	G	10	Units	18	18	18	18	-	13.28
Comprehensive Business Solutions	PTAC < 7kBtu/hr	E	15	Tons	91	96	130	130	78.30	-
Comprehensive Business Solutions	PTAC > 15kBtu/hr	E	15	Tons	91	96	130	130	98.10	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	PTAC 7kBtu/hr - 15kBtu/hr	E	15	Tons	91	96	130	130	87.10	-
Comprehensive Business Solutions	PTAC-HP	E	15	Tons	91	96	130	130	175.05	-
Comprehensive Business Solutions	Rack Oven Double	G	12	Units	14	14	14	14	-	185.23
Comprehensive Business Solutions	Rack Oven Single	G	12	Units	14	14	14	14	-	90.64
Comprehensive Business Solutions	RTUs AC <65k Single Package Unit SEER 15 - 1 Ph	E	15	Tons	91	96	130	130	450.00	-
Comprehensive Business Solutions	RTUs AC >760k EER 9.7	E	15	Tons	273	289	390	390	585.00	
Comprehensive Business Solutions	RTUs AC 135k - 240k EER 12 IEER 13	E	15	Tons	273	289	390	390	342.00	-
Comprehensive Business Solutions	RTUs AC 240k - 760k EER 10.6 IEER 12.1	E	15	Tons	136	145	195	195	652.50	-
Comprehensive Business Solutions	RTUs AC 65k - 135k EER 12 IEER 13.8	E	15	Tons	136	145	195	195	288.00	
Comprehensive Business Solutions	Snack Vending Machine Misers	E	5	Units	1	2	2	2	308.00	-
Comprehensive Business Solutions	Steam Cookers (6 Pan, Electric)	E	12	Units	40	42	57	57	13,653.00	-
Comprehensive Business Solutions	Steam Trap - Buy Michigan	G	5	Units	15	15	15	15	-	13.06
Comprehensive Business Solutions	Steam Traps	G	5	Units	2,700	2,700	2,700	2,700	-	13.06
Comprehensive Business Solutions	Tankless Water Heaters - Electric	E	10	Units	91	96	130	130	575.10	-
Comprehensive Business Solutions	Trim Kit	E	9	Units	8,182	8,673	8,673	8,673	70.88	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Web-Enabled Thermostats - Electric Customers	E	10	Units	18	19	26	26	1,990.00	-
Comprehensive Business Solutions	Web-Enabled Thermostats - Gas Customers	G	10	Units	18	18	18	18	-	41.95
Small Business Solutions	3.5 W LED Candelabra	E	4	Unit	30,403	35,594	22,107	19,410	67.66	-
Small Business Solutions	9.1% share of Residential Buydown at retail stores (Per Cadmus)	E	4	Average Unit	236,294	223,904	135,920	66,041	93.09	-
Small Business Solutions	Hospitality- Low Flow Showerhead- 1.5 gpm	E	10	Unit	5	6	7	9	630.80	-
Small Business Solutions	LED Exit Sign	E	15	Unit	6,979	9,079	7,518	9,902	180.36	-
Small Business Solutions	LED Globe	E	4	Unit	9,561	11,193	6,952	6,104	76.90	-
Small Business Solutions	LED Lighting - 6 W LED Lamps Replacing Incandescent Lights	E	3	Unit	5,258	4,617	2,549	-	88.65	-
Small Business Solutions	LED Lighting - 9.5 W LED Lamps Replacing Incandescent Lights	E	3	Unit	65,204	63,427	35,018	-	88.65	-
Small Business Solutions	LED Lighting- 11 W LED Flood Lamp	E	4	Unit	18,261	21,379	13,278	11,658	127.00	-
Small Business Solutions	Low Flow Showerheads	G	10	Unit	31	39	38	38	-	8.48
Small Business Solutions	Pipe Wrap- 140 F DHW (unconditioned space)	G	20	Unit	420	522	512	503	-	1.86
Small Business Solutions	Pipe Wrap- 140F DHW (conditioned space)	E	20	Unit	765	995	1,112	1,465	3.80	-
Small Business Solutions	Pipe Wrap- 140F DHW (unconditioned space)	E	20	Unit	96	124	139	183	12.60	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Small Business Solutions	Pre Rinse Sprayers- LT 1.6 gpm Electric	E	5	Unit	10	12	14	18	1,252.60	-
Small Business Solutions	Pre Rinse Sprayers- LT 1.6 gpm Gas	G	5	Unit	105	130	128	126	-	54.00
Small Business Solutions	Programmable Thermostat - Combination	E	9	Unit	191	249	206	271	329.10	-
Small Business Solutions	Programmable Thermostat - Combination	G	9	Unit	210	184	180	177	-	5.63
Small Business Solutions	SB Hosp - 1L 4' LED Tube Replacing T8 1L 4' Lamp	E	18	Unit	52,106	67,780	56,131	73,923	29.97	-
Small Business Solutions	SB Hosp - Electric Low-Flow Faucet Aerators LT 1.5 pgm (Bath)	E	10	Unit	5,258	6,840	7,647	10,071	148.22	-
Small Business Solutions	SB Hosp - Electric Low-Flow Faucet Aerators LT 1.5 pgm (Kitchen)	E	10	Unit	5,258	6,840	7,647	10,071	148.22	-
Small Business Solutions	SB Hosp- Beverage Vending Machine Controls	E	10	Unit	10	12	14	18	717.80	-
Small Business Solutions	SBA - Gas Low-Flow Faucet Aerators LT 1.5 pgm (Bath)	G	10	Unit	1,678	2,087	2,047	2,014	-	0.58
Small Business Solutions	SBA - Gas Low-Flow Faucet Aerators LT 1.5 pgm (Kitchen)	G	10	Unit	420	522	512	503	-	5.01
Small Business Solutions	Small Business Assessment	G	1	Units	4,000	4,000	4,000	4,000	-	9.90
Small Business Solutions	Small Business Assessment Kit	E	4	Units	4,000	4,000	4,000	4,000	337.00	-
Small Business Solutions	Smart Thermostat (EG)	E	10	Units	2,000	2,000	2,000	2,000	1,046.10	-
Small Business Solutions	Smart Thermostat (EG)	G	10	Units	2,098	1,837	1,802	1,773	-	18.20

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Small Business Solutions	Smart Thermostat (EO)	E	10	Units	5,000	5,000	5,000	5,000	1,046.10	-
Small Business Solutions	Smart Thermostat (GO)	G	10	Units	5,244	4,592	4,505	4,432	-	18.20
Small Business Solutions	Anti-Sweat Heater Controls	E	15	door	3,000	3,000	4,050	4,500	1,489.00	-
Small Business Solutions	Custom Exterior Induction	E	16	kWh	50,000	50,000	50,000	50,000	1.00	-
Small Business Solutions	Custom Exterior LED	E	12	kWh	800,000	800,000	800,000	800,000	1.00	-
Small Business Solutions	Custom Exterior T8 T5	E	12	kWh	75,000	75,000	75,000	75,000	1.00	-
Small Business Solutions	Custom Interior Induction	E	16	kWh	50,000	50,000	50,000	50,000	1.00	-
Small Business Solutions	Custom Interior LED	E	16	kWh	900,000	900,000	900,000	900,000	1.00	-
Small Business Solutions	Custom Interior T8 T5	E	15	kWh	75,000	75,000	75,000	75,000	1.00	-
Small Business Solutions	Custom Occupancy Sensor	E	10	connected watt	1,500	1,500	1,500	1,500	10.00	-
Small Business Solutions	ECM Case Motors	E	15	door	500	500	675	675	824.00	-
Small Business Solutions	ECM Walk-in Cooler and Freezer Motors	E	15	motor	1,000	1,000	1,350	1,350	1,365.00	-
Small Business Solutions	Evaporator Fan Motor Controls on ECM motors	E	5	unit	500	500	675	675	330.00	-
Small Business Solutions	Evaporator Fan Motor Controls on PSC motors	E	5	unit	50	50	68	68	796.00	-
Small Business Solutions	Evaporator Fan Motor Controls on S-P motors	E	5	unit	50	50	68	68	1,155.00	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Small Business Solutions	Exterior Fixture Removal	E	12	kWh	900,000	900,000	900,000	900,000	1.00	-
Small Business Solutions	Exterior LED Exit Signs	E	15	kWh	50,000	50,000	50,000	50,000	1.00	-
Small Business Solutions	Exterior LEDs	E	15	kWh	7,000,000	7,000,000	7,000,000	7,000,000	1.00	-
Small Business Solutions	Exterior T8s and U-Tube T8 Lamps	E	12	kWh	75,000	75,000	75,000	75,000	1.00	-
Small Business Solutions	Interior Fixture Removal	E	12	kWh	900,000	900,000	900,000	900,000	1.00	-
Small Business Solutions	Interior LED Exit Signs	E	15	kWh	150,000	150,000	150,000	150,000	1.00	-
Small Business Solutions	Interior LEDs	E	15	kWh	5,400,000	5,400,000	5,400,000	5,400,000	1.00	-
Small Business Solutions	Interior T8s and U-Tube T8 Lamps	E	12	kWh	75,000	75,000	75,000	75,000	1.00	-
Small Business Solutions	LED Lighting for Refrigeration Cases	E	16	nominal foot	5,000	5,000	5,000	5,000	195.00	-
Small Business Solutions	Occ Sensors	E	10	connected watt	3,500,000	3,500,000	3,500,000	3,500,000	1.00	-
Small Business Solutions	Occupancy Sensors for LED Refrigerator Lighting	E	16	door	1,000	1,000	1,000	1,000	195.00	-
Small Business Solutions	Screw-In LEDs	E	3	kWh	500	500	500	-	1.00	-
Small Business Solutions	Strip Curtains (0 Degrees)	E	4	square foot	678	791	1,068	2,700	454.00	-
Small Business Solutions	Strip Curtains (40 Degrees)	E	4	square foot	4,078	4,755	6,419	2,700	85.00	-
Small Business Solutions	Vending Equipment Controller	E	10	unit	150	150	203	203	800.00	-

Program	Measure Name	Fuel	Measure Life, 2020 (Years)	Units	Units Installed				Unit Energy Savings	
					2020	2021	2022	2023	Electricity, 2020 (kWh)	Natural Gas, 2020 (Mcf)
Comprehensive Business Solutions	Verified Custom Savings - Electric	E	5	kwh	0.5	1.0	1.0	1.0	2,200	-
Comprehensive Business Solutions	Verified Custom Savings - Gas	G	5	Mcf	1.0	1.0	1.0	1.0	-	12,650

Consumers Energy - Energy Waste Reduction Program
Recommended Financial Incentive Structure for Electric

Legislative First Year Savings Tiers			Metric 1: Lifetime Savings (MWh)			Metric 2: Low Income Investment ($1,000)		
			Minimum Basis (100%) Year 2020 = 3,601,921 Year 2021 = 3,816,559 Year 2022 = 3,867,358 Year 2023 = 4,179,710			Minimum Basis (100%) Year 2020 = $8,530 Year 2021 = $9,325 Year 2022 = $10,403 Year 2023 = $11,608		
			Savings weighted at 80%			*Weighted at 25%*		
	% Savings	***%***		***Weight***	***%***		***Weight***	***%***
Tier 1	1.00%	15.00%	***Tier 1***	100%	12.00%	***Tier 1***	100%	3.00%
	1.01%	15.10%		101%	12.08%		101%	3.04%
	1.02%	15.20%		102%	12.16%		102%	3.08%
	1.03%	15.30%		103%	12.24%		103%	3.12%
	1.04%	15.40%		104%	12.32%		104%	3.16%
	1.05%	15.50%		105%	12.40%		105%	3.20%
	1.06%	15.60%		106%	12.48%		106%	3.24%
	1.07%	15.70%		107%	12.56%		107%	3.28%
	1.08%	15.80%		108%	12.64%		108%	3.32%
	1.09%	15.90%		109%	12.72%		109%	3.36%
	1.10%	16.00%		110%	12.80%		110%	3.40%
	1.11%	16.10%		111%	12.88%		111%	3.44%
	1.12%	16.20%		112%	12.96%		112%	3.48%
	1.13%	16.30%		113%	13.04%		113%	3.52%
	1.14%	16.40%		114%	13.12%		114%	3.56%
	1.15%	16.50%		115%	13.20%		115%	3.60%
	1.16%	16.60%		116%	13.28%		116%	3.64%
	1.17%	16.70%		117%	13.36%		117%	3.68%
	1.18%	16.80%		118%	13.44%		118%	3.72%
	1.19%	16.90%		119%	13.52%		119%	3.76%
	1.20%	17.00%		120%	13.60%		120%	3.80%
	1.21%	17.10%		121%	13.68%		121%	3.84%
	1.22%	17.20%		122%	13.76%		122%	3.88%
	1.23%	17.30%		123%	13.84%		123%	3.92%
	1.24%	17.40%		124%	13.92%		124%	3.96%
Tier 2	1.25%	17.50%	***Tier 2***	125%	14.00%	***Tier 2***	125%	4.00%
	1.26%	17.60%		126%	14.08%		126%	4.04%
	1.27%	17.70%		127%	14.16%		127%	4.08%
	1.28%	17.80%		128%	14.24%		128%	4.12%
	1.29%	17.90%		129%	14.32%		129%	4.16%
	1.30%	18.00%		130%	14.40%		130%	4.20%
	1.31%	18.10%		131%	14.48%		131%	4.24%
	1.32%	18.20%		132%	14.56%		132%	4.28%
	1.33%	18.30%		133%	14.64%		133%	4.32%
	1.34%	18.40%		134%	14.72%		134%	4.36%
	1.35%	18.50%		135%	14.80%		135%	4.40%
	1.36%	18.60%		136%	14.88%		136%	4.44%
	1.37%	18.70%		137%	14.96%		137%	4.48%
	1.38%	18.80%		138%	15.04%		138%	4.52%
	1.39%	18.90%		139%	15.12%		139%	4.56%
	1.40%	19.00%		140%	15.20%		140%	4.60%
	1.41%	19.10%		141%	15.28%		141%	4.64%
	1.42%	19.20%		142%	15.36%		142%	4.68%
	1.43%	19.30%		143%	15.44%		143%	4.72%
	1.44%	19.40%		144%	15.52%		144%	4.76%
	1.45%	19.50%		145%	15.60%		145%	4.80%
	1.46%	19.60%		146%	15.68%		146%	4.84%
	1.47%	19.70%		147%	15.76%		147%	4.88%
	1.48%	19.80%		148%	15.84%		148%	4.92%
	1.49%	19.90%		149%	15.92%		149%	4.96%
Tier 3	1.50%	20.00%	***Tier 3***	150%	16.00%	***Tier 3***	150%	5.00%

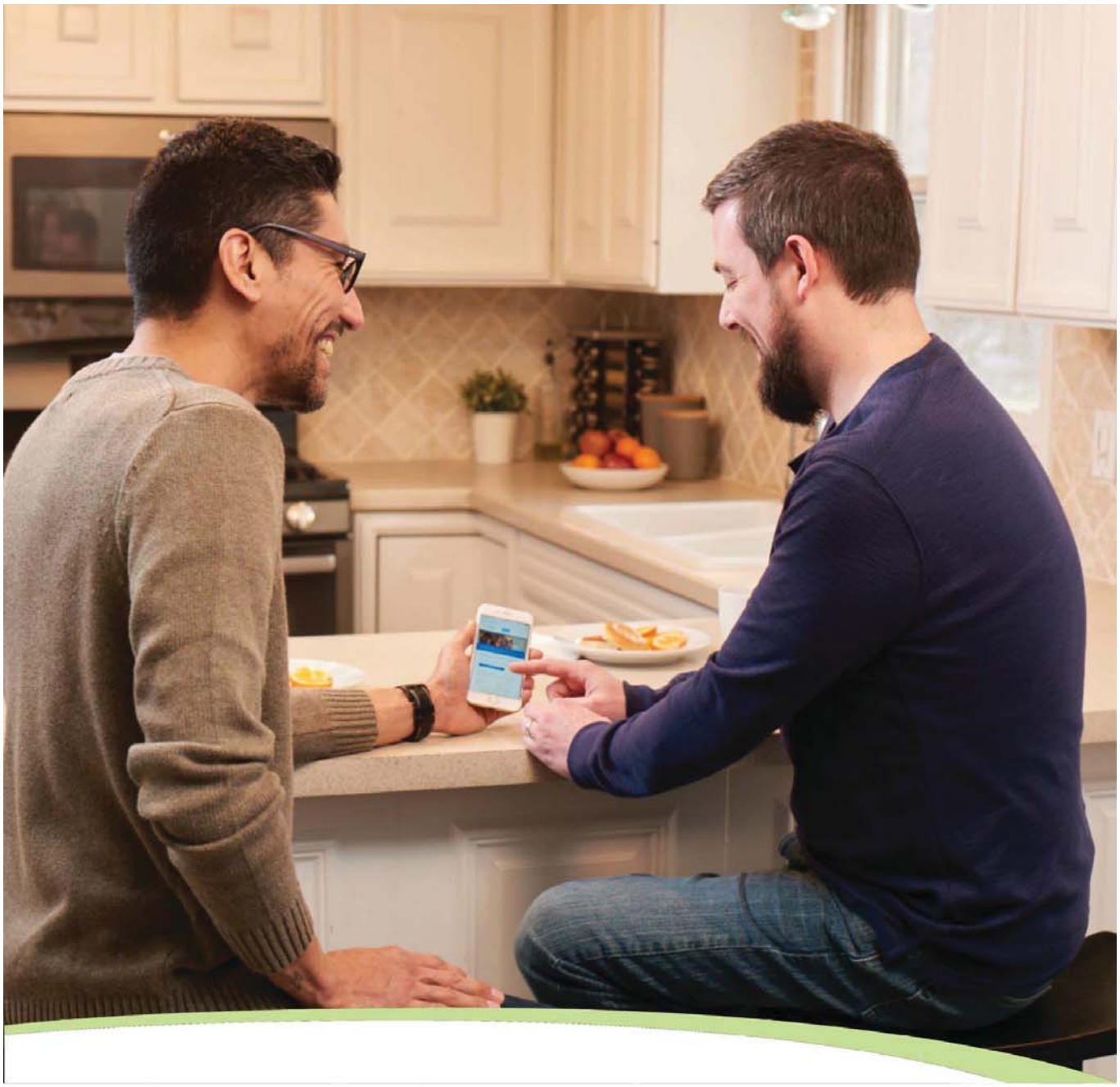
Note: The financial incentive is the minimum of the first year savings incentive or total metric incentive calculated by adding up the percentages earned in each of the 2 metrics. The total incentive award can not exceed the award based on the Company's 1st year energy savings achieved. (Financial incentive payment can not exceed 20% of program spend, or 30% of net benefits.

Consumers Energy - Energy Waste Reduction Program

Recommended Financial Incentive Structure for Gas

Legislative First Year Savings Tiers			Metric 1: Lifetime Savings (MCF) Minimum Basis (100%) Year 2020 = 26,880,109 Year 2021 = 26,168,290 Year 2022 = 25,860,259 Year 2023 = 25,703,336			Metric 2: Low Income Investment - ($1,000) Minimum (100%) Year 2020 = $5,031 Year 2021 = $6,617 Year 2022 = $6,997 Year 2023 = $6,533		
			Savings weighted at 80%			*Weighted at 25%*		
	% Savings	***Incentive Cap***		***Weight***	***Incentive Cap***		***Weight***	***Incentive Cap***
Tier 1	**0.750%**	**15.00%**	***Tier 1***	100.0%	12.00%	***Tier 1***	100.0%	3.00%
	0.755%	15.10%		100.7%	12.08%		100.7%	3.04%
	0.760%	15.20%		101.3%	12.16%		101.3%	3.08%
	0.765%	15.30%		102.0%	12.24%		102.0%	3.12%
	0.770%	15.40%		102.7%	12.32%		102.7%	3.16%
	0.775%	15.50%		103.3%	12.40%		103.3%	3.20%
	0.780%	15.60%		104.0%	12.48%		104.0%	3.24%
	0.785%	15.70%		104.7%	12.56%		104.7%	3.28%
	0.790%	15.80%		105.3%	12.64%		105.3%	3.32%
	0.795%	15.90%		106.0%	12.72%		106.0%	3.36%
	0.800%	16.00%		106.7%	12.80%		106.7%	3.40%
	0.805%	16.10%		107.3%	12.88%		107.3%	3.44%
	0.810%	16.20%		108.0%	12.96%		108.0%	3.48%
	0.815%	16.30%		108.7%	13.04%		108.7%	3.52%
	0.820%	16.40%		109.3%	13.12%		109.3%	3.56%
	0.825%	16.50%		110.0%	13.20%		110.0%	3.60%
	0.830%	16.60%		110.7%	13.28%		110.7%	3.64%
	0.835%	16.70%		111.3%	13.36%		111.3%	3.68%
	0.840%	16.80%		112.0%	13.44%		112.0%	3.72%
	0.845%	16.90%		112.7%	13.52%		112.7%	3.76%
	0.850%	17.00%		113.3%	13.60%		113.3%	3.80%
	0.855%	17.10%		114.0%	13.68%		114.0%	3.84%
	0.860%	17.20%		114.7%	13.76%		114.7%	3.88%
	0.865%	17.30%		115.3%	13.84%		115.3%	3.92%
	0.870%	17.40%		116.0%	13.92%		116.0%	3.96%
Tier 2	**0.875%**	**17.50%**	***Tier 2***	116.7%	14.00%	***Tier 2***	116.7%	4.00%
	0.880%	17.60%		117.3%	14.08%		117.3%	4.04%
	0.885%	17.70%		118.0%	14.16%		118.0%	4.08%
	0.890%	17.80%		118.7%	14.24%		118.7%	4.12%
	0.895%	17.90%		119.3%	14.32%		119.3%	4.16%
	0.900%	18.00%		120.0%	14.40%		120.0%	4.20%
	0.905%	18.10%		120.7%	14.48%		120.7%	4.24%
	0.910%	18.20%		121.3%	14.56%		121.3%	4.28%
	0.915%	18.30%		122.0%	14.64%		122.0%	4.32%
	0.920%	18.40%		122.7%	14.72%		122.7%	4.36%
	0.925%	18.50%		123.3%	14.80%		123.3%	4.40%
	0.930%	18.60%		124.0%	14.88%		124.0%	4.44%
	0.935%	18.70%		124.7%	14.96%		124.7%	4.48%
	0.940%	18.80%		125.3%	15.14%		125.3%	4.52%
	0.945%	18.90%		126.0%	15.12%		126.0%	4.56%
	0.950%	19.00%		126.7%	15.20%		126.7%	4.60%
	0.955%	19.10%		127.3%	15.28%		127.3%	4.64%
	0.960%	19.20%		128.0%	15.36%		128.0%	4.68%
	0.965%	19.30%		128.7%	15.44%		128.7%	4.72%
	0.970%	19.40%		129.3%	15.52%		129.3%	4.76%
	0.975%	19.50%		130.0%	15.60%		130.0%	4.80%
	0.980%	19.60%		130.7%	15.68%		130.7%	4.84%
	0.985%	19.70%		131.3%	15.76%		131.3%	4.88%
	0.990%	19.80%		132.0%	15.84%		132.0%	4.92%
	0.995%	19.90%		132.7%	15.92%		132.7%	4.96%
Tier 3	**1.000%**	**20.00%**	***Tier 3***	133.3%	16.00%	***Tier 3***	133.3%	5.00%

Note: The financial incentive is the minimum of the first year savings incentive or total metric incentive calculated by adding up the percentages earned in each of the 2 metrics. The total incentive award can not exceed the award based on the Company's 1st year energy savings achieved. (Financial incentive payment can not exceed 20% of program spend, or 30% of net benefits.



CONSUMERS ENERGY

July 2018-June 2019 Pay My Way™ Annual Report

Case No. U-18060
July 31, 2019

Consumers Energy
Count on Us®

Introduction

In response to the May 3, 2016 Order in Docket U-18060, this 2019 Pay My Way Annual Report ("Report") summarizes the activities and performance of Consumers Energy Company's Pay My Way pilot program ("Program") during the period of July 1, 2018 to June 30, 2019. In particular, this Report serves to inform our stakeholders, encourage collaboration, and provide comprehensive documentation of the Program's operations over the past year. The following sections will address: 1) the pilot concept and value offering; 2) operational statistics, such as monthly de-enrollments; 3) pilot demographics; 4) evaluation, measurement and research initiatives, including assessing the program's impacts on energy savings, bad debt reduction, and customer satisfaction; 5) customer experience; and 6) future plans.

Pilot Summary

Consumers Energy designed this Program to encourage energy savings by offering customers better insight into their energy use and costs on a daily basis.

The Program also provides customers with greater payment control and flexibility by allowing them to pay for energy on their own schedule through convenient payment channels. Rather than receiving a bill based on past energy consumption each month, the amount of energy consumed is charged against the customer's prepaid account balance, providing a direct link between energy use and costs. Customers have the option to make payments of any amount, and at any time, through one of several payment channels. In addition, customers are automatically notified via email, phone calls, or text messages when their account balance runs low. If the customer's energy consumption exceeds the prepaid amount, Consumers Energy stops supplying energy within 24 hours from the time the account balance was exceeded. Customers who participate in the Program can pre-pay at any time to continue the service without paying a reconnect fee.

Key benefits of the Program include:

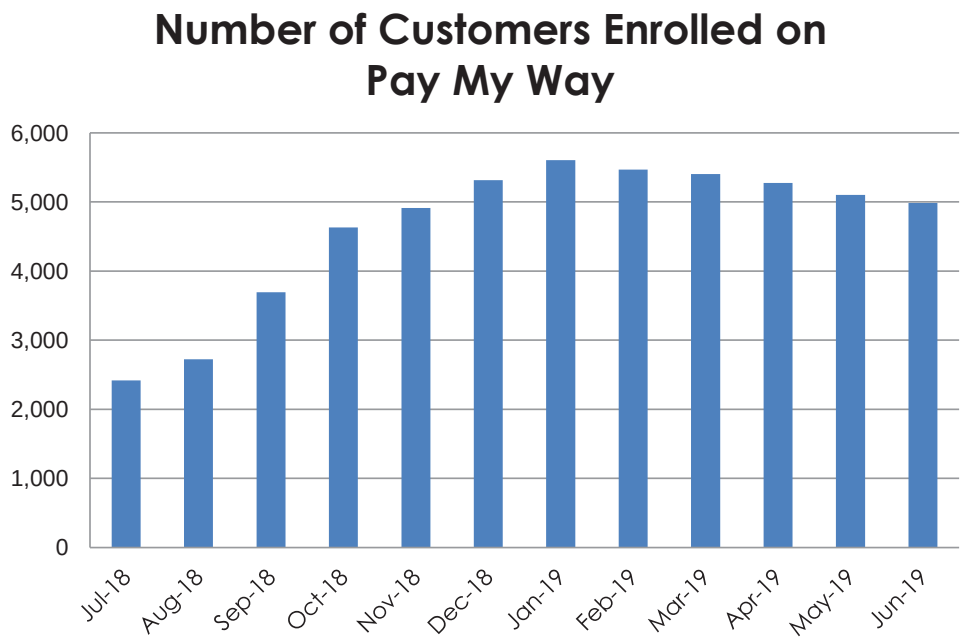
- Energy savings
- Relevant and timely energy use information and associated costs
- Increased control over household budgeting
- Convenient payment options
- No deposit, penalties, or fees

The Program's premise is simple: customers with better insight into their energy use and associated costs are more apt to reduce energy waste by using energy more

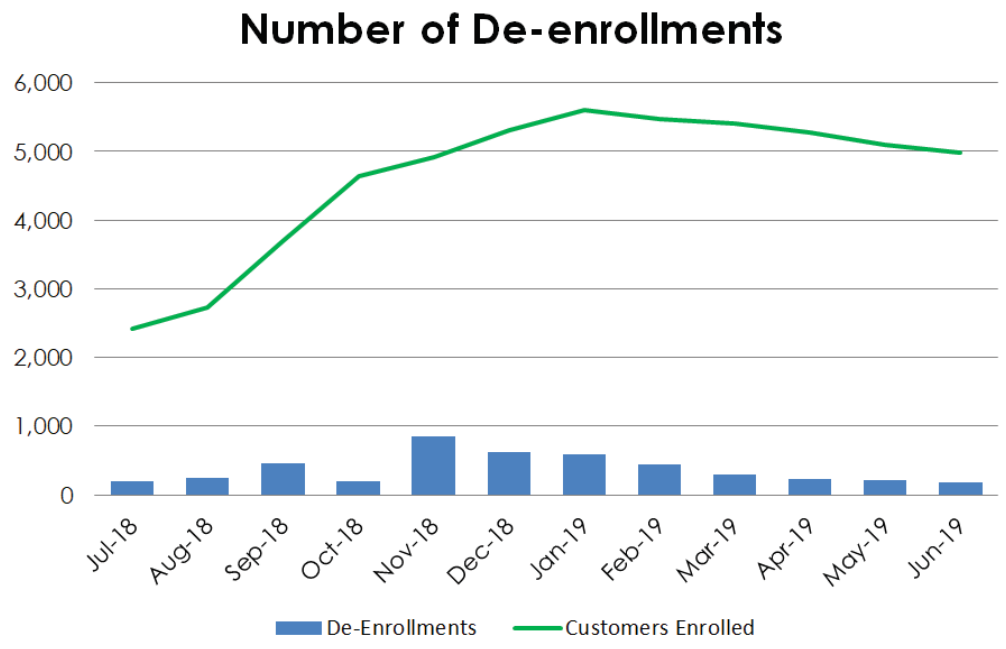
efficiently. Participants' financial security will also be improved through the Program's pre-pay design, which eliminates the risk of energy bill debt and facilitates flexible payment schedules.

Pilot Operations

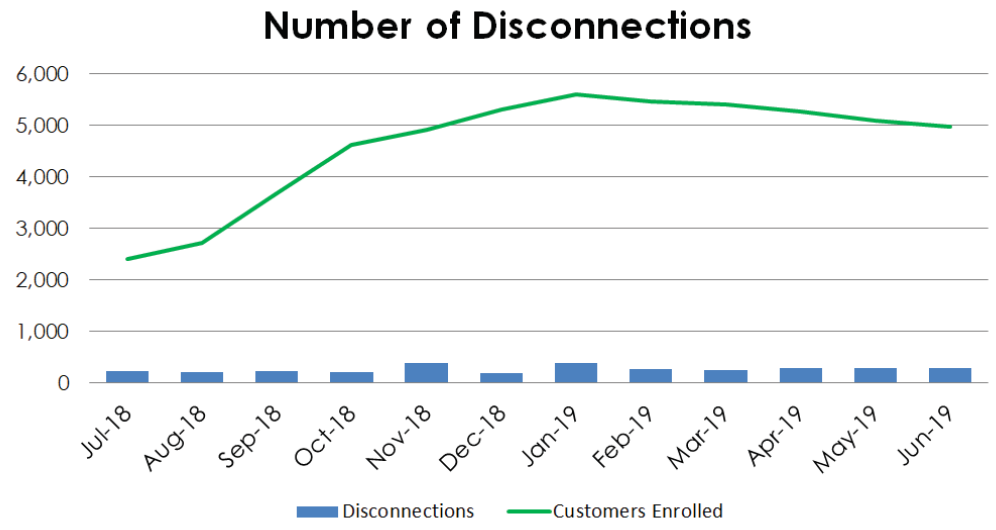
Consumers Energy monitored key program indicators, such as de-enrollments, disconnects, reconnects, and low balance alerts, to recognize trends in customer behavior and evaluate pilot performance. The following graphs provide monthly operational data.

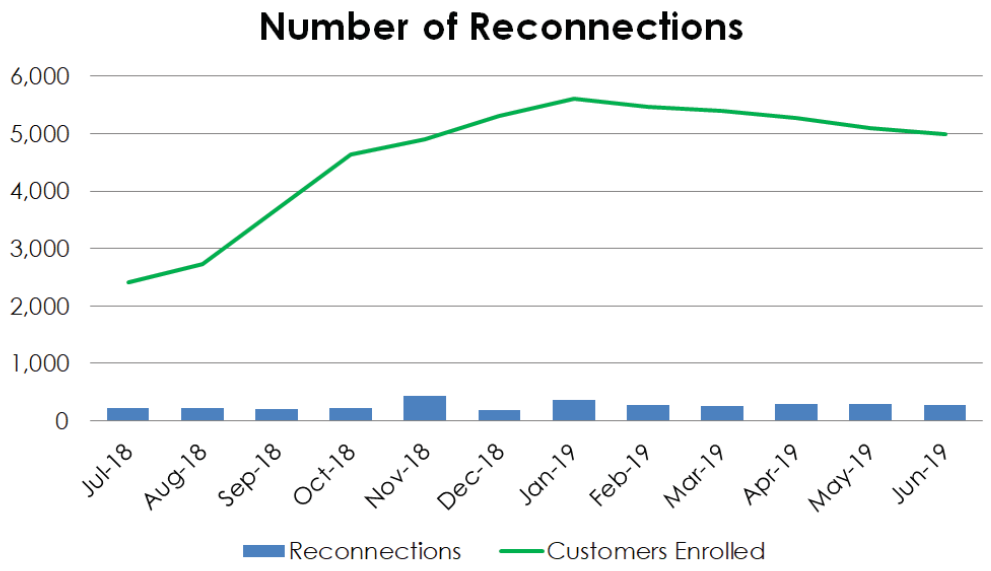


After a six-month marketing cessation in 2018, while technology issues impacting the customer experience were addressed, marketing efforts resumed in August 2018, and the program grew to over 5,000 participants by the end of 2018. In February 2019, marketing efforts were suspended to allow for evaluation of the Program.

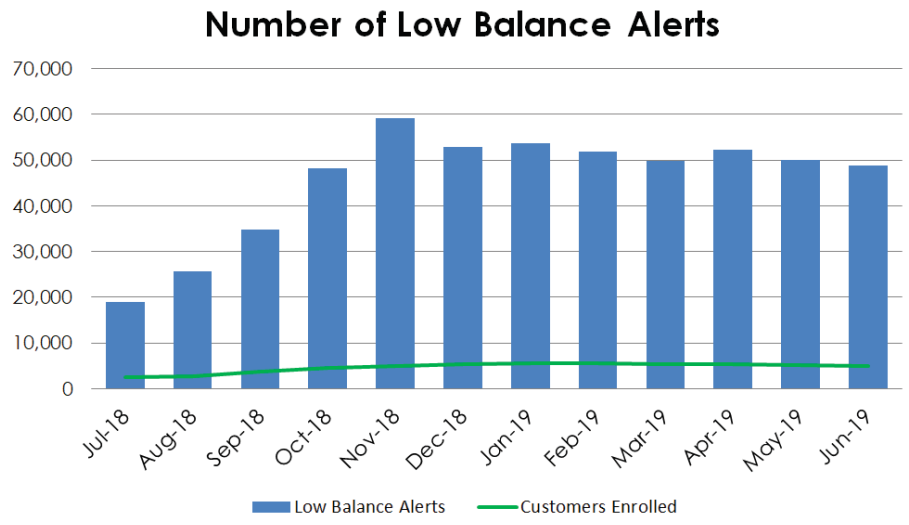


While customers de-enrolled for a variety of reasons, the highest number of de-enrollments (68%) were due to customers moving out of Consumers Energy's service territory. The remaining de-enrollments were attributed to customer sentiment that the Program did not fit their needs.





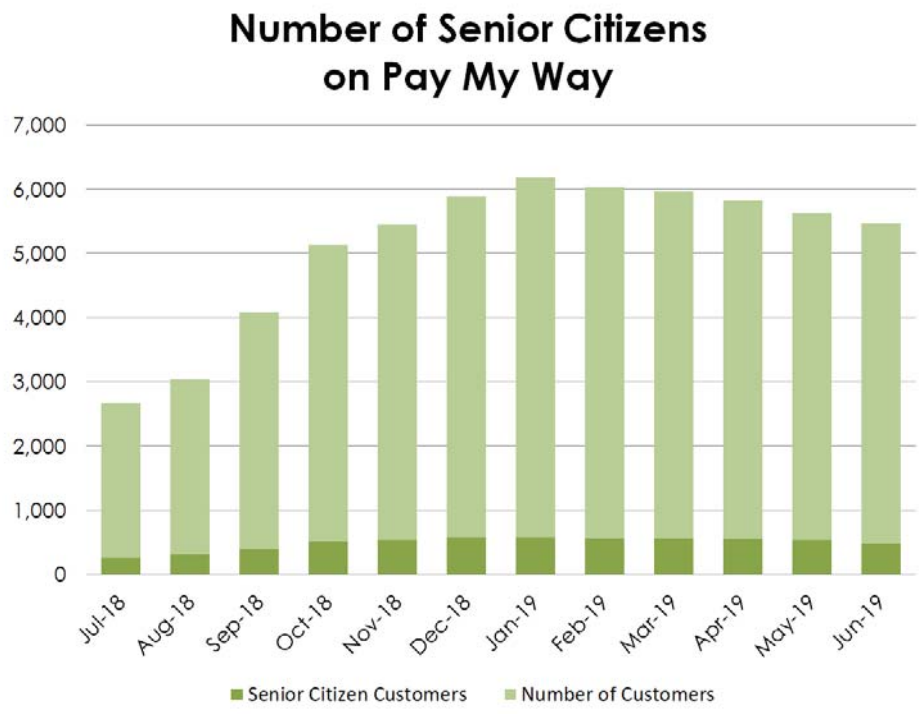
The Program utilizes remote disconnection and reconnection functionality and follows the same disconnection and reconnection standards that are utilized for post-pay customers. For example, senior citizen customers enrolled in the Program are not disconnected from November through March. Similarly, when post pay disconnections are suspended for weather conditions, so are any disconnections under the Program. The disconnections shown in the chart above are a direct correlation to the reconnections: 97% of the Pay My Way customers who are disconnected are also reconnected on the same day.



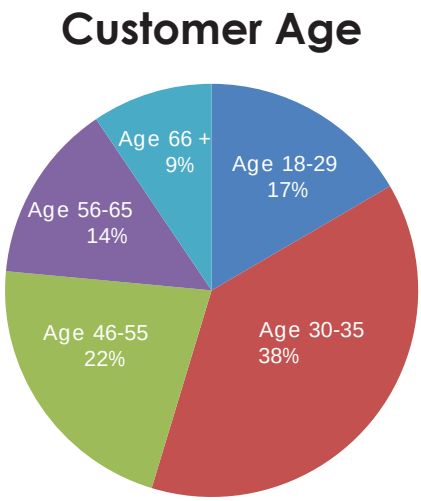
The Program has established a low balance alert cadence based on industry standards. Customers receive low balance alerts when they have 10 days, 5 days, 3 days, 2 days, 1 day, and 0 days of usage left. The proportion of low balance alerts to the number of customers enrolled in the Program was consistent throughout this reporting period.

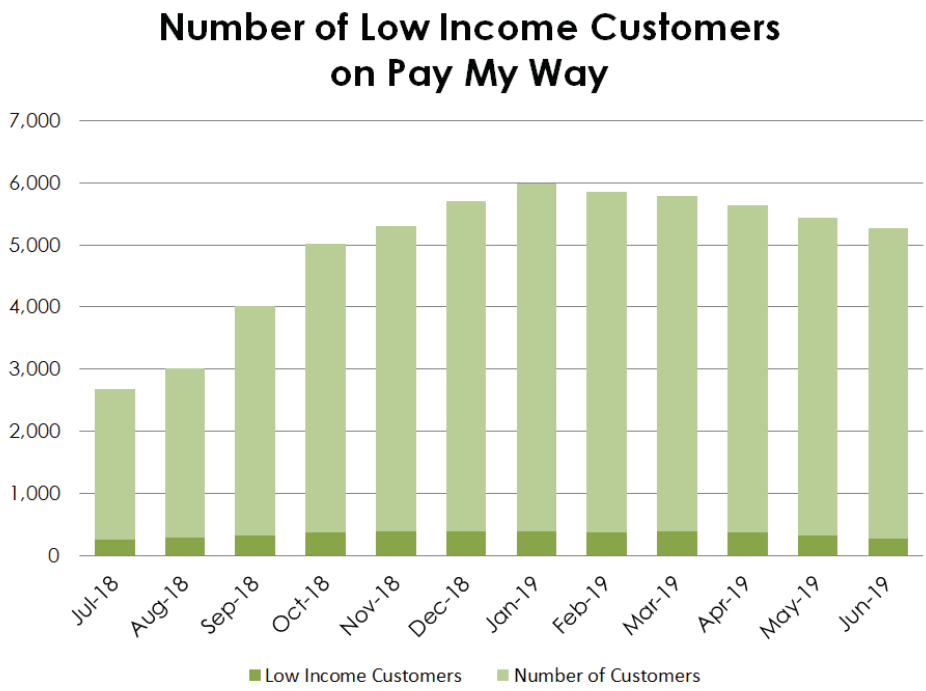
Pilot Demographics

The following charts provide specific detail of the Program's customer demographics. Five percent of the Program's customers have a household income below 150% of the federal poverty level and are considered low income. Approximately 8% of the Program's customers are 65 years of age or older and are considered senior citizens. The Program appeals to multiple customer segments and offers different benefits depending on the customer's unique situation. For some customers, the Program is a budgeting tool; for other customers, the Program offers a convenient way to make payments and provides easy access to real time energy usage.



Senior Citizen customers depicted in the chart above have self-identified as 65 years of age or older upon enrollment in the Program. The chart below illustrates the age distribution of Program customers using data issued by Acxiom LLC.





The chart above depicts customers who are identified as low income in the Company's SAP records utilizing the Michigan Public Service Commission's Consumer Standards and Billing Practices definition of "Eligible low-income customer." The chart below depicts household income data provided by Acxiom LLC.

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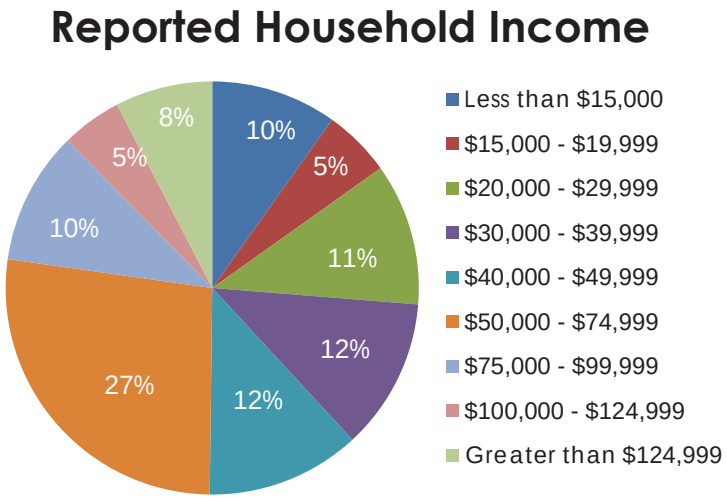
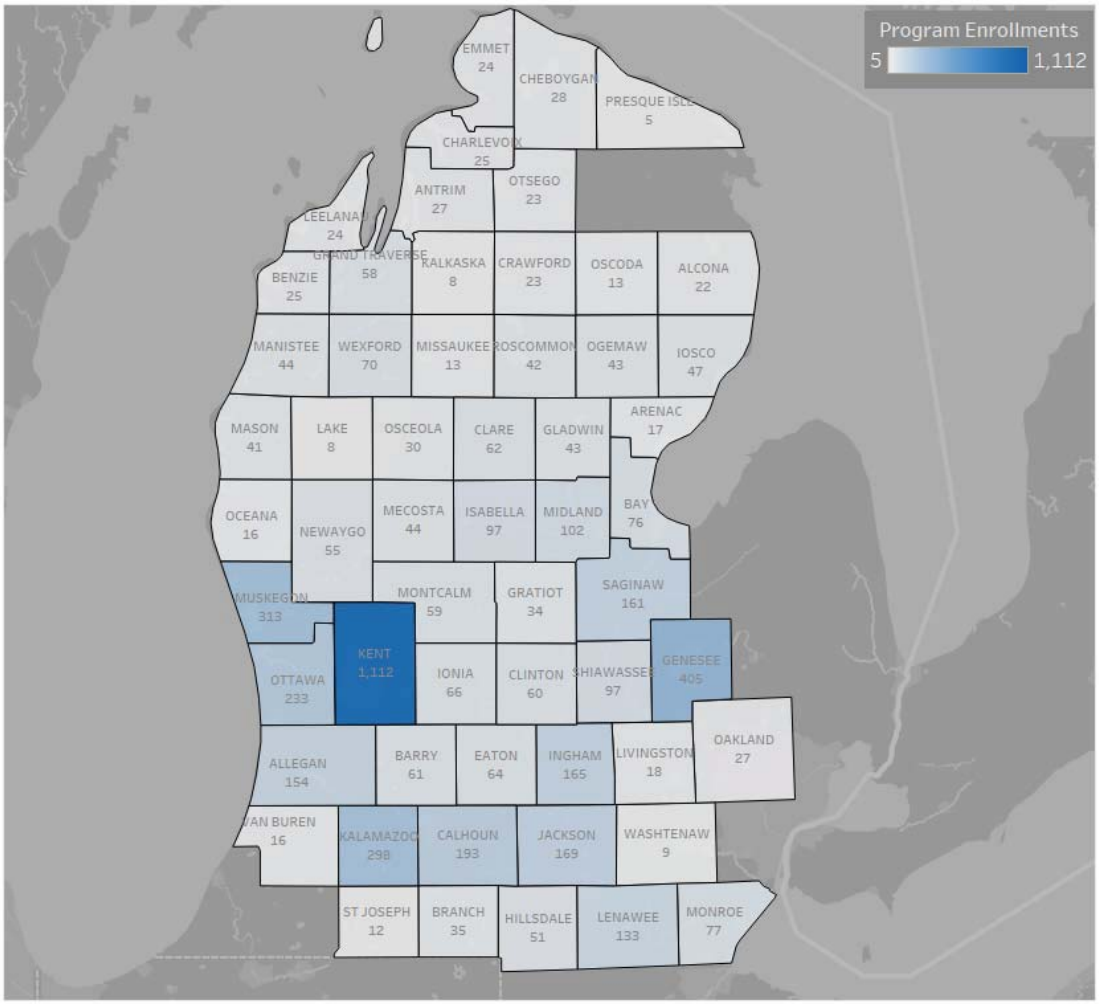
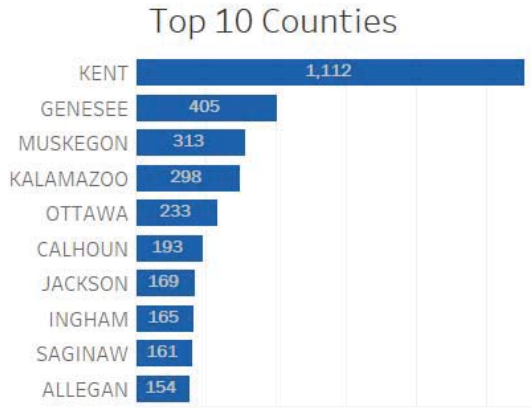






Geographically, 22% of Program customers reside in Kent County. One reason for this is that the Program began marketing efforts in December 2017 when the majority of smart meters were located in Kent County.

Evaluation, Measurement, and Research

Consumers Energy engaged Cadmus, a third-party evaluation firm, to evaluate the impacts of the Program's energy savings, debt reduction, and customer experience.

It is important to note that prepayment programs are relatively new and have a number of unique behavioral and program design elements, and potential impacts, when compared to other behavioral energy efficiency programs. Consequently, there is not a widely accepted industry standard approach to evaluate them. Therefore, Cadmus created a custom evaluation approach that included a mixture of some widely used evaluation techniques and some highly conservative and experimental techniques. Results from these approaches are discussed in the following sections.

Impacts on Energy Savings:

To estimate the energy impact of the Program, the team compared Program participants' energy use to the energy use of similar, non-participating customers. The similar, non-participating customers were selected from Consumers Energy's Rate RS1000 depending on a number of variables including monthly energy consumption, geographic location, head-of-household age, and household income. The non-participating customers who satisfied these categories tended to be slightly more high-income and older than participants. Nevertheless, the differences were not statistically significant, except for a few income ($30-39k, $75-99k) and age groups (30-45, 66+).

With the comparative data, the Cadmus team applied regression analysis of pre-participation and post-participation data to identify overall energy reductions attributable to participation in the Program. In doing so, the team used cleansed Consumers Energy customer data to construct the matched comparison group through a propensity score approach where the most similar nonparticipants, based on customer usage and demographics, were used as a baseline against participating customers. The team conducted several post-selection quality assurance tests to ensure that the non-participating customer group would be accurate. This robust method is the standard in Michigan for evaluating energy savings.

The regression analysis included independent variables indicating participation in the Program, calendar month, weather, and pretreatment average seasonal usage. This analysis revealed an average gross reduction (or savings) in electric consumption of approximately 4.1%, or 384 kWh per enrolled customer. This gross reduction is the first type of savings identified before factoring in any adjustments.

The Cadmus team attributed savings to two main channels: efficiency behaviors and experimental/conservatively unclaimed savings. Efficiency behaviors are the most widely observed behavioral changes in response to a prepaid program, such as the

increased adoption of more energy efficient equipment, as well as behaviors that reduce the amount of energy customers consume without affecting their comfort or perceived well-being. The second category, experimental/conservatively unclaimed savings, includes several other types of savings that the Program conservatively did not wish to claim for a variety of reasons. These include savings from unintended behaviors that the Program is not designed to induce, savings from disconnections, and savings that are the result of customers participating in other energy efficiency programs.

As described earlier, one aspect of the Program design is that energy service is shut off when a customer's account balance reaches zero. Most disconnections last less than a day as most participants tend to refill their account relatively quickly. However, these disconnections do result in some reductions/savings in energy use during this disconnected period, and, therefore, the evaluation placed those savings in the experimental/unclaimed savings category.

The final element of this experimental/conservatively unclaimed savings category looked at whether the Program induced participants to sign up for other Consumers Energy efficiency programs in an effort to increase their savings. Savings from these other program enrollments were identified, accounted for, and deducted to avoid double-counted savings.

The table below summarizes the relative percentage of annual kilowatt-hour savings for these two behavioral channel categories – Energy Efficiency Behavior Savings and Experimental/Conservatively Unclaimed Behavior Savings. The Cadmus team estimated net annual savings attributable to program-induced energy-efficient behaviors by removing unclaimed savings from the gross savings identified in the billing analysis. After accounting for these attribution channels, enrollment in the Program resulted in a net annual program savings impact of 282 kWh per participant, or 3.0% in net annual savings impact compared to similar non-participating customers. Almost three-quarters of gross program savings (73%) can be claimed from efficiency behaviors after deducting the experimental/conservatively unclaimed savings.

Annual Program Impacts by Behavioral Attribution Channel

Channel	Impacts per Customer (percentage)	Impacts per Customer (kWh)
Gross Annual Impact	**4.1%**	**384**
Efficiency Behavior Savings	3.0%	282
Unclaimed Savings	1.1%	102
Net Annual Impact	**3.0%**	**282**

Impacts on Customer Debt:

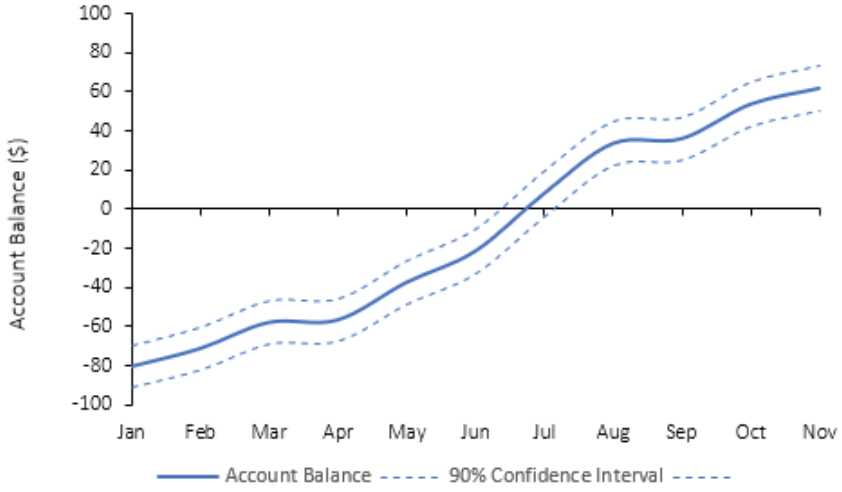
To assess the customer debt impacts of the Program, the Cadmus team evaluated the debt profiles of 1,292 participating customers who were enrolled in the Program for the entirety of the 2018 calendar year. As shown in the table below, 56% of Program customers in the month of January 2018 held some amount of outstanding debt, with the average amount being $80.29. After 11 months of program participation, customers carried an average of $61.67 in credit, a positive change of $141.96 per customer on average. The net outstanding debt decreased by 37 percentage points compared to the start of the program year, with only 19% of customers carrying any net outstanding debt in November 2018.

Change in Debt Profile of Pay My Way Customers in 2018

Period	Percentage of Customers Holding Net Debt	Average Net Debt Held Per Customer
January 2018	56%	$80.29
November 2018	19%	-$61.67
Difference	**-37%**	**141.96**

The figure below shows the average net outstanding debt held by the Program's customers in 2018. On average, customers enrolled in the Program were able to decrease their utility bill debt by roughly $13 per month, and typically paid off all debt within six to eight months of enrollment.

Average Participating Customer Eliminates Debt & Builds Small Net Balance Over 11 Months



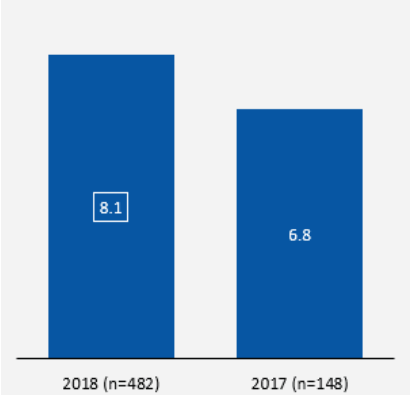
Impacts on Customer Experience:

As part of this evaluation, the Cadmus team invited Program participants to complete an online survey in the fall of 2018. The survey gauged participants' experience and satisfaction, as well as the types of energy saving behaviors and measures that participants took or installed in response to their participation in the Program.

The Cadmus team compared customer satisfaction and experience from the 2018 Pay My Way experience survey to the findings from the prior 2017 experience survey. Respondents rated their overall experience with the Program on a point scale of 1 to 10, where 1 was unacceptable and 10 was outstanding.

As shown in the figure below, 2018 survey respondents' average rating (mean=8.1) was significantly higher than the average rating of 2017 survey respondents (mean=6.8) due to improved communication and clarity from Consumers Energy about the Program.

Significantly Higher Customer Ratings on Overall Program Experience (2018 vs 2017)



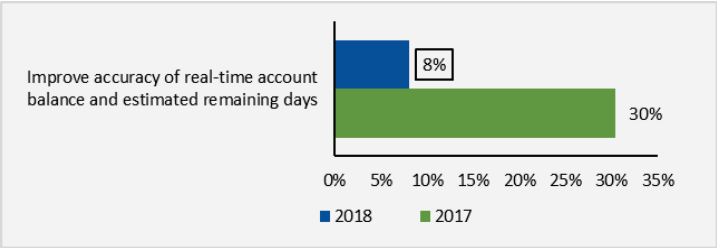
Source: Experience Survey Question I3 (2018) and Question I2 (2017). "Taking everything into consideration so far, how would you rate your overall experience with the Pay My Way Program?" Boxed value indicates statistically significant difference at the 99 percent level ($p \leq 0.01$).

Part of the improved communication and clarity was a result of Consumers Energy adding a Frequently Asked Questions (FAQ) section to its website and upgrading its IT systems. Additionally, significantly fewer respondents in 2018 (16%, n=63) felt the Program did not function as they initially understood, as compared to the 2017 survey respondents (32%, n=59) ($p<0.05$).

In 2018, Consumers Energy addressed an issue that caused some customers to receive inaccurate account balance estimates in 2017. Just three respondents reported issues with timely payment postings in 2018, and all three joined the program prior to Consumers Energy's IT upgrade. As shown in the following figure, significantly fewer

survey respondents in 2018 suggested that Consumers Energy improve the accuracy of the real-time account balance and estimated remaining days provided to customers.

Significant Reduction in Concerns about Account Notification Accuracy (2018 vs 2017)



Source: Experience Survey Question F6 (2018 and 2017). "How could Consumers Energy better meet your needs regarding account notifications?" (2018 n=77, 2017 n=23); open-ended, multiple response ($p<0.01$)

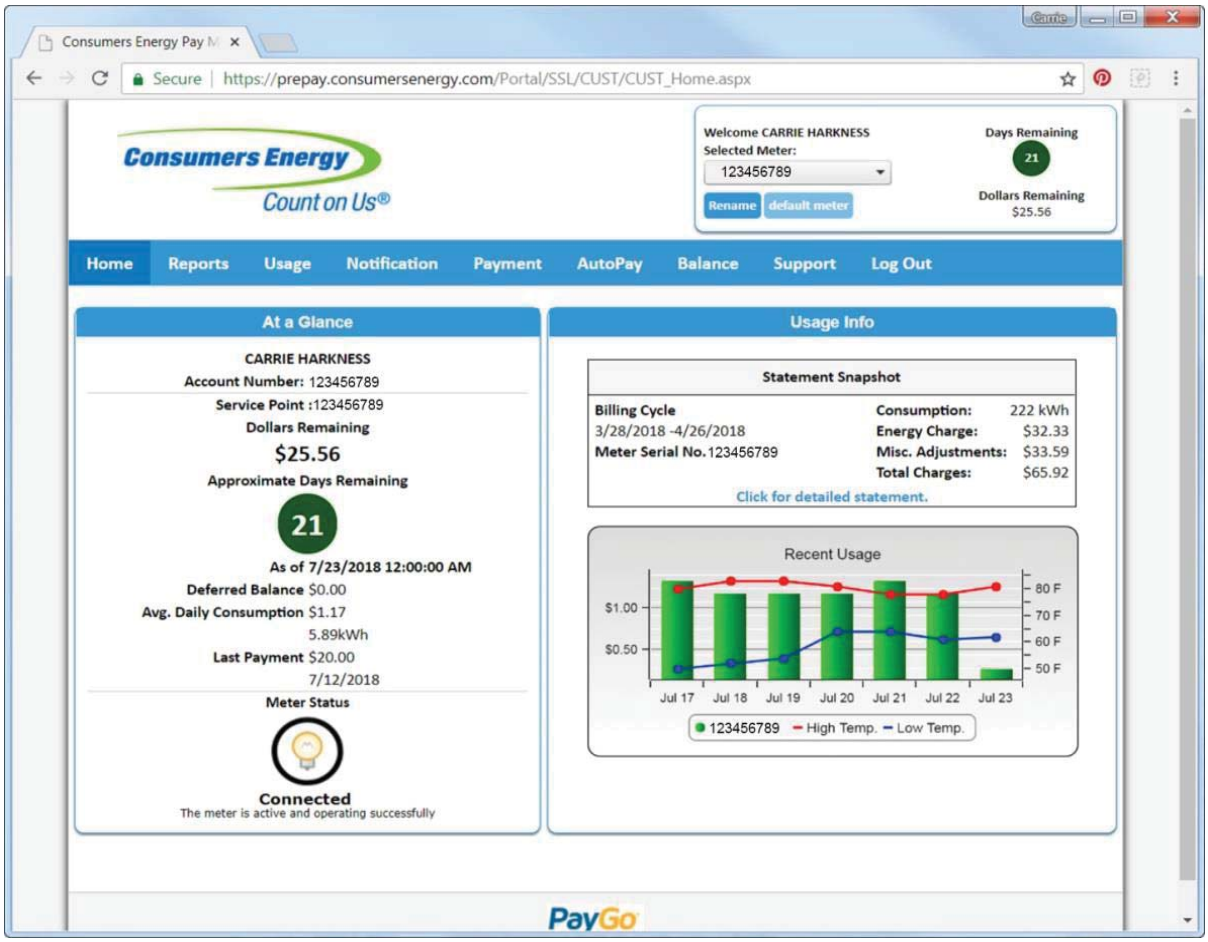
When considering all the information received about the Program, 2018 survey respondents rated such information significantly more favorable (mean=7.3, n=428) than did the 2017 survey respondents (mean=6.1, n=138) ($p<0.01$).

Finally, while these customer experience improvements are very encouraging, the above overall experience rating is somewhat lower than other more mature Company Energy Waste Reduction ("EWR") programs. Based on the 2018 Monthly Satisfaction Survey Annual Portfolio Summary Report, the 2018 EWR portfolio average for Overall Experience is 9.0 (this includes Appliance Recycling, ES Appliances, ES Online Store, HEA, HPwES, HVAC, INWIN, Income Qualified, and Multifamily programs).

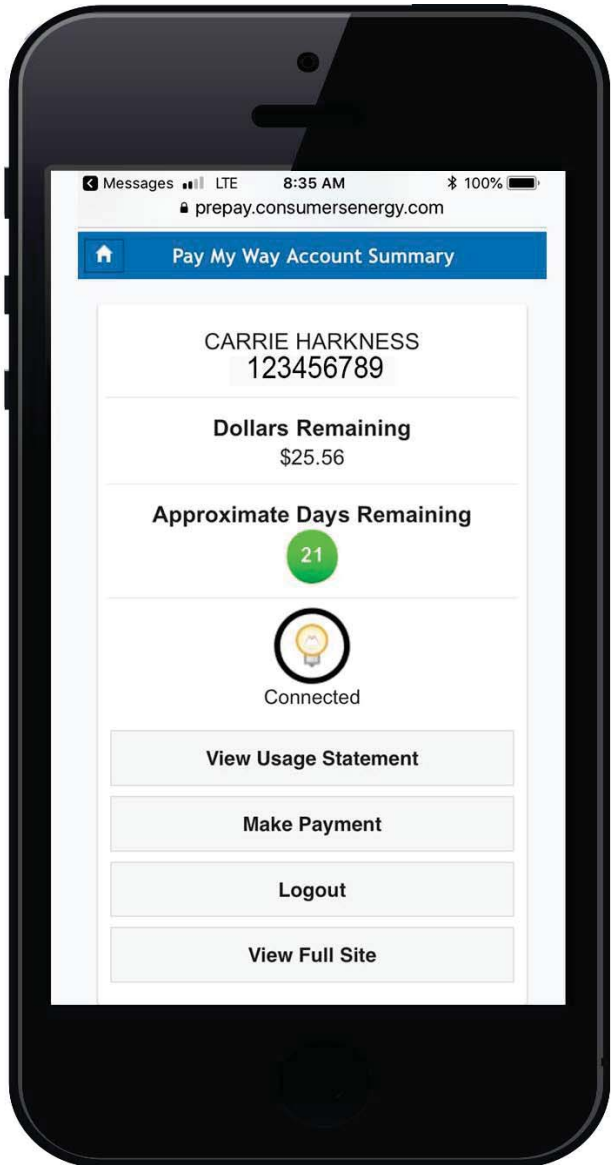
Customer Experience

The Program provides customers with an interactive experience through alerts and balance notifications and convenient ways to view daily use and make payments. Customers can make payments online, by phone, or by scanning their unique barcode at participating retailers. On average, customers access the portal five times a month.

Portal Experience



Mobile Experience



Looking Forward

The Company phased out Pay My Way marketing efforts beginning in February 2019 in anticipation of third-party evaluation results. Through these evaluation results, the Company will consider the energy savings analysis, bad debt impact analysis, and customer satisfaction measurements detailed above to determine the future status of the Program.

To support the Program's next steps, the Company received approval of a 3-year waiver of specific billing rules in June 2019 to allow continuation of the Program. In addition, the Company updated the Program's terms and conditions, in conformance with the Commission's June 7, 2019 Order, to reflect the rights of senior citizen and critical care customers and to specifically provide the waived shutoff protections that are outlined for post-pay customers. These updates align with information shared on billing statements and shut off notices.

S T A T E O F M I C H I G A N

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

DIRECT TESTIMONY

OF

EUGÈNE M. BREURING

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

Q. Please state your name and business address.

A. My name is Eugène M. Breuring, and my business address is One Energy Plaza, Jackson, Michigan.

Q. By whom are you employed and in what capacity?

A. I am employed by Consumers Energy Company ("Consumers Energy" or the "Company") as a Senior Rate Analyst II in the Planning, Budgeting & Analysis Section of the Rates & Regulation and Quality Department.

Q. Please describe your qualifications.

A. In 1992, I graduated from Grand Valley State University with a Bachelor of Business Administration degree in Accounting. In 1996, I graduated from Thunderbird School of Global Management with a Master of Business Administration degree in International Management. I have also attended trade-specific conferences and seminars related to Michigan and United States economies, Michigan economic forecasts, as well as regression modeling.

Prior to joining Consumers Energy in 2013, I worked at the Kellogg Company, Tecumseh Products Company, and Stryker Corporation, mostly in a financial planning, budgeting, and forecasting capacity. In January of 2013, I accepted the position of Senior Rate Analyst II, which is my current position at Consumers Energy. In this capacity, I am responsible for preparing the Company's official electric and natural gas sales and customer forecasts, sponsoring the sales and customer forecast testimony and exhibits, conducting industry research, and conducting various economic studies. I am also responsible for creating the Company's revenue forecast related to the Company's gas and electric business.

Q. Have you sponsored testimony in any previous cases before the Michigan Public Service Commission ("MPSC" or the "Commission")?

A. Yes, I have presented the Company's electric and gas sales forecasts in the following cases:

U-17771	2016 – 2017 Energy Optimization Plan
U-17990	2016 General Electric Rate Case
U-18142	2017 Power Supply Cost Recovery Plan
U-18261	2018-2021 Energy Waste Reduction ("EWR") Plan
U-18322	2017 General Electric Rate Case
U-18231	2017 Biennial Renewable Energy Plan
U-18402	2018 Power Supply Cost Recovery Plan
U-20134	2018 General Electric Rate Case
U-20165	2018 Integrated Resource Plan

PART I - INTRODUCTION

Q. Please explain the purpose of your direct testimony in this proceeding.

A. I am presenting the historical and forecasted sales and revenues used in developing the Company's 2020-2023 EWR Plan.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am providing the following exhibits:

Exhibit A-5 (EMB-1)	Electric Retail Weather-Normal Deliveries Forecast;
Exhibit A-6 (EMB-2)	Gas Retail Weather-Normal Deliveries Forecast;
Exhibit A-7 (EMB-3)	Billing Determinants Used For Developing The Electric EWR Surcharges;

Exhibit A-8 (EMB-4)	Billing Determinants Used For Developing The Electric Self-Direct EWR Surcharges; and
Exhibit A-9 (EMB-5)	Billing Determinants Used For Developing The Gas EWR Surcharges.

Q. Were these exhibits prepared by you or under your direct supervision?

A. Yes.

PART II – ELECTRIC & GAS RETAIL DELIVERIES

Q. Please describe Exhibit A-5 (EMB-1).

A. Company witness Theodore Ykimoff asked that I provide the currently approved weather-normal electric deliveries for use in calculating the electric statutory savings targets. Exhibit A-5 (EMB-1) is a single-page exhibit that shows the electric retail weather-normal deliveries forecast by class, as well as the previous year's weather-normal deliveries for each of the forecasted years.

Q. How has the Commission defined electric retail deliveries for purposes of the Company's EWR Plan?

A. The Commission defined electric retail deliveries in its December 4, 2008 Temporary Order in Case U-15800. In that Order, the Commission defined retail deliveries to include residential, commercial, industrial, street lighting, and interdepartmental electric deliveries.

Q. Please describe Exhibit A-6 (EMB-2).

A. Company witness Ykimoff asked that I also provide the currently approved weather-normal gas deliveries for use in calculating the natural gas statutory savings targets. Exhibit A-6 (EMB-2) is a single-page exhibit that shows the gas retail weather-normal deliveries forecast by class, as well as the previous year's weather-normal deliveries for each of the forecasted years.

Q. How has the Commission defined gas retail deliveries for purposes of the Company's EWR Plan?

A. The Commission defined gas retail deliveries in its December 4, 2008 Temporary Order in Case No. U-15800. In that Order, the Commission defined gas retail deliveries as gas deliveries including customer choice and transportation volumes.

PART III – FORECASTED BILLING DETERMINANT FORECASTS

Q. Please describe Exhibits A-7 (EMB-3) and A-8 (EMB-4).

A. Exhibits A-7 (EMB-3) and A-8 (EMB-4) contain the electric forecasted billing determinants used in developing the proposed electric EWR Plan surcharges. Exhibit A-7 (EMB-3) provides the forecasted billing determinants for customers participating in the Company's EWR programs. Exhibit A-8 (EMB-4) provides the forecasted billing determinants for those customers electing instead to self-direct.

Q. Please describe Exhibit A-9 (EMB-5).

A. Exhibit A-9 (EMB-5) is a two-page exhibit providing the forecasted gas billing determinants used in developing the proposed gas EWR Plan surcharges.

Q. Does this conclude your direct testimony?

A. Yes.

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

EXHIBITS

OF

EUGÈNE M. BREURING

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company

Electric Retail Weather-Normal Deliveries Forecast
2019 - 2023 Forecast
Megawatt-hours (MWh)

Case No.: U-20372
Exhibit No.: A-5 (EMB-1)
Page: 1 of 1
Witness: EMBreuring
Date: August 2019

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Line No.	Year	Residential	Commercial	Industrial	Street Lighting	Inter-departmental	Total	Previous Year W/N Deliveries
1	2018 Hist	12,450,195	11,797,683	8,804,521	135,017	35,157	33,222,571	
2	2019 Fcst	12,475,334	11,818,768	8,764,492	134,268	35,191	33,228,053	33,222,571
3	2020 Fcst	12,460,502	11,848,109	8,795,039	135,548	35,424	33,274,622	33,228,053
4	2021 Fcst	12,420,658	11,652,051	8,839,051	135,548	35,309	33,082,617	33,274,622
5	2022 Fcst	12,536,633	11,480,679	8,853,032	135,548	35,292	33,041,184	33,082,617
6	2023 Fcst	12,318,227	11,530,076	9,002,013	135,548	35,297	33,021,162	33,041,184

Notes:
(1) Retail electric deliveries are defined as total utility deliveries less wholesale deliveries, intersystem deliveries, and retail open access deliveries.
(2) Forecasted sales are all on a weather-normal basis.
(3) 2019 Fcst is based on a "4+8" Estimate (4 months of actuals, 8 months of forecast)

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company

Gas Retail Weather-Normal Deliveries Forecast
2019 - 2023 Forecast
Million Cubic Feet (MMcf)

Case No.: U-20372
Exhibit No.: A-6 (EMB-2)

Witness: EMBreuring
Date: August 2019

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Line No.	Year	Residential	Commercial	Industrial	Inter-departmental	Transportation	Total	Previous Year W/N Deliveries
1	2018 Hist	157,608	55,559	9,065	146	80,962	303,340	305,525
2	2019 Fcst	161,476	55,419	9,170	137	76,883	303,085	303,340
3	2020 Fcst	160,148	54,151	9,200	140	74,853	298,492	303,085
4	2021 Fcst	160,691	54,206	9,108	140	79,344	303,489	298,492
5	2022 Fcst	161,117	54,494	9,037	142	80,633	305,424	303,489
6	2023 Fcst	161,361	54,760	8,973	142	80,741	305,978	305,424

Notes:
(1) Retail gas deliveries are defined as total utility deliveries, including Gas Customer Choice and Transportation deliveries.
(2) Forecasted deliveries are all on a weather-normal basis.
(3) 2019 Fcst is based on a "3+9" Estimate (3 months of actuals, 9 months of forecast)

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company

Billing Determinants Used For
Developing The Electric Energy Waste Reduction Surcharges

Case No.: U-20372
Exhibit No.: A-7 (EMB-3)
Page: 1 of 1
Witness: EMBreuring
Date: August 2019

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
					Secondary					Primary				
Line No.	Year	Month	Residential	GUL	Tier 1 0 - 1,250 kWh/mo.	Tier 2 1,251 - 5,000 kWh/mo.	Tier 3 5,001 - 30,000 kWh/mo.	Tier 4 30,001 - 50,000 kWh/mo.	Tier 5 >50,000 kWh/mo.	Tier 1 0 - 5,000 kWh/mo.	Tier 2 5,001 - 10,000 kWh/mo.	Tier 3 10,001 - 30,000 kWh/mo.	Tier 4 30,001 - 50,000 kWh/mo.	Tier 5 >50,000 kWh/mo.
			MWh	fixtures	Cust.	Cust.	Cust.	Cust.	Cust.	Cust.	Cust.	Cust.	Cust.	Cust.
1	2019	1	1,180,922	160,921	158,615	42,719	13,765	644	345	416	188	582	457	2,474
2	2019	2	1,196,442	160,353	158,176	42,093	13,529	638	340	405	179	556	436	2,406
3	2019	3	1,056,591	159,785	158,641	41,781	13,516	642	339	424	181	551	430	2,401
4	2019	4	913,587	159,218	158,926	41,514	13,432	635	339	456	184	571	446	2,480
5	2019	5	852,863	158,650	159,546	41,165	13,303	638	337	471	183	564	439	2,468
6	2019	6	922,587	158,083	160,047	40,800	13,243	629	327	484	177	557	438	2,461
7	2019	7	1,269,525	157,515	160,468	40,529	13,174	628	332	494	180	558	439	2,451
8	2019	8	1,240,324	156,947	160,631	40,473	13,118	621	327	510	179	554	433	2,446
9	2019	9	1,067,393	156,380	161,240	40,084	13,066	621	331	510	180	551	433	2,439
10	2019	10	890,213	155,812	161,922	39,700	12,832	614	329	535	178	550	426	2,421
11	2019	11	911,950	155,244	161,931	39,704	12,872	611	338	575	173	542	426	2,410
12	2019	12	1,045,672	154,105	162,532	39,328	12,826	613	324	559	178	537	418	2,356
13	2020	1	1,244,466	156,359	158,296	42,633	13,737	643	345	409	185	572	450	2,432
14	2020	2	1,069,272	156,358	158,784	42,255	13,581	641	341	414	182	568	445	2,458
15	2020	3	1,007,783	156,357	159,223	41,935	13,565	645	340	434	185	563	440	2,455
16	2020	4	933,676	156,356	159,506	41,666	13,481	637	340	457	185	572	447	2,486
17	2020	5	825,842	156,354	160,118	41,312	13,351	640	338	472	183	565	440	2,473
18	2020	6	966,616	156,353	160,613	40,944	13,290	631	328	485	178	558	439	2,467
19	2020	7	1,235,674	156,352	161,028	40,671	13,220	631	333	495	181	559	440	2,457
20	2020	8	1,216,471	156,351	161,185	40,612	13,164	623	329	511	180	555	434	2,451
21	2020	9	1,082,214	156,350	161,790	40,221	13,111	623	332	511	180	552	434	2,444
22	2020	10	879,815	156,349	162,469	39,833	12,875	617	330	536	179	551	427	2,426
23	2020	11	904,167	156,348	162,472	39,836	12,915	613	340	576	173	543	427	2,415
24	2020	12	1,056,149	156,388	163,069	39,458	12,868	615	325	560	179	538	419	2,361
25	2021	1	1,235,759	158,642	158,815	42,773	13,782	645	346	410	185	574	451	2,437
26	2021	2	1,084,550	158,641	159,300	42,392	13,625	643	343	414	183	569	446	2,463
27	2021	3	1,013,253	158,640	159,736	42,070	13,609	647	341	435	185	565	441	2,460
28	2021	4	931,525	159,985	160,016	41,799	13,524	639	341	458	185	574	448	2,491
29	2021	5	827,573	159,985	160,628	41,444	13,394	642	339	473	183	566	441	2,478
30	2021	6	965,662	159,985	161,122	41,074	13,332	633	329	486	178	559	440	2,471
31	2021	7	1,234,083	159,985	161,536	40,799	13,262	633	334	496	181	561	441	2,461
32	2021	8	1,216,155	159,985	161,692	40,740	13,205	625	330	512	180	557	435	2,456
33	2021	9	1,080,915	159,985	162,298	40,347	13,152	625	333	512	181	553	435	2,448
34	2021	10	879,300	159,985	162,977	39,958	12,915	618	331	537	179	552	428	2,430
35	2021	11	903,169	159,985	162,980	39,961	12,956	615	341	578	174	544	428	2,419
36	2021	12	1,052,495	159,985	163,579		12,909	617	326	561	179	539	420	2,365
37	2022	1	1,248,209	159,985	159,311	42,907	13,825	647	347	411	186	575	451	2,441
38	2022	2	1,092,395	159,985	159,798	42,525	13,668	645	344	415	183	570	447	2,468
39	2022	3	1,021,695	159,985	160,236	42,201	13,651	649	342	436	185	566	442	2,465
40	2022	4	940,231	159,985	160,517	41,930	13,566	641	342	459	185	575	449	2,496
41	2022	5	834,729	159,985	161,131	41,574	13,436	644	340	474	184	568	442	2,483
42	2022	6	974,523	159,985	161,628	41,203	13,374	635	330	487	178	560	441	2,476
43	2022	7	1,245,642	159,985	162,044	40,927	13,303	635	335	497	181	562	441	2,466
44	2022	8	1,227,340	159,985	162,201	40,868	13,247	627	331	513	181	558	436	2,460
45	2022	9	1,090,814	159,985	162,809	40,474	13,193	627	334	513	181	554	436	2,453
46	2022	10	887,075	159,985	163,492	40,084	12,956	620	332	538	179	553	429	2,435
47	2022	11	911,104	159,985	163,495	40,087	12,997	617	342	579	174	545	429	2,424
48	2022	12	1,062,009	159,985	164,097	39,706	12,949	619	327	562	179	540	421	2,370
49	2023	1	1,228,177	159,985	159,816	43,043	13,869	649	348	411	186	576	452	2,446
50	2023	2	1,075,239	159,985	160,305	42,660	13,711	647	345	416	184	571	448	2,472
51	2023	3	1,005,449	159,985	160,745	42,335	13,695	651	343	437	186	567	442	2,470
52	2023	4	925,149	159,985	161,028	42,063	13,609	643	343	460	186	576	450	2,501
53	2023	5	821,333	159,985	161,644	41,706	13,478	646	341	475	184	569	442	2,488
54	2023	6	958,939	159,985	162,142	41,334	13,416	637	331	488	179	561	442	2,481
55	2023	7	1,225,884	159,985	162,560	41,058	13,346	637	336	498	182	563	442	2,471
56	2023	8	1,207,875	159,985	162,718	40,998	13,289	629	332	514	181	559	437	2,465
57	2023	9	1,073,364	159,985	163,328	40,603	13,235	629	335	514	181	555	436	2,458
58	2023	10	872,733	159,985	164,013	40,212	12,997	622	333	539	180	554	430	2,440
59	2023	11	896,289	159,985	164,016	40,215	13,038	619	343	580	174	546	430	2,429
60	2023	12	1,044,655	159,985	164,619	39,833	12,991	621	328	563	180	541	422	2,374

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company

Billing Determinants Used For
Developing The Electric Self Direct Energy Waste Reduction Surcharges

Case No.: U-20372
Exhibit No.: A-8 (EMB-4)
Page: 1 of 1
Witness: EMBreuring
Date: August 2019

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
					Secondary					Primary		
Line No.	Year	Month	Tier 1 0 - 1,250 kWh/mo.	Tier 2 1,251 - 5,000 kWh/mo.	Tier 3 5,001 - 30,000 kWh/mo.	Tier 4 30,001 - 50,000 kWh/mo.	Tier 5 >50,000 kWh/mo.	Tier 1 0 - 1,250 kWh/mo.	Tier 2 1,251 - 5,000 kWh/mo.	Tier 3 5,001 - 30,000 kWh/mo.	Tier 4 30,001 - 50,000 kWh/mo.	Tier 5 >50,000 kWh/mo.
			Cust.	Cust.	Cust.	Cust.	Cust.	Cust.	Cust.	Cust.	Cust.	Cust.
1	2019	1	9	15	17	-	3	-	1	5	3	87
2	2019	2	8	14	17	-	2	-	-	4	3	74
3	2019	3	8	15	16	-	2	-	-	4	2	71
4	2019	4	8	14	16	-	2	-	-	5	2	74
5	2019	5	7	14	17	-	2	-	-	5	1	74
6	2019	6	7	14	17	-	2	-	-	3	-	72
7	2019	7	7	14	17	-	2	-	-	3	-	72
8	2019	8	7	14	17	-	2	-	-	3	-	72
9	2019	9	7	15	16	-	2	-	-	3	-	72
10	2019	10	7	14	16	-	2	-	-	3	-	71
11	2019	11	6	14	14	-	2	-	-	2	-	62
12	2019	12	6	14	13	-	1	-	-	1	-	59
13	2020	1	9	14	17	-	3	-	1	5	3	86
14	2020	2	8	15	17	-	2	-	-	5	3	76
15	2020	3	8	15	16	-	2	-	-	5	2	73
16	2020	4	8	15	16	-	2	-	-	5	2	74
17	2020	5	7	15	17	-	2	-	-	5	1	74
18	2020	6	7	14	17	-	2	-	-	3	-	73
19	2020	7	7	14	17	-	2	-	-	3	-	73
20	2020	8	7	14	17	-	2	-	-	3	-	72
21	2020	9	7	15	16	-	2	-	-	3	-	72
22	2020	10	7	15	16	-	2	-	-	3	-	71
23	2020	11	6	14	14	-	2	-	-	2	-	62
24	2020	12	6	15	13	-	1	-	-	1	-	59
25	2021	1	9	15	17	-	3	-	1	5	3	86
26	2021	2	8	15	17	-	2	-	-	5	3	76
27	2021	3	8	15	16	-	2	-	-	5	2	73
28	2021	4	8	15	16	-	2	-	-	5	2	74
29	2021	5	7	15	17	-	2	-	-	5	1	74
30	2021	6	7	15	17	-	2	-	-	3	-	73
31	2021	7	7	15	17	-	2	-	-	3	-	73
32	2021	8	7	15	17	-	2	-	-	3	-	72
33	2021	9	7	15	16	-	2	-	-	3	-	72
34	2021	10	7	15	16	-	2	-	-	3	-	71
35	2021	11	6	14	14	-	2	-	-	2	-	62
36	2021	12	6	15	13	-		-	-	1	-	59
37	2022	1	9	15	17	-	3	-	1	5	3	86
38	2022	2	8	15	17	-	2	-	-	5	3	76
39	2022	3	8	15	16	-	2	-	-	5	2	73
40	2022	4	8	15	16	-	2	-	-	5	2	75
41	2022	5	7	15	17	-	2	-	-	5	1	74
42	2022	6	7	15	17	-	2	-	-	3	-	73
43	2022	7	7	15	17	-	2	-	-	3	-	73
44	2022	8	7	15	17	-	2	-	-	3	-	72
45	2022	9	7	15	16	-	2	-	-	3	-	73
46	2022	10	7	15	16	-	2	-	-	3	-	71
47	2022	11	6	15	15	-	2	-	-	2	-	62
48	2022	12	6	15	13	-	1	-	-	1	-	59
49	2023	1	9	15	17	-	3	-	1	5	3	86
50	2023	2	8	15	17	-	2	-	-	5	3	76
51	2023	3	8	15	16	-	2	-	-	5	2	73
52	2023	4	8	15	16	-	2	-	-	5	2	75
53	2023	5	7	15	17	-	2	-	-	5	1	74
54	2023	6	7	15	17	-	2	-	-	3	-	73
55	2023	7	7	15	17	-	2	-	-	3	-	73
56	2023	8	7	15	17	-	2	-	-	3	-	73
57	2023	9	7	15	16	-	2	-	-	3	-	73
58	2023	10	7	15	16	-	2	-	-	3	-	71
59	2023	11	6	15	15	-	2	-	-	2	-	62
60	2023	12	6	15	14	-	1	-	-	1	-	59

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company

Billing Determinants Used For
Developing The Gas Energy Waste Reduction Surcharges

Case No.: U-20372
Exhibit No.: A-9 (EMB-5)

Witness: EMBreuring
Date: August 2019

Line	(a) Year	(b) Month	(c) Residential Mcf	(d) 0 - 49,999 Mcf / Yr Mcf	(e) 50,000 - 99,999 Mcf / Yr Mcf	(f) > 100,000 Mcf / Yr Mcf	(g) Electric Generation Mcf	(h) Total Mcf
1	2019	1	31,025,351	11,263,839	1,391,148	7,122,400	1,367,386	52,170,124
2	2019	2	26,000,800	10,682,978	1,319,409	6,583,147	1,468,833	46,055,166
3	2019	3	23,420,504	10,036,721	1,239,592	6,207,324	1,357,559	42,261,700
4	2019	4	10,675,825	6,073,948	750,167	3,418,052	1,160,008	22,078,000
5	2019	5	5,928,454	3,540,088	437,221	1,462,593	1,205,644	12,574,000
6	2019	6	3,189,057	2,969,777	366,784	1,152,790	1,085,592	8,764,000
7	2019	7	2,928,847	2,976,814	367,653	1,224,407	1,019,279	8,517,000
8	2019	8	2,740,406	2,996,758	370,117	1,186,172	1,072,547	8,366,000
9	2019	9	4,107,280	3,126,805	386,178	1,340,421	1,016,316	9,977,000
10	2019	10	11,182,566	4,194,185	518,006	1,937,299	1,223,944	19,056,000
11	2019	11	16,579,611	7,172,491	885,843	4,174,153	1,231,901	30,044,000
12	2019	12	25,161,366	9,620,915	1,188,238	5,943,491	1,307,990	43,222,000
13	2020	1	30,955,272	11,397,933	1,407,710	6,405,379	1,438,206	51,604,500
14	2020	2	25,817,372	10,597,785	1,308,887	5,936,515	1,356,441	45,017,000
15	2020	3	21,093,971	8,736,183	1,078,968	4,706,493	1,305,385	36,921,000
16	2020	4	11,745,794	5,920,637	731,232	2,921,120	1,153,217	22,472,000
17	2020	5	6,017,370	3,702,193	457,242	1,349,054	1,198,641	12,724,500
18	2020	6	3,196,828	3,074,479	379,716	1,036,585	1,079,143	8,766,750
19	2020	7	2,942,838	3,089,928	381,624	1,112,675	1,013,685	8,540,750
20	2020	8	2,735,033	3,109,139	383,996	1,072,695	1,066,886	8,367,750
21	2020	9	3,907,052	3,458,532	427,148	1,370,366	1,009,652	10,172,750
22	2020	10	9,900,254	5,125,257	632,998	2,309,409	1,217,581	19,185,500
23	2020	11	17,513,324	7,119,242	879,267	3,675,234	1,223,933	30,411,000
24	2020	12	25,936,255	10,141,088	1,252,482	5,678,544	1,300,131	44,308,500
25	2021	1	31,201,003	11,095,830	1,370,398	6,515,744	1,432,358	51,615,333
26	2021	2	25,868,066	10,413,483	1,286,124	6,109,503	1,349,824	45,027,000
27	2021	3	21,155,742	8,935,978	1,103,644	4,512,701	1,888,268	37,596,333
28	2021	4	11,771,420	6,071,380	749,850	2,783,174	1,565,843	22,941,667
29	2021	5	6,038,492	3,930,189	485,401	1,137,547	1,677,704	13,269,333
30	2021	6	3,193,427	3,291,213	406,484	866,641	1,490,902	9,248,667

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company

Billing Determinants Used For
Developing The Gas Energy Waste Reduction Surcharges

Case No.: U-20372
Exhibit No.: A-9 (EMB-5)

Witness: EMBreuring
Date: August 2019

Line	(a) Year	(b) Month	(c) Residential Mcf	(d) 0 - 49,999 Mcf / Yr Mcf	(e) 50,000 - 99,999 Mcf / Yr Mcf	(f) > 100,000 Mcf / Yr Mcf	(g) Electric Generation Mcf	(h) Total Mcf
1	2021	7	2,920,807	3,296,442	407,129	971,781	1,389,507	8,985,667
2	2021	8	2,726,242	3,302,184	407,838	864,357	1,501,045	8,801,667
3	2021	9	3,915,601	3,584,625	442,722	1,263,627	1,304,092	10,510,667
4	2021	10	9,937,593	5,187,866	640,731	1,922,665	1,793,478	19,482,333
5	2021	11	17,574,098	7,272,760	898,227	3,529,647	1,679,935	30,954,667
6	2021	12	25,996,253	10,359,390	1,279,444	5,495,835	1,924,745	45,055,667
7	2022	1	31,307,694	11,448,340	1,413,935	6,125,218	2,144,313	52,439,500
8	2022	2	25,927,562	10,688,595	1,320,102	5,765,127	1,955,614	45,657,000
9	2022	3	21,212,300	8,904,184	1,099,717	4,550,461	1,881,338	37,648,000
10	2022	4	11,803,834	6,065,078	749,072	2,817,310	1,563,706	22,999,000
11	2022	5	6,063,559	3,930,969	485,497	1,163,140	1,676,335	13,319,500
12	2022	6	3,187,608	3,310,223	408,831	900,574	1,490,514	9,297,750
13	2022	7	2,891,116	3,326,200	410,805	1,011,852	1,390,777	9,030,750
14	2022	8	2,720,497	3,320,035	410,043	896,014	1,502,161	8,848,750
15	2022	9	3,923,028	3,593,335	443,797	1,290,131	1,305,459	10,555,750
16	2022	10	9,979,989	5,171,364	638,693	1,941,251	1,794,203	19,525,500
17	2022	11	17,644,586	7,235,953	893,681	3,547,671	1,679,108	31,001,000
18	2022	12	26,056,705	10,317,684	1,274,293	5,529,774	1,923,045	45,101,500
19	2023	1	31,370,537	11,440,523	1,412,970	6,110,661	2,141,642	52,476,333
20	2023	2	25,960,637	10,693,335	1,320,688	5,760,580	1,952,760	45,688,000
21	2023	3	21,243,538	8,904,785	1,099,792	4,544,322	1,878,897	37,671,333
22	2023	4	11,815,414	6,078,753	750,761	2,823,388	1,561,351	23,029,667
23	2023	5	6,078,683	3,949,772	487,819	1,174,002	1,675,057	13,365,333
24	2023	6	3,171,148	3,348,020	413,499	923,795	1,491,205	9,347,667
25	2023	7	2,861,211	3,371,835	416,441	1,039,217	1,392,963	9,081,667
26	2023	8	2,706,993	3,357,317	414,648	916,736	1,504,972	8,900,667
27	2023	9	3,928,256	3,621,699	447,300	1,303,787	1,308,625	10,609,667
28	2023	10	10,017,052	5,183,292	640,166	1,941,718	1,797,105	19,579,333
29	2023	11	17,706,638	7,232,669	893,276	3,536,762	1,680,322	31,049,667
30	2023	12	26,097,676	10,342,965	1,277,415	5,537,276	1,923,334	45,178,667

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

DIRECT TESTIMONY

OF

RUDOLPH M. CHAHINE

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

INTRODUCTION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is Rudolph M. Chahine, and my business address is 11801 Farmington Road, Livonia, Michigan 48150.

Q. Please describe your position and responsibilities.

A. As Business Energy Waste Reduction ("EWR") Custom Program Director, I am responsible for the development and implementation of Consumers Energy Company's ("Consumers Energy" or the "Company") business electric and business gas EWR custom and midstream programs as well as the management of the Company's self-direct program.

Q. Please describe your educational and professional experience.

A. I earned a bachelor's degree in Mechanical Engineering from Western Michigan University. In 1992, I began my career in the energy services industry as an Energy Engineer for ANCO Engineers. In this role I was responsible for supporting Consumers Power Company's (later renamed Consumers Energy) "Reduce the Use" energy efficiency rebate program. In 1996, I joined Consumers Energy as a Corporate Account Manager. In this position I was responsible for fostering and managing the Company's relationship with medium and large energy use business customers, including informing customers of opportunities and issues related to their accounts, communicating detailed engineering and financial energy analyses to customers, and assisting customers with the natural gas nomination process.

In 2009, I joined the Company's Energy Efficiency Department as a Program Manager for the residential Lighting & Appliance Program, Multi-family Program, and

Small Business Program. In 2010, I was tasked with implementing and managing the Company's residential Home Performance with Energy Star Program. In 2013, I was given responsibility for the Company's Small Business program and the Business Prescriptive component under the EWR Comprehensive Business program. In 2017, I accepted my current role as Director of the Custom and Midstream components under the Comprehensive Business program. In this capacity I am responsible for: (i) developing and implementing the Company's custom and midstream services offered under the EWR Comprehensive Business program; (ii) reporting the energy savings associated with the customer Self-Direct program; (iii) leading the engineering team in support of the Michigan Public Service Commission's ("MPSC" or the "Commission") technical subcommittee; and (iv) overseeing the interest buy-down of EWR projects offered through Michigan Saves.

Q. Have you previously testified before the Commission?

A. I submitted testimony in the following case:

- Case No. U-20365 regarding Consumers Energy's 2018 EWR Reconciliation.

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

A. The purpose of my direct testimony is to describe the programs, program costs, energy savings, and capacity savings in the Company's proposed 2020-2023 EWR Plan.

Q. Are you sponsoring any exhibits with your direct testimony?

A. No.

CONSUMERS ENERGY'S PROPOSED BUSINESS EWR PROGRAMS

Q. Please describe the most significant proposed changes to the business programs associated with the 2020-2023 EWR Plan.

A. The Company is proposing changes to the business programs, consistent with the increased electric savings goals in its approved Integrated Resource Plan ("IRP"), Case No. U-20165, and in consideration of new technology standards, evolving market conditions, and increases in cost of acquisition. These changes include the addition of a midstream program focused on medium-sized businesses and increased investment in business electric and gas EWR programs. The business program changes and increased investment included in the EWR Plan provide an achievable approach to meeting the needs of business customers, expanding interest and participation in business EWR programs, and cost-effectively delivering increased gas and electric savings targets.

Q. Please describe the EWR programs the Company plans to offer to its business customers.

A. Consumers Energy is proposing to offer the following EWR programs to its business electric and business natural gas customers:

- Comprehensive Business Solutions Program;
- Small Business Direct Install Program;
- Business Multi-Family Program; and
- Business Pilots.

Q. Please describe the Company's Comprehensive Business Solutions Program.

A. The Comprehensive Business Solutions Program will generate energy savings for all business customers through the promotion of high-efficiency electric and natural gas equipment. The primary objectives of the program are to increase the market share of commercial-grade high-efficiency technologies sold through existing market channels,

increase the installation rate of high-efficiency technologies in facilities that would not have done so in the absence of the program, and improve the operating efficiency of existing long-life equipment. The Comprehensive Business Solutions Program comprises the following components:

- Prescriptive Rebates;
- Custom Rebates;
- Midstream Rebates;
- New Construction;
- Compressed Air;
- Smart Buildings;
- Agriculture;
- Industrial Energy Programs;
- Building Performance with Energy Star;
- Buy Michigan;
- Builder Operator Certification; and
- Marketplace.

Q. Please describe the Prescriptive and Custom Rebates.

A. The Prescriptive Rebates component will offer cash back incentives to customers when they purchase qualifying equipment or services. The program is designed to offer incentives for cross-cutting technologies that address a variety of market sectors and industries by using targeted, proactive outreach efforts to influence specific market sectors including:

- Trade allies (wholesalers, distributors, contractors, and retailers that market qualifying technologies);
- High-impact/high-need customer sectors (such as schools, municipal buildings, and hospitals); and
- Industrial business customers.

The program targets measures where the unit energy savings can be reliably predicted. As such, standard per-measure savings ("deemed savings") and incentive levels will be utilized to simplify the application process and reduce administrative costs.

Business customers' capital investment decisions are financially driven and often considered on a first-cost option basis. That is, their focus on project payback related to capital equipment often overlooks long-term operating costs when making choices to replace equipment. Traditionally, EWR equipment is not directly related to the capital investment strategies of business customers. Therefore, it is essential to educate and provide financial incentives to overcome barriers to implementing EWR improvements. This program will provide cash-back mail-in incentives equal to 20% to 50% of the incremental cost to purchase EWR products along with tiered incentive approaches to promote investment in high-efficiency equipment and multi-measure projects.

The Custom Rebates component will assist larger business customers with the analysis and selection of high-efficiency equipment or processes not covered under the Prescriptive Rebates component. Large business customers typically have more complex mechanical equipment supporting facility operations and manufacturing processes. As a result, many barriers prevent projects from being implemented. This component of the program is designed to help large business customers take a project from conception to completion.

In particular, the custom component identifies complex energy savings projects, provides economic analysis, and aids in the completion of the incentive application. Incentives are based on energy savings on a per kWh or Mcf basis for installed measures. The program targets large customers better served by a custom approach than Prescriptive incentives. Targeted markets include large manufacturing facilities, hospitals, schools, and the lodging/hospitality industry. This program will also offer technical support to help customers evaluate comprehensive EWR opportunities,

including walk through energy assessments to identify energy savings and to assist in specifying projects. Further, targeted audits by seasoned contractors will be utilized to assist large customers in identifying process improvements in manufacturing facilities.

Q. Please describe the Midstream Program.

A. The Company will recruit local suppliers offering energy efficient equipment to contractors and customers. These participating suppliers will be compensated on a monthly basis for offering an instant discount for qualified products at the time of purchase. The program will offer the buy down type incentive on selected products that include light; Heating, Ventilation, and Air-Conditioning ("HVAC"); and food service equipment. Furthermore, the Company will examine the potential of an Upstream Program in 2020 to recruit and incentivize HVAC and food service equipment manufacturers to increase the sale of energy efficient equipment.

Q. Please describe the remaining components of the Comprehensive Business Solutions Program.

A. The New Construction component will work with the design community to influence business owners to capture immediate and long-term EWR opportunities that are available during the design and construction phases of new buildings, additions, and renovations in the non-residential market. Owners are often reluctant to adopt new EWR practices and expend the increased upfront costs. To combat these challenges and encourage energy efficient integration during design and construction, the New Construction Program offers value engineering processes to reduce costs and promote an integrated system over the range of expected operating conditions. Incentives for both owners and designers will be provided.

The Compressed Air component will provide a package of prescriptive incentives including a compressed air system evaluation to improve the overall efficiency of customers' compressed air systems. This will be marketed directly to customers as well as through trade allies in the compressed air field.

The Smart Buildings (Retro-Commissioning) component is a systematic facility investigation that identifies low-cost and no-cost facility improvement measures. The program will utilize operations and maintenance reviews in combination with enhanced energy audits that draw upon existing building commissioning techniques to assist customers in EWR optimization of their facilities. The program will provide customers with value-added services, such as energy-saving estimates, and will incentivize engineering studies to help customers develop an energy-saving strategy and realize immediate savings through identified low-cost/no-cost measure implementations.

The Agriculture component will focus on providing technical assistance as well as incentives for participating agricultural customers through Prescriptive and Custom Rebates. Program staff will work directly with agricultural customers to assist in finding opportunities for energy improvement as well as associated incentives for project completion. In addition, the program collaborates with Michigan State University's Farm Audit program to offer incentives to customers who have an audit completed on their facility.

The Industrial Energy component will work closely with industrial customers in a long term continuous improvement relationship to help achieve energy savings reductions through ISO50001 and Energy Star methodologies. This includes: training, energy audits, forming energy committees, and assistance in obtaining certification.

The Building Performance with Energy Star component will help commercial buildings such as schools and hospitals become more energy efficient through behavioral assessments, benchmarking, energy committees, and energy audits.

The Buy Michigan component will provide bonus incentives to customers who choose energy saving equipment manufactured in Michigan.

The Builder Operators Certification ("BOC") component is a competency-based training and certification program for operations and maintenance staff working in commercial, institutional, or industrial buildings. BOC achieves energy savings by training individuals directly responsible for the maintenance of energy-building equipment and day-to-day building operations and maintenance professionals. Classes are designed to improve job skills and lead to improved comfort and energy efficiency in the participant's facility.

The Marketplace component is an online digital shopping market offering a variety of Do-It-Yourself energy efficiency products exclusively for Small Business customers.

Comprehensive Business Solutions Program details are provided in Exhibit A-2 (TAY-2).

Q. Please describe the Company's Small Business Direct Install Program.

A. The Small Business Direct Install Program will provide direct install EWR services to small businesses and nonprofit customers typically considered "hard to reach" and who have limited resources to participate in standard business programs. Small businesses, either owner-occupied or tenant facilities with owner permission, with an average 12-month individual facility utility usage of less than 400,000 kWh or 6,000 Mcf are

eligible to participate in the program. Eligible participants include small retail businesses such as convenience and grocery stores, small offices, service stations, restaurants, hotels/motels, nonprofit organizations, and small manufacturers.

The Small Business Direct Install Program consists of several components each targeting small business customers. These small business customers typically lack the technical and financial resources necessary to participate in the larger EWR programs and often are sole proprietorships where the owner or manager cannot commit time and effort to reducing energy use. Market providers of EWR products and services seldom target these small customers due to higher costs relative to larger customers. To overcome these barriers, several components are offered to this market.

Q. Please describe the components of the Small Business Direct Install Program.

A. The Small Business Trade Ally Program component promotes energy saving opportunities to small businesses through the installation of common lighting and refrigeration measures. Program-approved trade allies provide efficiency audits, customer education, and the installation of cost-effective measures on a turnkey basis. At no charge, customers will receive an energy audit that results in a standardized report detailing costs and potential savings from recommended measures. Customers will be entitled to choose all, some, or none of the eligible recommended measures and schedule installation services with a program-approved trade ally. Incentives will be paid up to 100% of the installation costs, up to a $20,000 maximum incentive per premise.

The Direct Install component is designed to introduce EWR to smaller businesses. This component provides low-flow showerheads, faucet aerators, pre-rinse sprayers, pipe wrap, and Light Emitting Diodes ("LEDs") to a variety of small business customers,

including hotels, motels, restaurants, retail, nonprofit organizations, and houses of worship.

The Assessment component targets small businesses specifically to perform an on-site energy assessment along with direct installation of LEDs, faucet aerators, and other low-cost measures. As a follow-up to the assessment, customers are e-mailed a report of the measures installed and recommendations on how they can save more energy by installing additional energy efficiency products in their business.

The LED Buy-Down component provides a discount for the cost of LED bulbs at common retail locations to encourage customers to purchase energy efficient lighting for their businesses.

Small Business Direct Install program details are provided in Exhibit A-2 (TAY-2).

Q. Please describe the Company's Business Multi-Family Program.

A. The Business Multi-Family Direct Install Program produces immediate electric energy savings in multi-family buildings through the direct installation of EWR measures both in the common areas of the building and in the individual living units. An implementation contractor will dispatch a crew of installers to retrofit living units in targeted buildings. Since this is traditionally a hard-to-reach market, low-cost measures such as lighting and low-flow water devices will be installed free of charge to the property owner. In addition, incentives for both prescriptive and custom measures will be offered. For more details on the Business Multi-Family Program, see Exhibit A-2 (TAY-2).

Q. Please describe the Company's Business Pilots Programs.

A. Pilot Programs are intended to test program concepts prior to full launch. New technologies and marketing methodologies are offered to various customer segments and revised based on results. Pilots include, but are not limited to the following:

- Green Revolving Fund – This pilot will offer a financing strategy (reinvestment of energy savings dollars into seed fund for the next project) designed to incite a market transformation increase towards select customer segments implementing energy efficiency projects;

- Zero Net Energy - This pilot is an extension of the current EWR New Construction program targeting ultra-high performance building, in this case Zero Net Energy ready facilities. This program will educate on the principle value of zero net energy, and reduce barriers to design, construction, and operation of zero net energy buildings;

- Commercial Real Estate – This pilot will engage this hard-to-reach market segment through targeted outreach, energy benchmarking, and comprehensive assessments;

- Energy Concierge Services – This pilot will offer a single point of contact to assigned customers to provide detailed on-site energy auditing and assistance with all energy management projects and goals including business case development, project management, rebate support, and ongoing energy management;

- Industria – This pilot will partner with school districts to develop EWR course curriculum and provide opportunities for students to engage in the energy audit process, leading to better implementation rates and attribution; and

- Energy Coaching – This pilot will engage unassigned, non-participating, midsize customers to receive an onsite energy assessment and quarterly energy coaching sessions to advance EWR understanding, increase program participation, and achieve additional EWR savings.

Additionally, Consumers Energy will participate in the Midwest Market Transformation Collaborative in an effort to identify and explore new Market Transformation opportunities in its service territory. Market Transformation is defined as a strategy that intends to induce long-lasting, sustainable changes in the structure or functioning of a

market. Market Transformation initiatives offer a unique opportunity to address the challenge of capturing cost-effective EWR by pooling resources across multiple utilities and coordinating intervention strategies to influence lasting market changes at a lower cost of delivery.

CONSUMERS ENERGY'S EXPECTED PERFORMANCE OF BUSINESS EWR PROGRAMS

Q. What is the expected energy savings from Consumers Energy's 2020-2023 EWR business programs?

A. The expected first year electric and gas energy savings from the Company's 2020-2023 EWR business programs is 2,137,082 MWh and 4,891,841 Mcf.

Q. What is the basis for the expected energy savings?

A. The basis for expected energy savings is historical performance of past programs, industry trends, market performance, and new initiatives and incentives offered by the Company. The various business programs being proposed in this case are expected to deliver the first year savings shown in Exhibit A- 2 (TAY-2), Table ES-5.

Q. What is the expected capacity savings from the Company's business programs for 2020 through 2023?

A. Between 2020 and 2023, Consumers Energy expects to produce net capacity savings of 293.9 MW from its business programs, as shown in Exhibit A-2 (TAY-2), Table ES-5.

Q. How does the Company propose to verify these savings?

A. Program Evaluation, Measurement, and Verification ("EM&V") activities are central to the success of Consumers Energy's portfolio. Consumers Energy's EM&V processes are based on extensive experience and participation in the EWR Evaluation Collaborative established by the Commission. EM&V activities are implemented through a third-party

contractor selected through a competitive bid process to verify program savings impacts and monitor program performance. These activities serve as a way to determine the actual program level savings being delivered and to maximize energy optimization investments.

Beginning in 2011, the evaluation team began applying two adjustment factors to gross energy savings to derive final verified net energy savings: (1) verified gross adjustment factor, and (2) net-to-gross adjustment factor. The verified gross savings adjustment factors incorporate installation rates and, where applicable, engineering adjustment factors derived from previous program evaluations. The net-to-gross adjustment factor is currently a constant 0.90 across all business programs, but for standard CFLs at 0.82, as approved by the Commission. Effective EM&V measures ensure that expected results are measurable, achieved results are robust and defensible, program delivery is effective in maximizing participation, and the overall portfolio is cost-effective.

Q. How much does Consumers Energy propose to invest in the business electric and gas programs to deliver the aforementioned energy and capacity savings?

A. Between 2020 and 2023, Consumers Energy proposes to invest approximately $382.7 million and $87.2 million in its electric and gas business programs, respectively as shown in Exhibit A-2 (TAY-2), Table ES-5.

Q. How did Consumers Energy determine this spending level?

A. Investment in the Company's business programs is based on its commitment to cost-effectively reduce total electric and gas energy waste by 1.8% to 2.0% and 1% to 1.10%, respectively.

Q. Is this investment level reasonable?

A. Yes. The Company believes this level of electric and gas investment in its business programs is reasonable, prudent, and cost-effective as described in the direct testimony of Company witness Richard A. Morgan. Cost-effectiveness is measured by the results of the Utility Cost Test ("UCT") as established in 2008 PA 295. If the planned savings can be delivered at a UCT score greater than 1.0, then the planned savings are considered a good investment. The Company expects its proposed electric business programs to achieve a score of 4.05 and its proposed gas business programs to achieve a UCT score of 1.87. Individual program UCT scores can be found in Exhibit A- 2 (TAY-2), Table ES-5.

Q. How will the Company demonstrate that its business investments are achieving the desired results?

A. The Company will file annual reconciliation reports with the Commission after the end of each plan year detailing program investment and energy savings achieved for each program and by customer class in the previous year. Such reports will be in sufficient detail to allow the Commission to determine that the Company is complying with the Commission's orders and statutory requirements.

Q. Does this conclude your direct testimony?

A. Yes.

S T A T E O F M I C H I G A N

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

DIRECT TESTIMONY

OF

ALEX M. GAST

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

Q. Please state your name and business address.

A. My name is Alex M. Gast, and my business address is One Energy Plaza, Jackson, Michigan 49201.

Q. By whom are you employed?

A. I am employed by Consumers Energy Company ("Consumers Energy" or the "Company").

Q. What is your position with Consumers Energy?

A. I am a Senior Rate Analyst in the Pricing Section of the Rates and Regulation department.

Q. Please state your educational background and work experience.

A. In 2011, I graduated from Central Michigan University with a Bachelor of Science degree in Business Administration, with a major in Accounting. In 2013, I graduated from Spring Arbor University with a Master of Arts degree in Business Administration. I am also a Certified Public Accountant registered in the State of Michigan.

From 2012 to 2014, I was employed by Plante & Moran as a Staff Auditor. My responsibilities included the planning and execution of financial statement audits, reviews, and consulting engagements for a variety of non-profit, healthcare, and manufacturing clients.

In 2014, I joined Consumers Energy as a Business Support Advisor in the Distribution, Operations, Engineering, and Transmission department. My responsibilities included managing financial budgets, forecasts, and long-term financial plans for natural gas and electric programs. In 2015, I joined the Energy Resources department as a Financial Analyst. My primary areas of focus were business plans and performance metrics. In 2019, I joined the Pricing Section of the Rates and Regulation department.

My current responsibilities include: rate design, research and development of additional services, analyses for Senior Management, and customer-specific rate analyses.

Q. Have you previously filed direct testimony with the Michigan Public Service Commission ("MPSC" or the "Commission")?

A. Yes. I filed direct testimony on behalf of the Company in Case No. U-20365, the Company's 2018 Energy Waste Reduction ("EWR") Reconciliation.

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

A. I am presenting the Company's proposals for: (i) the allocation of the 2020-2023 EWR Plan ("2020-2023 Plan") investments between customer groups; (ii) the utilization of the monthly billing determinants for surcharge design; and (iii) the calculation of the proposed surcharges necessary to recover the proposed investments.

Q. Are you sponsoring any exhibits?

A. Yes, I am sponsoring the following exhibits:

Exhibit A-10 (AMG-1)	Allocation of the 2020-2023 Energy Waste Reduction Program Investments - Electric & Gas; and
Exhibit A-11 (AMG-2)	Calculation of Energy Waste Reduction Plan Component Surcharges - Electric & Gas.

Q. Were these exhibits prepared by you or under your supervision?

A. Yes.

Q. Please describe Exhibit A-10 (AMG-1).

A. Exhibit A-10 (AMG-1), is a two-page exhibit which shows the proposed allocation of the Company's investment to help its customers reduce energy waste among the various customer groups for both the electric and gas plans.

Q. What was the basis for the investment allocations?

A. The electric and gas EWR investments were provided by Company witness Theodore A. Ykimoff. The investments are allocated to the various customer groups based on the level of investment in each class, consistent with prior cases. This is represented on Exhibit A-10 (AMG-1).

Q. Please describe Exhibit A-11 (AMG-2).

A. Exhibit A-11 (AMG-2) provides an overview of the calculation of the monthly EWR plan component surcharges by customer group, which will recover the Company's annual investments. The derivation of the surcharges will be discussed in more detail later in my direct testimony.

Q. What is the basis for the development of the Company's proposed 2020-2023 Plan investment recovery mechanism?

A. The monthly surcharges were designed to recover the Company's investments in EWR in accordance with Public Act 295 of 2008, as amended.

Q. Does the Company intend to assess an EWR surcharge to municipal customers with utility-owned street lighting?

A. No. The Company is proposing to close its EWR programs to these customers as part of its proposed 2020–2023 Plan. Instead, the Company proposes to allow these customers to opt in to the EWR Program. As such, for customers electing to opt in, the Company proposes to assess a monthly $0.27 per light surcharge, equal to the surcharge approved in Case No. U-18261, the Company's 2018-2021 EWR Plan.

Q. Please elaborate on how the Company intends to recover its investment in EWR from its customers?

A. The Company will assess monthly levelized surcharges to recover its proposed investments over the period of January 2020 through December 2023. The Company is proposing to replace its existing EWR surcharges, beginning with the first billing cycle of the January 2020 billing month. The surcharges have been designed to recover the investments for each respective customer class (residential and business) as required by Act 295, as amended. The surcharges for each customer group calculated on Exhibit A-11 (AMG-2) represent the recovery of the residual 2019 investments, plus the $620 million and $270 million of 2020-2023 electric and gas investments, respectively. The Company's combined surcharges (current plus incremental) are displayed on Exhibit A-12 (SCH-1) and Exhibit A-13 (SCH-2).

Q. How did you calculate the proposed 2020-2023 Plan surcharges?

A. The annual investments to be collected for each rate category on a 100% expensed basis for the period January 2020 through December 2023 were calculated based on the levelized net present value of incremental plan expenditures provided by Company witness Ykimoff.

Q. How will the monthly surcharges be assessed?

A. The electric and gas surcharges will be assessed to each customer group as specified in Act 295, as amended. Residential electric customers will be charged on a per-kilowatt-hour basis on their monthly bill. Secondary and Primary electric customers will be assessed the surcharge on a per meter basis on their monthly bill. All gas customer groups will be charged each month on a per Mcf basis.

Q. Does the Company intend to modify the way surcharges are assessed to electric business customers?

A. Yes. The program spending is increasing over previous years, and the Company's objective is to design rates so that impacts are equitable. To do that, the Company is proposing to utilize two additional tiers for Secondary customers. This will result in five tiers, compared to the three tiers used in the past. The additional tiers help make a more equitable rate impact for all Secondary customers. The customers that fall into the 4th and 5th tiers will have a larger surcharge, but the surcharge impact will be below 6% of those customers' average total bills. On average, the EWR surcharge makes up about 10% of the average electric business customer's bill. These surcharges are shown on Exhibit A-11 (AMG-2).

Q. How are the surcharges for a typical residential customer impacted?

A. Under the Company's proposed allocation, a residential electric customer using 673 kWh per month would see an increase of $0.07 per month, while a residential gas customer using 8 Mcf per month would see a decrease of $0.01 per month.

Q. How will the Company determine the appropriate surcharge category for each customer?

A. A new customer with no usage history will initially be assigned to the lowest usage surcharge level for their rate class. Existing customers will be placed in their demarcated subclass based on their 12-month historic usage. An annual review of customers' average annual consumption levels will be performed each January to determine which usage segment the customers will be assigned to during the next year.

Q. How does the Company propose to recover its plan costs from the low-income residential program?

A. The EWR investments for the low-income residential program have been allocated to all customer groups based on the weighting of the customer group's respective investments to the total investments for a given year. Customers who self-direct their own programs are still responsible for paying their share for these low-income program investments through the appropriate surcharge assigned to their respective customer group in compliance with the statutory requirements.

Q. Does this conclude your direct testimony in this proceeding?

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

EXHIBITS

OF

ALEX M. GAST

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Energy Waste Reduction Program
Allocation of the 2020-2023 Energy Waste Reduction Program Investments - Electric & Gas

Case No.: 20372
Exhibit No.: A-10 (AMG-1)
Page: 1 of 1
Witness: AMGast
Date: August 2019

Line No.	Description	2020 (a)	2021 (b)	2022 (c)	2023 (d)	Total (e)
	Program Costs - Electric					
1	Residential	$ 35,355,586	$ 36,600,200	$ 33,844,646	$ 28,992,487	$ 134,792,920
2	Low Income	7,546,077	9,925,754	10,495,739	9,799,360	37,766,929
3	Secondary	65,112,313	76,300,919	80,803,012	86,583,224	308,799,469
4	Primary	29,324,276	34,363,227	36,390,810	38,994,012	139,072,325
5	Total	$ 137,338,253	$ 157,190,100	$ 161,534,207	$ 164,369,084	$ 620,431,644
	Program Cost Responsibility					
	By Customer Group - Electric					
6	Residential	$ 35,355,586	$ 36,600,200	$ 33,844,646	$ 28,992,487	$ 134,792,920
7	Low Income	$ 7,546,077	$ 9,925,754	$ 10,495,739	$ 9,799,360	$ 37,766,929
8	Small Secondary (0 to 1,250 kWhs per month)	19,697,557	23,082,297	24,444,255	26,192,865	93,416,973
9	Small Medium Secondary (1,251 to 5,000 kWhs per month)	20,538,100	24,067,274	25,487,350	27,310,578	97,403,301
10	Medium Secondary (5,001 to 30,000 kWhs per month)	22,074,849	25,868,091	27,394,423	29,354,073	104,691,436
11	Large Medium Secondary (30,001 to 50,000 kWhs per month)	1,528,259	1,790,868	1,896,537	2,032,205	7,247,869
12	Large Secondary (above 50,000 kWhs per month)	1,273,549	1,492,390	1,580,447	1,693,504	6,039,891
13	Total Secondary	$ 65,112,313	$ 76,300,919	$ 80,803,012	$ 86,583,224	$ 308,799,469
14	Small Primary (0 to 5,000 kWhs per month)	71,663	83,978	88,933	95,294	339,868
15	Small Medium Primary (5,001 to 10,000 kWhs per month)	96,988	113,654	120,360	128,970	459,971
16	Medium Primary (10,001 to 30,000 kWhs per month)	1,353,581	1,586,175	1,679,766	1,799,927	6,419,449
17	Large Medium Primary (30,001 to 50,000 kWhs per month)	2,349,157	2,752,826	2,915,255	3,123,796	11,141,034
18	Large Primary (above 50,000 kWhs per month)	25,452,886	29,826,595	31,586,497	33,846,025	120,712,003
19	Total Primary	$ 29,324,276	$ 34,363,227	$ 36,390,810	$ 38,994,012	$ 139,072,325
20	Total	$ 137,338,253	$ 157,190,100	$ 161,534,207	$ 164,369,084	$ 620,431,644
	Program Costs - Gas					
21	Residential	38,875,065	41,753,109	44,300,332	46,861,978	171,790,485
22	C&I	28,267,601	24,624,435	23,390,633	22,317,703	98,600,371
23	Total	$ 67,142,666	$ 66,377,544	$ 67,690,965	$ 69,179,681	$ 270,390,856
	Program Cost Responsibility					
	By Customer Group - Gas					
24	Residential	38,875,065	41,753,109	44,300,332	46,861,978	171,790,485
25	Small C&I (< 100,000 Mcf)	27,693,769	24,124,559	22,915,803	21,864,653	96,598,784
26	Large C&I (> 100,000 Mcf)	573,832	499,876	474,830	453,049	2,001,588
27	Total	$ 67,142,666	$ 66,377,544	$ 67,690,965	$ 69,179,681	$ 270,390,856

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
Energy Waste Reduction Program
Calculation of Energy Waste Reduction Program Surcharges - Electric & Gas

Case No.: 20372
Exhibit No.: A-11 (AMG-2)
Page: 1 of 1
Witness: AMGast
Date: August 2019

Line No.	(a) Customer Group	(b) Charge Basis	(c) U-20372 Monthly EWR Plan Component Surcharge
	Consumers Plan		
	Electric EWR Surcharge		
1	Residential	($/kWh)	$0.002831
2	Small Secondary (0 to 1,250 kWhs per month)	($/mo)	14.71
3	Small Medium Secondary (1,251 to 5,000 kWhs per month)	($/mo)	58.64
4	Medium Secondary (5,001 to 30,000 kWhs per month)	($/mo)	178.25
5	Large Medium Secondary (30,001 to 50,000 kWhs per month)	($/mo)	290.30
6	Large Secondary (above 50,000 kWhs per month)	($/mo)	480.10
7	Small Primary (0 to 5,000 kWhs per month)	($/mo)	17.63
8	Small Medium Primary (5,001 to 10,000 kWhs per month)	($/mo)	59.38
9	Medium Primary (10,001 to 30,000 kWhs per month)	($/mo)	261.37
10	Large Medium Primary (30,001 to 50,000 kWhs per month)	($/mo)	556.69
11	Large Primary (above 50,000 kWhs per month)	($/mo)	1,104.63
12	Lighting (Opt-In)	Fixt	0.27
	Self-Direct Plan		
	Electric EWR Surcharge		Monthly EWR Plan Component Surcharge
	Customer Group		
13	Residential		N/A
14	Small Secondary (0 to 1,250 kWhs per month)	($/mo)	$0.84
15	Small Medium Secondary (1,251 to 5,000 kWhs per month)	($/mo)	3.41
16	Medium Secondary (5,001 to 30,000 kWhs per month)	($/mo)	11.50
17	Large Medium Secondary (30,001 to 50,000 kWhs per month)	($/mo)	16.38
18	Large Secondary (above 50,000 kWhs per month)	($/mo)	25.79
19	Small Primary (0 to 5,000 kWhs per month)	($/mo)	0.99
20	Small Medium Primary (5,001 to 10,000 kWhs per month)	($/mo)	3.49
21	Medium Primary (10,001 to 30,000 kWhs per month)	($/mo)	16.16
22	Large Medium Primary (30,001 to 50,000 kWhs per month)	($/mo)	36.29
23	Large Primary (above 50,000 kWhs per month)	($/mo)	64.72
	Consumers Plan		
	Gas EWR Surcharge		Monthly EWR Plan Component Surcharge
	Customer Group		
24	Residential	($/Mcf)	$0.2197
25	Small C&I (0 to 100,000 Mcf)	($/Mcf)	0.3802
26	Large C&I (> 100,000 Mcf)	($/Mcf)	0.0122
27	Large Transportation Opt-Out	($/Mcf)	0.0031

S T A T E O F M I C H I G A N

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

DIRECT TESTIMONY

OF

SHAWN C. HURD

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

Q. Please state your name and business address.

A. My name is Shawn C. Hurd, and my business address is One Energy Plaza, Jackson, Michigan 49201.

Q. By whom are you employed and in what capacity?

A. I am employed by Consumers Energy Company ("Consumers Energy" or the "Company") as a General Rate Analyst II in the Rates and Regulation Department.

Q. Please describe your educational background.

A. I graduated from Michigan State University in December 2011 with a Bachelor of Arts and Letters degree in English. In addition, I have attended a number of courses on utility ratemaking provided by the Institute of Public Utilities located at Michigan State University.

Q. Please describe your work experience at Consumers Energy.

A. In November 2012, I was hired by Consumers Energy as a Customer Service Representative within the Company's Customer Call Center. In March 2014, I was promoted to Administrative Specialist I. In August 2016, I joined the Rate Administration Section as a Business Support Advisor I within the Rates and Regulation Department and have received promotions up to my current position.

Q. What are your responsibilities as a General Rate Analyst II?

A. My primary responsibilities are tariff filings for Gas Cost Recovery and Power Supply Cost Recovery cases, developing tariff exhibits for rate cases, preparing rate and monthly bill comparisons, and successfully implementing tariff changes Company wide based on Orders issued by the Michigan Public Service Commission ("MPSC" or the "Commission").

Q. Have you previously provided testimony before the Commission?

A. Yes. I have filed direct testimony on behalf of the Company in the following cases:

Case No. U-18322	Electric General Rate Case, Tariffs; and
Case No. U-20028	Energy Waste Reduction ("EWR") Reconciliation Plan Costs 2017, Tariffs.

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

A. I am sponsoring all proposed changes to the Company's electric and gas rate schedules and tariffs pertaining to the EWR surcharges for the Company's 2020-2023 EWR Plan, and I am also showing how the Company will be compliant with Section 89(2) of Public Act 295 of 2008, as amended by Public Act 342 of 2016 ("Section 89").

Q. What does Section 89 require of the Company?

A. The Company understands Section 89 to require the elimination of EWR surcharges as itemized charges on customer utility bills by January 1, 2021. I am proposing the Company's methodology for removing the EWR surcharge itemization from the utility bill.

Q. Are you sponsoring any exhibits with your direct testimony?

A. Yes. I am sponsoring the following exhibits:

Exhibit A-12 (SCH-1)	Proposed Electric Energy Waste Reduction Surcharge Tariff Sheets for January - February 2020 Billing Month;
Exhibit A-13 (SCH-2)	Proposed Electric Energy Waste Reduction Tariff Sheets which remove the Electric Energy Waste Reduction Surcharge line item from customer billing statements in compliance with 2008 PA 295, as amended in 2016 PA 342, Section 89, commencing in March 2020;
Exhibit A-14 (SCH-3)	Proposed Gas Energy Waste Reduction Surcharge Tariff Sheets for January - February 2020 Billing Month; and

Exhibit A-15 (SCH-4)	Proposed Gas Energy Waste Reduction Tariff Sheets which remove the Gas Energy Waste Reduction Surcharge line item from customer billing statements in compliance with 2008 PA 295, as amended in 2016 PA 342, Section 89, commencing in March 2020.

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

A. Yes.

<u>ELECTRIC RATE BOOK EWR SURCHARGES</u>

Q. Please describe the proposed tariff changes to Sheet No. C-52.10 as set forth in Exhibit A-12 (SCH-1).

A. Sheet No. C-52.10 in Exhibit A-12 (SCH-1) describes: (i) how the EWR surcharge is applied to customer bills; (ii) that customers on eligible lighting rates can opt-in to the program; and (iii) that General Service Self Generation Rate GSG-2 ("Rate GSG-2") can also opt-in to the EWR Program.

Q. Why are Rate Codes 1455 and 1460 excluded from paying the EWR surcharge and participating in the EWR program under General Service Unmetered Lighting Rate GUL ("Rate GUL")?

A. These Rate Codes were grandfathered into Rate GUL and are currently closed to new business, making them ineligible for upgrades or adding luminaries to a Company-Owned or Customer-Owned street lighting system. These customers cannot take advantage of energy saving options, so they are excluded from participating in the EWR program and paying the EWR surcharge.

Q. Please describe the proposed tariff changes to Sheet Nos. D-2.10, D-2.12, and D-2.14 as set forth in Exhibit A-12 (SCH-1)?

A. Sheet No. D-2.10 shows the EWR surcharge and the Self-Directed Customer surcharge being moved to Sheet No. D-2.12 and D-2.14 respectively for formatting purposes. Sheet No. D-2.12 shows the total EWR surcharge by Rate Schedule in a rate sheet format, and Sheet No. D-2.14 shows the surcharge for customers that choose to Self-Direct in the same manner. Both surcharges were calculated by Company witness Gast.

Q. Please describe the changes being shown on Exhibit A-12 (SCH-1), Sheet No. D-2.12, which reflect the proposed EWR surcharge for Company-owned lighting fixtures served under Rate GUL.

A. The tariff changes shown on Exhibit A-12 (SCH-1), Sheet No. D-2.12, reflect the proposed EWR surcharge for Company-owned lighting fixtures served under Rate GUL being discontinued as mandatory for customers on this Rate Schedule, and now becoming an opt-in option as explained in the testimony of Company witness Theodore A. Ykimoff.

SECTION 89 ELECTRIC EWR SURCHARGE ITEMIZATION ELIMINATION

Q. Please describe the proposed tariff changes in Exhibit A-13 (SCH-2).

A. Exhibit A-13 (SCH-2) shows the Company's additional proposed tariff changes to commence in March 2020. The tariff changes reflect the Company's approach for removing the electric EWR surcharges as an itemized charge on customer bills, which is a requirement under Section 89. The Company is proposing that this Section 89 compliance be implemented 90 days after the Company receives an order in this case, as I discuss later in my testimony. On these tariff sheets, the Company is proposing to include: (i) the residential EWR surcharge in the volumetric Distribution charge found on

all Residential Rates; (ii) the business EWR surcharges in the monthly System Access charge found on metered Nonresidential Rates; and (iii) the business EWR surcharges in either the monthly Fixture charge or Service Charge per Luminaire found on Nonresidential Street Lighting Rates for customers that choose to opt-in to the EWR surcharge.

Q. Will the System Access charge for customers who choose to Self-Direct include the business EWR surcharge?

A. No. It will only contain the low-income portion of the EWR surcharge that customers who choose to Self-Direct already pay.

Q. Why is the Company proposing to include the EWR surcharges in the fixed or volumetric charges listed above?

A. As discussed above, the Company's understanding of Section 89 is that the EWR surcharge should not be itemized on customer bills after January 1, 2021. To meet this mandate in advance of the deadline, the Company is proposing to have the EWR surcharges, sponsored by Company witness Alex M. Gast in this proceeding, included in existing fixed or volumetric distribution charges that customers already pay according to their current Rate Schedules beginning in March 2020, which assumes a Commission order in this case no later than December 2019.

Q. Has the Company made this proposal before?

A. Yes. The Company made a proposal in Case No. U-20028 to remove the EWR line item surcharge and include it in existing charges that customers are already being assessed. The issue was addressed in the Settlement Agreement, approved by the Commission, in that case.

Q. How does your proposal in this case adhere to the terms of the settlement agreement that was filed in Case No. U-20028 pertaining to the timeline for removing the EWR surcharge as a line item from the monthly bill?

A. The terms of the Commission-approved Settlement Agreement in Case No. U-20028 requires that the Company withhold implementing this change on any customer bills for all billing months of 2019. My proposal in this case is consistent with the settlement agreement and commences implementation in March 2020.

Q. Why is the Company planning to wait 90 days (until March 2020) to implement the Section 89 requirement to remove the EWR surcharge as a line item from customer bills as reflected in Exhibit A-13 (SCH-2)?

A. The Company will need an appropriate amount of time to configure, test, and implement this change after the Commission issues an order approving the change. This includes modifying the billing system to accommodate the change and informing customers of upcoming changes to their bills. The Company anticipates that the activities needed to implement the changes will take approximately 90 days and, thus, the Company is requesting that the change to remove the EWR surcharge as a line item on customer bills be effective in the March 2020 billing month (which assumes a December 2019 Commission order in this case). The Company would maintain the proposed tariff sheet Nos. D-2.12 and D-2.14 that reflect the proposed January through February 2020 EWR surcharges proposed in Exhibit A-12 (SCH-1), until the new tariff sheets (Exhibit A-13 (SCH-2)) would go into effect in March 2020. The Company will file the tariff sheets reflected in Exhibit A-13 (SCH-2), that remove the EWR surcharge as a line item from customer bills, prior to the implementation of that change.

EWR OPT-IN OPTION FOR STREET LIGHTING

Q. Please explain how the Company intends to address Street Lighting rates that do not have a monthly System Access charge and choose to opt-in to the EWR Program.

A. The Company proposes to include the current EWR surcharge in the Service Charge per Luminaire for customers taking service under Rate GUL as shown on Exhibit A-13 (SCH-2), Sheet No. C-52.10.

Q. Please describe how the Company proposes to address the EWR surcharge for customers who switch from Rate GUL to the General Unmetered Experimental Lighting Rate GU-XL ("Rate GU-XL").

A. The Company proposes to include the Rate GUL EWR surcharge in the Rate GU-XL Fixture Charge per Luminaire for customers who have participated in an EWR program and have elected to switch to Rate GU-XL.

Q. Please explain how the Company intends to address EWR Surcharges for Street Lighting Rates that do have a monthly System Access charge and choose to opt-in to the EWR Program.

A. For customers serviced on General Service Metered Lighting Rate GML ("Rate GML"), the Company proposes to multiply the EWR surcharge by the number of fixtures on the customer's account and add that cost to the System Access Charge per billing meter month as described on Exhibit A-13 (SCH-2), Sheet No. C-52.10.

GAS EWR SURCHARGES

Q. Please describe the proposed tariff changes shown on Sheet No. D-1.10 from Exhibit A-14 (SCH-3)?

A. Sheet No. D-1.10 shows the proposed EWR surcharge, by customer Rate Schedule, in a rate sheet format.

Q. Please describe the proposed tariff changes shown on Sheet No. D-1.15 from Exhibit A-14 (SCH-3)?

A. Sheet No. D-1.15 shows the Energy Efficiency Large Gas Opt-Out Program Surcharge, and the Company's proposal to remove the word 'pilot' from name of this surcharge. This program was authorized in the Commission's April 17, 2012 Order Case No. U-16670, and should no longer be considered a pilot.

SECTION 89 GAS EWR SURCHARGE ITEMIZATION ELIMINATION

Q. Please describe Exhibit A-15 (SCH-4).

A. Similar to Exhibit A-13 (SCH-2), Exhibit A-15 (SCH-4) shows the Company's additional proposed tariff changes to commence in March 2020. The tariff changes reflect the Company's approach for removing the gas EWR surcharges as an itemized charge on customer bills, which is a requirement under Section 89. Like the Electric EWR surcharge itemization elimination, discussed above, the Company is proposing that this Section 89 compliance, related to Gas EWR surcharge itemization elimination, be implemented 90 days after the Company receives an order in this case. On these tariff sheets, the Company is proposing to include the EWR surcharge in the (i) volumetric Distribution charge for all Residential and General Service Gas Rates; and (ii) volumetric Transportation charge for all Gas Transportation customers.

Q. Will the volumetric gas charge for customers who choose to Opt Out include the EWR surcharge?

A. No. It will only contain the low-income portion of the EWR surcharge that customers who choose to Opt Out already pay.

Q. Is the Company requesting the same implementation schedule for the removal of the gas EWR surcharge as a line item on the customer bill, as was proposed for the electric EWR surcharge removal?

A. Yes, for the same reasons articulated for the electric EWR surcharge change, the Company is requesting that the change to remove the EWR surcharge as a line item on the gas customer bills be effective 90 days from the date of the issuance of a Commission order in this case to allow proper time for implementation.. The Company would maintain the proposed tariff sheets (Nos. D-1.10 and D-1.15), introduced in this proceeding as Exhibit A-14 (SCH-3), that reflect the proposed January through February 2020 EWR surcharges until the new tariff sheets, reflected in Exhibit A-15 (SCH-4) would go into effect in March 2020. The Company would file the tariff sheets reflected in Exhibit A-15 (SCH-4), that remove the EWR surcharge as a line item from customer bills, prior to the implementation of that change.

Q. Does this complete your direct testimony?

A. Yes.

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

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EXHIBITS

OF

SHAWN C. HURD

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

TECHNICAL TERMS AND ABBREVIATIONS (FOR ALL CUSTOMERS)

(Continued From Sheet No. A-29.00)

B. Company (Contd)

Customer Voltage Level 2 – Service supplied either directly from the Company's distribution system when the voltage is 25,000 Volts or greater but less than 120,000 Volts or from this system through a Company-owned substation where, from the exits of the substation, the distribution equipment for supplying service is owned and maintained by the customer. Portions of the distribution system supply Customer Voltage Level 2 service at a voltage lower than 25,000 Volts, these customers are grandfathered into Customer Voltage Level 2.

Customer Voltage Level 3 – Service supplied from the Company's distribution system and the voltage is 2,400 Volts or greater but less than 25,000 Volts.

Customer Voltage Level 4 – Service supplied from the Company's distribution system and the voltage is less than 2,400 Volts.
Cycling – Alteration of the operating schedule of a customer's electrical air conditioner, heat pump or other qualifying device.

Energy and Demand Registering Meter – A device that registers customer kilowatt-hour use, peak demand and the on-peak demand.

Energy Efficiency Plan Surcharge (EE) - The EE Surcharge is permitted pursuant to Section 89 of 2008 PA 295 and as amended in 2016 PA 342. Through the application of the EE Surcharge, the rates for distribution service are adjusted to allow for recovery of the cost of the energy waste reduction (EWR) requirements included in 2008 PA 295 and as amended in 2016 PA 342. (Annually, a reconciliation shall be conducted pursuant to Section 97 of 2008 PA 295 and as amended in 2016 PA 342.) The approved EE Surcharges are shown on Sheet ~~D-2.10~~ *D-2.12*.

Energy-Only Registering Meter – A device that registers customer kilowatt-hour use only.
Full Service Customer - A customer taking power supply and delivery service from the Company, even if on an irregular basis. With the exception of Wholesale Customers and Retail Open Access Customers, as defined in Rule E1.4(u) of the Company's Rate Book for Electric Service, customers are deemed to be Full Service Customers.

General Service Usage – Any use of electric energy that does not qualify for residential rates.
Hertz (Hz) – Cycle per second.

Horsepower (hp) – Unit of mechanical power equivalent to 746 watts of electrical power.
Industrial Usage for Emergency Electrical Procedures – Usage for application, other than those defined as residential or commercial, which qualify for a manufacturing industry code under the most current edition of the Standard Industrial Classification Manual and are associated with the manufacture of a product for sale including processing of a product from one form to another. It also includes usage for facilities directly associated with and on the same premises as the manufacturing business such as offices and warehouses.

Interval Data Meter – A device that registers customer kilowatt-hour use, peak demand, on-peak demand, and maximum demand.

Kilo (k) – Prefix meaning one thousand.
Kilowatt (kW) – Unit of electrical power representing rate of usage of energy, equivalent to about 1-1/3 Horsepower.
Kilowatt-hour (kWh) – Unit of electrical energy equivalent to the use of one Kilowatt for one hour.
Kilovolt-ampere (kVA) – Unit of apparent electrical power which at 100% Power Factor is equivalent to one Kilowatt.

(Continued on Sheet No. A-31.00)

(Continued From Sheet No. C-52.00)

C12. ENERGY EFFICIENCY (EE)

C12.1 Energy Efficiency Program – Electric

This rule implements the energy waste reduction (EWR) requirements of 2008 PA 295 and as amended in 2016 PA 342 in accordance with Orders issued by the Commission in Case No. U-15805. The monthly Energy Efficiency surcharges to be applied to each Rate Schedule are shown on Sheet No. ~~D-2.10~~ *D-2.12* of this Rate Book.

The customer's consumption will be reviewed annually in the January bill month. Following the annual review, the customer may be subsequently moved to the surcharge level for their applicable rate for the next billing period based on the customer's average consumption for the previous year. In situations where no historical consumption is available, the monthly surcharge level will be based on the lowest consumption category for the secondary Rate Schedules or the lowest consumption category for primary Rate Schedules. No retroactive adjustment will be made due to the application of the Energy Efficiency Program surcharge associated with increases or decreases in consumption.

A. Opt-In Option

(1) Customers served on General Service Unmetered Lighting Rate GUL (except for rate codes 1455 and 1460), General Service Metered Lighting Rate GML, or General Unmetered Experimental Lighting Rate GU-XL are eligible to participate in the Energy Efficiency Program.

(2) Customers served on General Service Self Generation Rate GSG-2 are eligible to participate in the Energy Efficiency Program. These customers shall be charged the Large General Service Primary Demand Rate GPD Tier 5: > 50,000 kWh/mo. rate per billing meter per month as shown on Sheet No. D-2.12.

C12.2 Self-Directed Customer Plans

An eligible primary or secondary electric customer is exempt from the mandatory energy efficiency surcharge(s), with the exception of the surcharge funding low-income programs as well as review and evaluation costs, if the customer files and implements a self-directed energy efficiency plan.

A. Eligibility

(1) Customers must have had an annual peak demand in the preceding year of at least 1 megawatt in the aggregate at all sites to be covered by the self-directed plan.

(2) The customer and sites covered by an implemented self-directed plan are not eligible to participate in any energy efficiency program of the Company.

B. Requirements

(1) A customer with a self-directed plan is required to pay the self-directed customer program surcharge.

(2) In its Order dated December 4, 2008, in Case No. U-15800, the Commission stated "A self-direct energy optimization plan shall be considered complete, and the customer exempt from the Company's energy optimization surcharge in the next billing cycle after the start date for the first action item in the customer's self-direct energy optimization plan. This applies to a customer with a single site or several sites aggregated together. The plan, including the implementation schedule and expected energy savings, must be attested to as true and accurate by a knowledgeable official of the customer. Customers must comply with the statutory self-direct plan reporting requirements to retain the exemption from the surcharge." Additional information on self-directed plans is available to customers in Attachment E of that Order and Attachments A, B & C from the Order dated August 25, 2011 in Case No. U-16563.*

(3) *The self-directed plan shall provide for aggregate energy savings that for each year meet or exceed the energy waste reduction performance standards based on the electricity purchases in the previous year for the site or sites covered by the self-directed plan.

(4) Incremental Energy Savings each year through 2021 are equivalent to 1.0% of total annual retail electricity sales in megawatt hours in the preceding year.

(Continued on Sheet No. C-52.20)

SURCHARGES

Rate Schedule	Renewable Energy Plan Surcharge (Case No. U-17301) Effective beginning the July 2014 Billing Month~~(5)~~(2)	~~Energy Efficiency Program Surcharge (Case No. U-20028) Effective beginning the February 2018 Billing Month(3)~~	~~Energy Efficiency Self-Directed Customer Surcharge (Case No. U-20028) Effective beginning the February 2018 Billing Month(3)~~
Residential Rates	$ 0.00/billing meter	~~$ 0.003101/kWh~~	~~NA~~
Rate GS, GSTU, and GSD (1)			
Tier 1: 0 – 1,250 kWh/mo.	$ 0.00/billing meter	~~$ 4.47/billing meter~~	~~$ 0.11/billing meter~~
Tier 2: 1,251 – 5,000 kWh/mo.	0.00/billing meter	~~25.23/billing meter~~	~~0.65/billing meter~~
Tier 3: 5,001 – 30,000 kWh/mo.	0.00/billing meter	~~155.30/billing meter~~	~~3.87/billing meter~~
Tier 4: 30,001 – 50,000 kWh/mo.	0.00/billing meter	~~155.30/billing meter~~	~~3.87/billing meter~~
Tier 5: > 50,000 kWh/mo.	0.00/billing meter	~~155.30/billing meter~~	~~3.87/billing meter~~
Rate GP, GPD, GPTU and EIP (1)			
Tier 1: 0 – 5,000 kWh/mo.	$ 0.00/billing meter	~~$ 5.97/billing meter~~	$ ~~0.20/billing meter~~
Tier 2: 5,001 – 10,000 kWh/mo.	0.00/billing meter	~~45.93/billing meter~~	~~1.75/billing meter~~
Tier 3: 10,001 – 30,000 kWh/mo.	0.00/billing meter	~~216.51/billing meter~~	~~4.52/billing meter~~
Tier 4: 30,001 – 50,000 kWh/mo.	0 00/billing meter	~~560.51/billing meter~~	~~9.04/billing meter~~
Tier 5: > 50,000 kWh/mo.	0.00/billing meter	~~1123.89/billing meter~~	~~43.62/billing meter~~
Rate GSG-2	NA	~~NA(4)~~	~~NA~~
Rate GML~~(6)~~			
Tier 1: 0 – 1,250 kWh/mo.	$ 0.00/billing meter	~~NA~~	~~NA~~
Tier 2: 1,251 – 5,000 kWh/mo.	0.00/billing meter	~~NA~~	~~NA~~
Tier 3: > 5,000 kWh/mo.	0.00/billing meter	~~NA~~	~~NA~~
Rate GUL~~(6)(7)~~	0.00/luminaire	~~$ 0.27/fixture per month~~	~~NA~~
Rate GU-XL~~(6)~~	0.00/luminaire	~~NA~~	~~NA~~
Rate GU			
Tier 1: 0 – 1,250 kWh/mo.	0.00/billed account	~~NA~~	~~NA~~
Tier 2: 1,251 – 5,000 kWh/mo.	0.00/billed account	~~NA~~	~~NA~~
Tier 3: > 5,000 kWh/mo.	0.00/billed account	~~NA~~	~~NA~~
Rate PA	NA	~~NA~~	~~NA~~
Rate ROA-R, ROA-S, ROA-P	NA	~~As in Delivery Rate Schedule~~	~~As in Delivery Rate Schedule~~

All Surcharges shall be applied on a monthly basis. The customer's consumption will be reviewed annually in the January bill month. Following the annual review, the customer may be subsequently moved to the Surcharge level for their applicable rate for the next billing period based on the customer's average consumption for the previous year. In situations where no historical consumption is available, the monthly Surcharge level will be based on the lowest consumption category for the secondary rate schedules or the lowest consumption category for primary rate schedules. No retroactive adjustment will be made due to the application of the REP ~~or EE~~ Surcharges associated with increases or decreases in consumption.

(1)Municipal Pumping customers shall be excluded from the Renewable Energy Plan Surcharge.

~~(2)An eligible customer who files and implements a self-directed plan in compliance with Rule C12 is required to pay the Energy Efficiency Self-Directed Program Surcharge.~~

~~(3)An Energy Efficiency Program Surcharge amount may vary during specific months as authorized by the Michigan Public Service Commission. The Company will file a new tariff sheet to reflect any change in surcharges once the financial incentive recovery period has been completed.~~

~~(4)Rate GSG-2 Customers are eligible to opt-in to the Energy Efficiency Electric Program Surcharge. A GSG-2 customer electing to participate in the Energy Efficiency Electric Program will be charged the GPD, Tier 5: > 50,000 kWh/mo rate per billing meter per month.~~

~~(5)~~(2)A Renewable Energy Plan Surcharge will be in effect for the period of the September 2009 Bill Month through the August 2029 Bill Month. The amount may vary during specific months as authorized by the Michigan Public Service Commission. Applicable cases include Case Nos. U-15805, U-16543, U-16581 and U-17301.

~~(6)Customer-Owned lighting fixtures served on Rate GML, GUL and Rate GU-XL are eligible to opt-in to the Energy Efficiency Program Surcharge. A GML, GUL or GU-XL customer electing to participate in the Energy Efficiency Electric Program shall pay the Rate GUL Company-Owned Energy Efficiency Program Surcharge per fixture per month as shown above.~~

~~(7)Rate Schedule GUL Company-Owned lighting fixtures shall pay the per fixture surcharge monthly as shown above.~~

SURCHARGES

Rate Schedule	*Energy Efficiency Program Surcharge (Case No. U-20372) Effective beginning the January 2020 Billing Month* [1]
Residential Rates	*$ 0.003363/kWh*
Rate GS, GSTU, and GSD	
Tier 1: 0-1,250 kWh/mo.	*$ 15.22/billing meter*
Tier 2: 1,251 – 5,000 kWh/mo.	*61.56/billing meter*
Tier 3: 5,001 – 30,000 kWh/mo.	*196.16/billing meter*
Tier 4: 30,001 – 50,000 kWh/mo.	*308.21/billing meter*
Tier 5: >50,000 kWh/mo.	*498.01/billing meter*
Rate GP, GPD, GPTU, and EIP	
Tier 1: 0-1,250 kWh/mo.	*$ 18.80/billing meter*
Tier 2: 1,251 – 5,000 kWh/mo.	*68.40/billing meter*
Tier 3: 5,001 – 30,000 kWh/mo.	*284.64/billing meter*
Tier 4: 30,001 – 50,000 kWh/mo.	*601.17/billing meter*
Tier 5: >50,000 kWh/mo.	*1,329.32/billing meter*
Rate GSG-2[2]	*NA*
Rate GML[2][3]	*NA*
Rate GUL[2][3]	*NA*
Rate GU-XL[2][3]	*NA*
Rate GU	*NA*
Rate PA	*NA*
Rate ROA-R, ROA-S, ROA-P	*Same as Full Service Delivery Rate Schedule*

[1] *This is subject to all general terms and conditions as shown in Rule C12, Energy Efficiency. The Energy Efficiency Program Surcharge amount may vary during specific months as authorized by the Michigan Public Service Commission. The Company will file a new tariff sheet to reflect any change in surcharges once the financial incentive recovery period has been completed.*
[2] *Additional Rate Schedules can opt-in to the Energy Efficiency Program as described in Rule C12, Energy Efficiency.*
[3] *Lighting rates that choose to opt-in to the Energy Efficiency Program shall be assessed $0.27 per fixture per month.*

SURCHARGES

Rate Schedule	*Energy Efficiency Self-Directed Customer Surcharge (Case No. U-20372) Effective beginning the January 2020 Billing Month* [1]
Residential Rates	*NA*
Rate GS, GSTU, and GSD	
Tier 1: 0-1,250 kWh/mo.	*$ 0.84/billing meter*
Tier 2: 1,251 – 5,000 kWh/mo.	*3.41/billing meter*
Tier 3: 5,001 – 30,000 kWh/mo.	*11.50/billing meter*
Tier 4: 30,001 – 50,000 kWh/mo.	*16.38/billing meter*
Tier 5: >50,000 kWh/mo.	*25.79/billing meter*
Rate GP, GPD, GPTU, and EIP	
Tier 1: 0-1,250 kWh/mo.	*$ 0.99/billing meter*
Tier 2: 1,251 – 5,000 kWh/mo.	*3.49/billing meter*
Tier 3: 5,001 – 30,000 kWh/mo.	*16.16/billing meter*
Tier 4: 30,001 – 50,000 kWh/mo.	*36.29/billing meter*
Tier 5: >50,000 kWh/mo.	*64.72/billing meter*
Rate GSG-2	*NA*
Rate GML	*NA*
Rate GUL	*NA*
Rate GU-XL	*NA*
Rate GU	*NA*
Rate PA	*NA*
Rate ROA-R, ROA-S, ROA-P	*Same as Full Service Delivery Rate Schedule*

[1] An eligible customer who files and implements a self-directed plan in compliance with Rule C12 is required to pay the Energy Efficiency Self-Directed Program Surcharge.

GENERAL SERVICE UNMETERED LIGHTING RATE GUL

(Continued From Sheet No. D-51.00)

Monthly Rate: (Contd)

Green Generation Program:

Customer contracts for participation in the Green Generation Program shall be available to any eligible customer as described in Rule C10.2, Green Generation Program.

A customer who participates in the Green Generation Program is subject to the provisions contained in Rule C10.2, Green Generation Program.

General Terms, Surcharges, Power Supply Cost Recovery (PSCR) Factor and Power Plant Securitization Charges:

This rate is subject to all general terms and conditions shown on Sheet No. D-1.00, Surcharges shown on Nos. D-2.00 through D-3.10, PSCR Factor shown on Sheet No. D-4.00 and the Power Plant Securitization Charges shown on Sheet No. D-5.10. ~~Customer-Owned Lighting customers who choose to participate in Energy Efficiency Program will have the Rate GUL Company-Owned Energy Efficiency Program Surcharge shown on Sheet No. D-2.10~~

Due Date and Late Payment Charge:

The due date of the customer bill shall be 21 days from the date of mailing. A late payment charge of 2% of the unpaid balance, net of taxes, shall be assessed to any bill which is not paid on or before the due date shown thereon.

Special Terms and Conditions:

The Company reserves the right to make special contractual arrangements as to term or duration of contract, termination charges, contribution in aid of construction, annual charges or other special considerations when the customer requests service, equipment or facilities not normally provided under this rate.

GENERAL UNMETERED EXPERIMENTAL LIGHTING RATE GU-XL

(Continued From Sheet No. D-54.01)

Facilities Policy (Contd)

Company-Owned Option (Contd)

D. The Company will determine the type and size of all experimental lighting fixtures to be offered under this rate. The list of approved fixtures is subject to modification at the sole discretion of the Company to accommodate new product development and advances in technology. Upon customer request, the Company shall provide a list of experimental lighting available under this rate.

E. The Company shall determine all associated equipment necessary to provide service under the Company-Owned Unmetered Experimental Lighting option.

F. Any charges, deposits or contributions may be required in advance of commencement of construction.

G. At the Company's discretion, any failed lighting fixtures may be converted to an equivalent LED at no cost to the customer if the customer agrees to the conversion. The replaced fixture will then be moved to General Unmetered Experimental Lighting Rate GU-XL upon completion of the installation.

Customer-Owned Option

If it is necessary for the Company to install distribution facilities to serve a customer-owned system, contributions and/or deposits for such additional facilities shall be calculated in accordance with the Company's general service line extension policy. Any charges, deposits or contributions may be required in advance of commencement of construction.

Monthly Rate

Power Supply Charges

Energy Charge:

Non-Capacity	Capacity	Total	
$ 0.048281	$ 0.000000	$0.048281	per kWh for all kWh

This rate is subject to the Power Supply Cost Recovery (PSCR) Factor shown on Sheet No. D-4.00.

Delivery Charges Customer-Owned Option

Distribution Charge:	$0.025336	per kWh for all kWh

Delivery Charges Company-Owned Option

Distribution Charge:	$0.031076	per kWh for all kWh
Fixture Charge per Luminaire:	$6.00	per month

This rate is subject to the Surcharges shown on Sheet Nos. D-2.00 through D-3.10 and the Securitization Charges shown on Sheet Nos. D-5.00 and D-5.10. ~~Previous~~ Rate GUL ~~Company or Customer-Owned~~ Energy Efficiency Program *opt-in* customers shall pay monthly the ~~Rate GUL Company-Owned~~ Energy Efficiency Program Surcharge ~~shown on Sheet No. D-2.10~~ once they have converted to Rate GU-XL.

General Terms

This rate is subject to all general terms and conditions shown on Sheet No. D-1.00.

Due Date and Late Payment Charge

The due date of the customer bill shall be 21 days from the date of mailing. A late payment charge of 2% of the unpaid balance, net of taxes, shall be assessed to any bill which is not paid on or before the due date shown thereon.

Determination of Monthly Kilowatt-Hours and Burning Hours per Month Based on 4,200 Burning Hours per Year

The monthly kilowatt-hours shall be determined by multiplying the total capacity requirements in watts (including the lamps, ballasts, drivers, and control devices) times the monthly Burning Hours as defined below divided by 1,000. The customer shall not change the capacity requirements of the equipment owned by it without first notifying the Company in writing of such changes and the date that they shall be made, and modifying the lighting contract with the Company accordingly.

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
457.8	382.2	369.6	306.6	264.6	226.8	252.0	298.2	336.0	399.0	432.6	474.6	4,200

Hours of Lighting

Unmetered Experimental Lighting shall be burning at all times when the natural general level of illumination is lower than about 3/4 footcandle, and under normal conditions this is approximately one-half hour after sunset until approximately one-half hour before sunrise. Lighting service will be supplied from dusk to dawn every night and all night on an operating schedule of approximately 4,200 hours per year.

(Continued on Sheet No. D-54.03)

(Continued From Sheet No. C-52.00)

C12. ENERGY EFFICIENCY (EE)

C12.1 Energy Efficiency Program – Electric

This rule implements the energy waste reduction (EWR) requirements of 2008 PA 295 and as amended in 2016 PA 342 in accordance with Orders issued by the Commission in Case No. U-15805. The monthly Energy Efficiency surcharges to be applied to each Rate Schedule are shown on Sheet No. D-2.12 of this Rate Book *and shall be added with an existing fixed or volumetric charge on each eligible Rate Schedule as described below:*

(1) For all customers on Residential Rate Schedules, the Energy Efficiency Program Surcharge shall be added to the Distribution Charge for both Full Service and ROA customers each month.

(2) For all eligible Nonresidential customers, the Energy Efficiency Program Surcharge shall be added to the System Access charge for both Full Service and ROA customers each month.

The customer's consumption will be reviewed annually in the January bill month. Following the annual review, the customer may be subsequently moved to the Surcharge level for their applicable rate for the next billing period based on the customer's average consumption for the previous year. In situations where no historical consumption is available, the monthly Surcharge level will be based on the lowest consumption category for the secondary rate schedules or the lowest consumption category for primary rate schedules. No retroactive adjustment will be made due to the application of the Energy Efficiency Program Surcharge associated with increases or decreases in consumption.

A. Opt-In Option

(1) Customers served on General Service Unmetered Lighting Rate GUL (except for Commercial - Outdoor Area Lighting and Industrial - Outdoor Area Lighting), General Service Metered Lighting Rate GML, or General Unmetered Experimental Lighting Rate GU-XL are eligible to participate in the Energy Efficiency Program *and shall have the Energy Efficiency Program Surcharge billed monthly as follows:*

a. Customers on Rate GUL shall have the per fixture surcharge multiplied by the number of fixtures for the customer's account added to the Service Charge per Luminaire each billing month.

b. Customers on Rate GML shall have the per fixture surcharge multiplied by the number of fixtures for the customer's account added to the System Access Charge per billing meter per month.

c. Customers on Rate GU-XL shall have the per fixture surcharge multiplied by the number of fixtures for the customer's account then added to the Fixture Charge per Luminaire each billing month.

(2) Customers served on General Service Self Generation Rate GSG-2 are eligible to participate in the Energy Efficiency Program. These customers shall be charged the Large General Service Primary Demand Rate GPD Tier 5: > 50,000 kWh/mo. rate per billing meter per month as shown on Sheet No. D-2.12. *The Energy Efficiency Program Surcharge will be added to the appropriate System Access Charge per billing meter per month.*

C12.2 Self-Directed Customer Plans

An eligible primary or secondary electric customer is exempt from the mandatory energy efficiency surcharge(s), with the exception of the surcharge funding low-income programs as well as review and evaluation costs, if the customer files and implements a self-directed energy efficiency plan.

A. Eligibility

(1) Customers must have had an annual peak demand in the preceding year of at least 1 megawatt in the aggregate at all sites to be covered by the self-directed plan.

(2) The customer and sites covered by an implemented self-directed plan are not eligible to participate in any energy efficiency program of the Company.

B. Requirements

(1) A customer with a self-directed plan is required to pay the self-directed customer program surcharge. *It shall be added to the existing System Access Charge for both Full Service and ROA customers that qualify.*

(2) In its Order dated December 4, 2008, in Case No. U-15800, the Commission stated "A self-direct energy optimization plan shall be considered complete, and the customer exempt from the Company's energy optimization surcharge in the next billing cycle after the start date for the first action item in the customer's self-direct energy optimization plan. This applies to a customer with a single site or several sites aggregated together. The plan, including the implementation schedule and expected energy savings, must be attested to as true and accurate by a knowledgeable official of the customer. Customers must comply with the statutory self-direct plan reporting requirements to retain the exemption from the surcharge." Additional information on self-directed plans is available to customers in Attachment E of that Order and Attachments A, B & C from the Order dated August 25, 2011 in Case No. U-16563.*

(3) *The self-directed plan shall provide for aggregate energy savings that for each year meet or exceed the energy waste reduction performance standards based on the electricity purchases in the previous year for the site or sites covered by the self-directed plan.

(4) Incremental Energy Savings each year through 2021 are equivalent to 1.0% of total annual retail electricity sales in megawatt hours in the preceding year.

(Continued on Sheet No. C-52.20)

SURCHARGES

Rate Schedule	Energy Efficiency Program Surcharge (Case No. U-20372) Effective beginning the January 2020 Billing Month[1]		Distribution Charge for all Residential Rate Schedules		Total Distribution Charge [4]
Residential Rates	$ 0.003363/kWh	+	*$0.047054/kWh*	=	*$0.050417/kWh*
			System Access Charge for each Non-Residential Rate Schedule	=	Total System Access Charge [4]
Rate GS *and* GSTU					
Tier 1: 0-1,250 kWh/mo.	$ 15.22/billing meter	+	*$ 20.00/month*	=	*$ 35.22/month*
Tier 2: 1,251 – 5,000 kWh/mo.	61.56/billing meter	+	*20.00/month*	=	*81.56/month*
Tier 3: 5,001 – 30,000 kWh/mo.	196.16/billing meter	+	*20.00/month*	=	*216.16/Month*
Tier 4: 30,001 – 50,000 kWh/mo.	308.21/billing meter	+	*20.00/month*	=	*328.21/Month*
Tier 5: >50,000 kWh/mo.	498.01/billing meter	+	*20.00/month*	=	*518.01/Month*
Rate GSD					
Tier 1: 0-1,250 kWh/mo.	*$ 15.22/billing meter*	+	*$ 30.00/month*	=	*$ 45.22/month*
Tier 2: 1,251 – 5,000 kWh/mo.	*61.56/billing meter*	+	*30.00/month*	=	*91.56/month*
Tier 3: 5,001 – 30,000 kWh/mo.	*196.16/billing meter*	+	*30.00/month*	=	*226.16/Month*
Tier 4: 30,001 – 50,000 kWh/mo.	*308.21/billing meter*	+	*30.00/month*	=	*338.21/Month*
Tier 5: >50,000 kWh/mo.	*498.01/billing meter*	+	*30.00/month*	=	*528.01/Month*
Rate GP					
Tier 1: 0-1,250 kWh/mo.	$ 18.80/billing meter	+	*$ 100.00/month*	=	*$ 118.80/month*
Tier 2: 1,251 – 5,000 kWh/mo.	68.40/billing meter	+	*100.00/month*	=	*168.40/Month*
Tier 3: 5,001 – 30,000 kWh/mo.	284.64/billing meter	+	*100.00/month*	=	*384.64/Month*
Tier 4: 30,001 – 50,000 kWh/mo.	601.17/billing meter	+	*100.00/month*	=	*701.17/Month*
Tier 5: >50,000 kWh/mo.	1,329.32/billing meter	+	*100.00/month*	=	*1,429.32/Month*
Rate GPD, GPTU, and EIP					
Tier 1: 0-1,250 kWh/mo.	*$ 18.80/billing meter*	+	*$ 200.00/month*	=	*$ 218.80/month*
Tier 2: 1,251 – 5,000 kWh/mo.	*68.40/billing meter*	+	*200.00/month*	=	*268.40/Month*
Tier 3: 5,001 – 30,000 kWh/mo.	*284.64/billing meter*	+	*200.00/month*	=	*484.64/Month*
Tier 4: 30,001 – 50,000 kWh/mo.	*601.17/billing meter*	+	*200.00/month*	=	*801.17/Month*
Tier 5: >50,000 kWh/mo.	*1,329.32/billing meter*	+	*200.00/month*	=	*1529.32/Month*
Rate GSG-2 [2]	NA		*NA*		*NA*
Rate GML [2] [3]	NA		*NA*		*NA*
Rate GUL [2] [3]	NA		*NA*		*NA*
Rate GU-XL [2] [3]	NA		*NA*		*NA*
Rate GU	NA		*NA*		*NA*
Rate PA	NA		*NA*		*NA*
Rate ROA-R, ROA-S, ROA-P	Same as Full Service Delivery Rate Schedule		*Same as Full Service Delivery Rate Schedule*		*Same as Full Service Delivery Rate Schedule*

[1] This is subject to all general terms and conditions as shown in Rule C12, Energy Efficiency. The Energy Efficiency Program Surcharge amount may vary during specific months as authorized by the Michigan Public Service Commission. The Company will file a new tariff sheet to reflect any change in surcharges once the financial incentive recovery period has been completed.
[2] Additional Rate Schedules can opt-in to the Energy Efficiency Program as described in Rule C12, Energy Efficiency.
[3] Lighting rates that choose to opt-in to the Energy Efficiency Program shall be assessed $0.27 per fixture per month.
[4] This charge will be shown on the monthly utility bill using the methodology as described in Rule C12, Energy Efficiency.

SURCHARGES

Rate Schedule	**Energy Efficiency Self-Directed Customer Surcharge (Case No. U-20372) Effective beginning the January 2020 Billing Month[1]**		*System Access Charge for each Non-Residential Rate Schedule*		*Total System Access Charge [2]*
Residential Rates	N/A				
Rate GS *and* GSTU					
Tier 1: 0-1250 kWh/mo.	$ 0.84/billing meter	+	*$ 20.00/month*	=	*$ 20.84/month*
Tier 2: 1,251 – 5000 kWh/mo.	3.41/billing meter	+	*20.00/month*	=	*23.41/month*
Tier 3: 5,001 – 30,000 kWh/mo.	11.50/billing meter	+	*20.00/month*	=	*31.50/month*
Tier 4: 30,001 – 50,000 kWh/mo.	16.38/billing meter	+	*20.00/month*	=	*36.38/month*
Tier 5: >50,000 kWh/mo.	25.79/billing meter	+	*20.00/month*	=	*45.79/month*
Rate GSD					
Tier 1: 0-1250 kWh/mo.	*$ 0.84/billing meter*	+	*$ 30.00/month*	=	*$ 30.84/month*
Tier 2: 1,251 – 5000 kWh/mo.	*3.41/billing meter*	+	*30.00/month*	=	*33.41/month*
Tier 3: 5,001 – 30,000 kWh/mo.	*11.50/billing meter*	+	*30.00/month*	=	*41.50/month*
Tier 4: 30,001 – 50,000 kWh/mo.	*16.38/billing meter*	+	*30.00/month*	=	*46.38/month*
Tier 5: >50,000 kWh/mo.	*25.79/billing meter*	+	*30.00/month*	=	*55.79/month*
Rate GP					
Tier 1: 0-1250 kWh/mo.	$ 0.99/billing meter	+	*$ 100.00/month*	=	*$ 100.99/month*
Tier 2: 1,251 – 5000 kWh/mo.	3.49/billing meter	+	*100.00/month*	=	*103.49/month*
Tier 3: 5,001 – 30,000 kWh/mo.	16.16/billing meter	+	*100.00/month*	=	*116.16/month*
Tier 4: 30,001 – 50,000 kWh/mo.	36.29/billing meter	+	*100.00/month*	=	*136.29/month*
Tier 5: >50,000 kWh/mo.	64.72/billing meter	+	*100.00/month*	=	*164.72/month*
Rate GPD, GPTU, and EIP					
Tier 1: 0-1250 kWh/mo.	*$ 0.99/billing meter*	+	*$ 200.00/month*	=	*$ 200.99/month*
Tier 2: 1,251 – 5000 kWh/mo.	*3.49/billing meter*	+	*200.00/month*	=	*203.49/month*
Tier 3: 5,001 – 30,000 kWh/mo.	*16.16/billing meter*	+	*200.00/month*	=	*216.16/month*
Tier 4: 30,001 – 50,000 kWh/mo.	*36.29/billing meter*	+	*200.00/month*	=	*236.29/month*
Tier 5: >50,000 kWh/mo.	*64.72/billing meter*	+	*200.00/month*	=	*264.72/month*
Rate GSG-2	N/A		*N/A*		*N/A*
Rate GML	N/A		*N/A*		*N/A*
Rate GUL	N/A		*N/A*		*N/A*
Rate GU-XL	N/A		*N/A*		*N/A*
Rate GU	N/A		*N/A*		*N/A*
Rate PA	N/A		*N/A*		*N/A*
Rate ROA-R, ROA-S, ROA-P	Same as Full Service Delivery Rate Schedule		*Same as Full Service Delivery Rate Schedule*		*Same as Full Service Delivery Rate Schedule*

[1] An eligible customer who files and implements a self-directed plan in compliance with Rule C12 is required to pay the Energy Efficiency Self-Directed Program Surcharge.

[2] *This charge will be shown on the monthly utility bill using the methodology as described in Rule C12, Energy Efficiency.*

GENERAL UNMETERED EXPERIMENTAL LIGHTING RATE GU-XL

(Continued From Sheet No. D-54.01)

Facilities Policy (Contd)

Company-Owned Option (Contd)

D. The Company will determine the type and size of all experimental lighting fixtures to be offered under this rate. The list of approved fixtures is subject to modification at the sole discretion of the Company to accommodate new product development and advances in technology. Upon customer request, the Company shall provide a list of experimental lighting available under this rate.

E. The Company shall determine all associated equipment necessary to provide service under the Company-Owned Unmetered Experimental Lighting option.

F. Any charges, deposits or contributions may be required in advance of commencement of construction.

G. At the Company's discretion, any failed lighting fixtures may be converted to an equivalent LED at no cost to the customer if the customer agrees to the conversion. The replaced fixture will then be moved to General Unmetered Experimental Lighting Rate GU-XL upon completion of the installation.

Customer-Owned Option

If it is necessary for the Company to install distribution facilities to serve a customer-owned system, contributions and/or deposits for such additional facilities shall be calculated in accordance with the Company's general service line extension policy. Any charges, deposits or contributions may be required in advance of commencement of construction.

Monthly Rate

Power Supply Charges

Energy Charge:

Non-Capacity	Capacity	Total	
$ 0.048281	$ 0.000000	$0.048281	per kWh for all kWh

This rate is subject to the Power Supply Cost Recovery (PSCR) Factor shown on Sheet No. D-4.00.

Delivery Charges Customer-Owned Option

Distribution Charge:	$0.025336	per kWh for all kWh
Fixture Charge per Luminaire:	*$0.00*	*per month*

Delivery Charges Company-Owned Option

Distribution Charge:	$0.031076	per kWh for all kWh
Fixture Charge per Luminaire:	$6.00	per month

This rate is subject to the Surcharges shown on Sheet Nos. D-2.00 through D-3.10 and the Securitization Charges shown on Sheet Nos. D-5.00 and D-5.10. Rate GUL Energy Efficiency Program opt-in customers shall pay monthly the Energy Efficiency Program Surcharge once they have converted to Rate GU-XL.

General Terms

This rate is subject to all general terms and conditions shown on Sheet No. D-1.00.

Due Date and Late Payment Charge

The due date of the customer bill shall be 21 days from the date of mailing. A late payment charge of 2% of the unpaid balance, net of taxes, shall be assessed to any bill which is not paid on or before the due date shown thereon.

Determination of Monthly Kilowatt-Hours and Burning Hours per Month Based on 4,200 Burning Hours per Year

The monthly kilowatt-hours shall be determined by multiplying the total capacity requirements in watts (including the lamps, ballasts, drivers, and control devices) times the monthly Burning Hours as defined below divided by 1,000. The customer shall not change the capacity requirements of the equipment owned by it without first notifying the Company in writing of such changes and the date that they shall be made, and modifying the lighting contract with the Company accordingly.

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
457.8	382.2	369.6	306.6	264.6	226.8	252.0	298.2	336.0	399.0	432.6	474.6	4,200

Hours of Lighting

Unmetered Experimental Lighting shall be burning at all times when the natural general level of illumination is lower than about 3/4 footcandle, and under normal conditions this is approximately one-half hour after sunset until approximately one-half hour before sunrise. Lighting service will be supplied from dusk to dawn every night and all night on an operating schedule of approximately 4,200 hours per year.

(Continued on Sheet No. D-54.03)

SURCHARGE

Each Rate Schedule may be subject to Rule No. C8., Customer Attachment Program.

Rate Schedule	**Energy Efficiency[1] Program Surcharge (Case No. U-~~20028~~ *20372*) Effective beginning the[2] January ~~2019~~ *2020* Billing Month[2]**	**~~Energy Efficiency Large Gas Transportation Opt-Out Pilot Program Surcharge (Case No. U-16670)[3]~~**
Rate A	$~~0.2367~~ *0.2599*/Mcf	~~NA~~
Rate A-1	~~0.2367~~ *0.2599* /Mcf	~~NA~~
Rate GS-1	~~0.3496~~ *0.4248* /Mcf	~~NA~~
Rate GS-2	~~0.3496~~ *0.4248* /Mcf	~~NA~~
Rate GS-3		
0 – 100,000 / Year	~~0.3496~~ *0.4248* /Mcf	~~NA~~
> 100,000 / Year	~~0.0117~~ *0.0137* /Mcf	~~NA~~
Rate GL	NA	~~NA~~
Rate ST		
0 – 100,000 / Year	~~0.3496~~ *0.4248* /Mcf	~~NA~~
> 100,000 / Year	~~0.0117~~ *0.0137* /Mcf	~~$0.0018/Mcf~~
Rate LT		
0 – 100,000 / Year	~~0.3496~~ *0.4248* /Mcf	~~NA~~
> 100,000 / Year	~~0.0117~~ *0.0137* /Mcf	~~0.0018/Mcf~~
Rate XLT		
0 – 100,000 / Year	~~0.3496~~ *0.4248* /Mcf	~~NA~~
> 100,000 / Year	~~0.0117~~ *0.0137* /Mcf	~~0.0018/Mcf~~
Rate XXLT		
0 – 100,000 / Year	NA	~~NA~~
> 100,000 / Year	~~0.0117~~ *0.0137* /Mcf	~~0.0018/Mcf~~
Rate CC	Per applicable distribution Rate Schedule	~~NA~~

(1) All surcharges shall be applied on a monthly basis. The customer's consumption will be reviewed annually in the January bill month. Following the annual review, the customer may be subsequently moved to the surcharge level for their applicable rate for the next billing period based on the customer's average consumption for the previous year. No retroactive adjustment will be made due to the application of EE surcharges associated with increases or decreases in consumption.

(2) An Energy Efficiency Program Surcharge amount may vary during specific months as authorized by the Michigan Public Service Commission. The Company will file a new tariff sheet to reflect any change in surcharges once the financial incentive recovery period has been completed.

~~(3) Gas Transportation customers on Rate ST, LT, XLT, or XXLT using more than 100,000 Mcf per year may be eligible to opt-out of the Energy Efficiency program. Eligible customers who elect to opt-out of the Energy Efficiency program will pay the Energy Efficiency Large Gas Transportation Opt-Out Pilot Program surcharge per Mcf on a monthly basis. Eligibility is determined solely by the Company and is dependent upon terms and conditions of the Energy Efficiency Large Gas Transportation Customer Opt-Out Pilot Program as authorized in the April 17, 2012 order in Case No. U-16670.~~

SURCHARGE

Each Rate Schedule may be subject to Rule No. C8., Customer Attachment Program.

Rate Schedule	***Energy Efficiency Large Gas Transportation Opt-Out Program Surcharge (Case No. U-20372) Effective Beginning the January 2020 Billing Month*** [(1)]
Rate A	*NA*
Rate A-1	*NA*
Rate GS-1	*NA*
Rate GS-2	*NA*
Rate GS-3	*NA*
Rate GL	*NA*
Rate ST	
> 100,000 / Year	*$0.0031/Mcf*
Rate LT	
> 100,000 / Year	*0.0031/Mcf*
Rate XLT	
> 100,000 / Year	*0.0031/Mcf*
Rate XXLT	
> 100,000 / Year	*0.0031/Mcf*
Rate CC	*NA*

[(1)] *Gas Transportation customers on Rate ST, LT XLT, or XXLT using more than 100,000 Mcf per year may be eligible to opt-out of the Energy Efficiency program. Eligible customers who elect to opt-out of the Energy Efficiency program will pay the Energy Efficiency Large Gas Transportation Opt-Out Program surcharge per Mcf on a monthly basis. Eligibility is determined solely by the Company and is dependent upon terms and conditions of the Energy Efficiency Large Gas Transportation Customer Opt-Out Program as authorized in the April 17, 2012 order in Case No. U-16670.*

SURCHARGE

Each Rate Schedule may be subject to Rule No. C8., Customer Attachment Program.

Rate Schedule	Energy Efficiency [1] Program Surcharge (Case No. U-20372) Effective beginning the January 2020 Billing Month [2]		Distribution Charge per Mcf for all Mcf		Total Distribution Charge [3]
Rate A	$0.2599/Mcf	+	*$3.0031/Mcf*	=	*$3.2630/Mcf*
Rate A-1	0.2599/Mcf	+	*3.0031/Mcf*	=	*3.2630/Mcf*
Rate GS-1	0.4248/Mcf	+	*2.5133/Mcf*	=	*2.9381/Mcf*
Rate GS-2	0.4248/Mcf	+	*1.9517/Mcf*	=	*2.3765/Mcf*
Rate GS-3					
0 – 100,000 / Year	0.4248/Mcf	+	*1.4608/Mcf*	=	*1.8856/Mcf*
> 100,000 / Year	0.0137/Mcf	+	*1.4608/Mcf*	=	*1.4745/Mcf*
Rate GL	NA				
Rate ST			Transportation Charge per Mcf for all Mcf		Total Transportation Charge [3]
0 – 100,000 / Year	0.4248/Mcf	+	*$1.0705/Mcf*	=	*$1.4953/Mcf*
> 100,000 / Year	0.0137/Mcf	+	*1.0705/Mcf*	=	*1.0842/Mcf*
Rate LT					
0 – 100,000 / Year	0.4248/Mcf	+	*0.7932/Mcf*	=	*1.2180/Mcf*
> 100,000 / Year	0.0137/Mcf	+	*0.7932/Mcf*	=	*0.8069/Mcf*
Rate XLT					
0 – 100,000 / Year	0.4248/Mcf	+	*0.6969/Mcf*	=	*1.1217/Mcf*
> 100,000 / Year	0.0137/Mcf	+	*0.6969/Mcf*	=	*0.7106/Mcf*
Rate XXLT					
0 – 100,000 / Year	NA		*NA*		*NA*
> 100,000 / Year	0.0137/Mcf	+	*0.5394/Mcf*	=	*0.5531/Mcf*
Rate CC	Per applicable distribution Rate Schedule				

[1] All surcharges shall be applied on a monthly basis. The customer's consumption will be reviewed annually in the January bill month. Following the annual review, the customer may be subsequently moved to the surcharge level for their applicable rate for the next billing period based on the customer's average consumption for the previous year. No retroactive adjustment will be made due to the application of EE surcharges associated with increases or decreases in consumption.

[2] An Energy Efficiency Program Surcharge amount may vary during specific months as authorized by the Michigan Public Service Commission. The Company will file a new tariff sheet to reflect any change in surcharges once the financial incentive recovery period has been completed.

[3] The Energy Efficiency Program Surcharge and either the Distribution or Transportation Charge per Mcf for all Mcf for each rate will be added and shown as above on the monthly utility bill for all customers.

SURCHARGE

Each Rate Schedule may be subject to Rule No. C8., Customer Attachment Program.

Rate Schedule	Energy Efficiency Large Gas Transportation Opt-Out Program Surcharge [1] (Case No. U-20372) Effective beginning the January 2020 Billing Month		*Transportation Charge per Mcf for all Mcf*		*Total Transportation Charge [2]*
Rate A	NA		*NA*		*NA*
Rate A-1	NA		*NA*		*NA*
Rate GS-1	NA		*NA*		*NA*
Rate GS-2	NA		*NA*		*NA*
Rate GS-3	NA		*NA*		*NA*
Rate GL	NA		*NA*		*NA*
Rate ST					
> 100,000 / Year	$0.0031/Mcf	+	*$1.0705/Mcf*	=	*$1.0736/Mcf*
Rate LT					
> 100,000 / Year	0.0031/Mcf	+	*0.7932/Mcf*	=	*0.7963/Mcf*
Rate XLT					
> 100,000 / Year	0.0031/Mcf	+	*0.6969/Mcf*	=	*0.7000/Mcf*
Rate XXLT					
> 100,000 / Year	0.0031/Mcf	+	*0.5394/Mcf*	=	*0.5425/Mcf*
Rate CC	N/A				

[1] Gas Transportation customers on Rate ST, LT, XLT, or XXLT using more than 100,000 Mcf per year may be eligible to opt-out of the Energy Efficiency program. Eligible customers who elect to opt-out of the Energy Efficiency program will pay the Energy Efficiency Large Gas Transportation Opt-Out Program surcharge per Mcf on a monthly basis. *This surcharge will be added to the Transportation charge for each applicable Rate Schedule.* Eligibility is determined solely by the Company and is dependent upon terms and conditions of the Energy Efficiency Large Gas Transportation Customer Opt-Out Program as authorized in the April 17, 2012 order in Case No. U-16670.

[2] *The Energy Efficiency Large Gas Transportation Opt-Out Program Surcharge and the Transportation Charge per Mcf for all Mcf will be added and shown as above on the monthly utility bill for all customers.*

S T A T E O F M I C H I G A N

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

DIRECT TESTIMONY

OF

SVITLANA LYKHYTSKA

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

Q. Please state your name and business address.

A. My name is Svitlana Lykhytska. My business address is One Energy Plaza, Jackson, Michigan, 49201.

Q. Please describe your position and responsibilities.

A. I am employed by Consumers Energy Company ("Consumers Energy" or the "Company") as a Principal Accounting Analyst in the General Accounting Department. I am responsible for analyzing financial results for the Company.

Q. Please describe your education and professional experience.

A. I received a bachelor's degree and a qualification of Engineer - Economist (with a specialization in Economics and Organization of Consumer Goods Industry) from the Technologic Institute of Light Industry of Kiev, Ukraine in 1988. In 2002, I received a Bachelor of Science in Business Administration in Accounting from Michigan State University. In 2002, I started my career at Consumers Energy in the General Accounting Department where I progressed from Accounting Analyst in 2002 to Senior Accounting Analyst Lead in 2014 and Principal Accounting Analyst in 2016. I obtained my Certified Management Accountant and Certified Financial Manager certifications in 2007.

Q. Have you provided testimony before the Michigan Public Service Commission ("MPSC" or the "Commission")?

A. Yes, I have provided testimony in the following cases:

Case No.	Description
U-17831	2014 Energy Optimization Plan Reconciliation;
U-18025	2015 Energy Optimization Plan Reconciliation;
U-18261	2018-2021 Energy Waste Reduction Plan;
U-18331	2016 Energy Optimization Plan Reconciliation;

U-20028 2017 Energy Waste Reduction Plan Reconciliation;

U-20365 2018 Energy Waste Reduction Plan Reconciliation; and

U-20563 2018 Demand Response Program Cost Reconciliation.

Q. What is the purpose of your direct testimony?

A. The purpose of my direct testimony is to provide the methodology and calculation of the Company's accounting process associated with its Electric and Gas Energy Waste Reduction ("EWR") programs.

Q. Are you sponsoring any exhibits with your direct testimony?

A. Yes, I am sponsoring two exhibits.

Exhibit A-16 (SL-1) 2018 EWR Electric Cumulative Over/Under Recovery; and

Exhibit A-17 (SL-2) 2018 EWR Gas Cumulative Over/Under Recovery.

Q. Have these exhibits been prepared by you or under your supervision?

A. Yes.

Q. What information is provided in these exhibits?

A. Exhibits A-16 (SL-1) and A-17 (SL-2) provide accounting data (by month and customer class) for the Electric and Gas EWR programs including surcharges billed, costs incurred, and over/under recovery balances with carrying costs.

Q. What surcharge amounts were billed to customers in 2018?

A. In accordance with the tariff sheets on file with the Commission, the Company began billing customers in June 2009 for EWR surcharges. In 2018, the Company billed $123,448,707 in total to electric customers (Exhibit A-16 (SL-1), page 1, line 1). These surcharges are split between Residential class customers and Commercial and Industrial ("C&I") class customers in the amounts of $33,600,197 and $89,848,510, respectively.

In 2018, the Company billed $61,063,103 in total to gas customers (Exhibit A-17 (SL-2), page 1, line 1). These surcharges are split between Residential and C&I customer classes in the amounts of $33,164,181 and $27,898,922, respectively.

Q. What program costs were booked in 2018?

A. In 2018, the Company booked $117,320,577 of program costs for the Electric EWR program (Exhibit A-16 SL-1, page 1, line 2). These costs are split between Residential and C&I customer classes in the amounts of $36,230,711 and $81,089,866, respectively. In 2018, the Company booked $54,133,658 of program costs for the Gas EWR program (Exhibit A-17 SL-2, page 1, line 2). These costs are split between Residential and C&I customer classes in the amounts of $37,788,271 and $16,345,387, respectively.

Q. What is the Low-Income Accounting Adjustment?

A. The December 22, 2015 Order in Case No. U-17771 approved a four-year, low-income adjustment to correctly allocate 2009 through 2014 low income costs collected from C&I customers to residential customers.

Q. What information is provided on the Low-Income Accounting Adjustment line in Exhibits A-16 (SL-1) and A-17 (SL-2)?

A. Information provided on line 3 of Exhibits A-16 (SL-1) and A-17 (SL-2) shows the low-income accounting adjustment component of the surcharges billed to C&I customers monthly. To accurately match monthly surcharges to approved recovery amounts by customers' classes, the low-income accounting adjustment component should be added to residential and subtracted from C&I customers' surcharge revenue.

Q. What information is provided on the Annual transfer of Low-Income Funding line in Exhibits A-16 (SL-1) and A-17 (SL-2)?

A. Public Act 295 of 2008 requires all customer classes to fund their share of the cost of the residential low-income programs. Information provided on line 3 of Exhibits A-16 (SL-1) and A-17 (SL-2) shows monthly collections from C&I customers on behalf of low-income residential programs. To accurately match monthly surcharges to approved recovery amounts by customers' classes, the funding amount should be added to Residential and subtracted from C&I customers' surcharge revenue.

Q. Will the low-income adjustment continue beyond 2019?

A. No. This low-income adjustment concludes December 31, 2019, and as such, beginning in 2020, will no longer be included in the levelized surcharges to recover gas and electric EWR program costs.

Q. How are over/under-recovery amounts calculated?

A. The incremental over/under-recovery amount is a difference between Lines 1 and 2 with amounts on Lines 3 and 4 added to the difference. (Exhibits A-16 (SL-1) and A-17 (SL-2), page 1, line 5). This total is added to the prior year-end over/under-recovery amount calculated in the same manner plus the prior year interest recorded on the over/under recovery-balance. If, since program inception, the Company has collected more in total surcharges than costs incurred, the Company has over recovered. In that case, excess revenues are deferred and a regulatory liability is recorded. Conversely, if, since program inception, the Company has incurred more costs than surcharges collected, the Company has under recovered its costs. In that case, excess costs are deferred and a regulatory asset is recorded.

Q. What are the over/under-recovery balances in the regulatory asset and/or regulatory liability accounts associated with the EWR program as of December 31, 2018?

A. In the electric EWR program, for the 2018 reconciliation period, total revenue exceeded total booked costs resulting in an over recovery in all customer classes in the amount of $6,128,130 (Exhibit A-16 (SL-1), page 1, line 5). The Residential program resulted in an over recovery in the amount of $3,183,361, and the C&I program resulted in an over recovery in the amount of $2,944,769. The prior year under-recovery balance and interest carried forward into 2018 were $22,343,111 and $4,784 respectively (Exhibit A-16 (SL-1), page 1, lines 6 and 7). As a result, the total under-recovery balance as of the end of December 2018 is $16,219,765 (Exhibit A-16 (SL-1), page 1, line 9). The total includes $4,379,222 over recovery for Residential and $20,598,987 under recovery for C&I class of customers.

In the Gas EWR program, 2018 total surcharges exceeded total booked cost resulting in an over recovery in the amount of $6,929,445 (Exhibit A-17 (SL-2), page 1, line 5) split between Residential and C&I in the amounts of $3,938,626 and $2,990,819 respectively. The prior year under-recovery balance and interest carried forward into 2018 were $16,271,021 and $17,589 (Exhibit A-17 (SL-2), page 1, lines 6 and 7). As a result, the total under-recovery balance as of the end of December 2018 is $9,359,165 (Exhibit A-17 (SL-2), page 1, line 9) split between Residential and C&I customer classes in the amounts of $2,562,159 and $6,797,006, respectively.

Q. Have carrying costs on over/under-recovery balances been recorded and at what interest rate?

A. Yes, the Company records carrying costs on over/under-recovery balances per the Commission's Order in Case No. U-15805. The carrying cost rate used for both over and under-recovery balances is the Company's short-term borrowing rate. In 2018, carrying costs were recorded for the Electric EWR program in the amount of $223,177 (Exhibit A-16 (SL-1), page 1, line 10). For the same period of 2018, carrying costs were recorded for the Gas EWR program in the amount of $65,256 (Exhibit A-17 (SL-2), page 1, line 10).

Q. Does this conclude your direct testimony?

A. Yes.

S T A T E O F M I C H I G A N

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

EXHIBITS

OF

SVITLANA LYKHYTSKA

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
2018 EWR Electric Cummulative Over (Under) Recovery (By Class and Total)

Case No.: U-20372
Exhibit No.: A-16 (SL-1)

Witness: SLykhytska
Date: August 2019

	(a)	(b)	Date: (c)	Aug-19 (d)
Line	**Description**	**Residential**	**C&I**	**Total**
	Annual Summary			
1	Surcharge Revenue	$ 33,600,197	$ 89,848,510	$ 123,448,707
2	Program Expenses	$ 36,230,711	$ 81,089,866	$ 117,320,577
3	2009 - 2014 Low-Income Accounting Adjustment (1)	$ 1,952,954	$ (1,952,954)	$ -
4	Annual Transfer of Low-Income Funding	$ 3,860,921	$ (3,860,921)	$ -
5	Change in Over (Under) Recovery	$ 3,183,361	$ 2,944,769	$ 6,128,130
	Program Over/(Under) Recovery			
6	Over (Under) Recovery Beginning Balance	$ 1,160,409	$ (23,503,520)	$ (22,343,111)
7	Prior Year Carrying Charges	35,452	(40,236)	(4,784)
8	Change in Balance	3,183,361	2,944,769	6,128,130
9	Over (Under) Recovery Ending Balance	$ 4,379,222	$ (20,598,987)	$ (16,219,765)
	Carrying Charges			
10	Carrying Charges, Cumulative	$ 101,305	$ (324,482)	$ (223,177)
11	Cumulative Over (Under) Recovery	$ 4,480,527	$ (20,923,469)	$ (16,442,942)
12	Annual Interest Rate	2.10%	2.10%	2.10%

Notes:
(1) The low-income accounting adjustment refunded to Residential customers is $2,030,477. $77,524 difference is due to a timing of billing and it will be eliminated in future billing periods. The cumulative difference is $133,452.

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
2018 EWR Electric Cummulative Over (Under) Recovery (By Class and Total)

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
Line	**Description**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**	**Source**
	Residential														
1	Surcharge Revenue	$ 3,520,936	$ 2,759,995	$ 2,520,314	$ 2,522,025	$ 2,184,324	$ 2,705,879	$ 3,438,959	$ 3,258,369	$ 3,121,014	$ 2,328,858	$ 2,391,068	$ 2,848,456	$ 33,600,197	Per Books
2	Program Expenses	$ 2,263,345	$ 2,145,691	$ 2,928,869	$ 2,237,352	$ 2,551,684	$ 3,438,624	$ 2,906,734	$ 2,632,017	$ 3,135,309	$ 3,199,673	$ 3,676,373	$ 5,115,040	$ 36,230,711	Per Books
3	2009 - 2014 Low-Income Accounting Adjustment	$ 166,110	$ 164,836	$ 164,081	$ 161,675	$ 165,094	$ 162,567	$ 162,649	$ 161,861	$ 160,889	$ 160,150	$ 158,866	$ 164,176	$ 1,952,954	Per Books
4	Annual Transfer of Low-Income Funding	$ 198,365	$ 201,103	$ 225,191	$ 211,699	$ 263,733	$ 205,550	$ 352,130	$ 261,106	$ 261,983	$ 377,409	$ 549,542	$ 753,110	$ 3,860,921	
5	Change in Over (Under) Recovery	$ 1,622,066	$ 980,243	$ (19,283)	$ 658,047	$ 61,467	$ (364,628)	$ 1,047,004	$ 1,049,319	$ 408,577	$ (333,256)	$ (576,897)	$ (1,349,298)	$ 3,183,361	Line 1 - Line 2 + Line 3 + Line 4
	Program Over/(Under) Recovery														
6	Over (Under) Recovery Beg.Bal.	$ 1,160,409	$ 2,817,927	$ 3,798,170	$ 3,778,887	$ 4,436,934	$ 4,498,401	$ 4,133,773	$ 5,180,777	$ 6,230,096	$ 6,638,673	$ 6,305,417	$ 5,728,520		Line 9 Prior Month/Year
7	Prior Year Carrying Charges	35,452	-	-	-	-	-	-	-	-	-	-	-		Prior Year Ending
8	Change in Balance	1,622,066	980,243	(19,283)	658,047	61,467	(364,628)	1,047,004	1,049,319	408,577	(333,256)	(576,897)	(1,349,298)		Line 5
9	Over (Under) Recovery Ending Bal.	$ 2,817,927	$ 3,798,170	$ 3,778,887	$ 4,436,934	$ 4,498,401	$ 4,133,773	$ 5,180,777	$ 6,230,096	$ 6,638,673	$ 6,305,417	$ 5,728,520	$ 4,379,222		Line 6 + Line 7 + Line 8
10	Over (Under) Recovery Average Bal.	$ 2,006,894	$ 3,308,049	$ 3,788,529	$ 4,107,911	$ 4,467,668	$ 4,316,087	$ 4,657,275	$ 5,705,437	$ 6,434,385	$ 6,472,045	$ 6,016,969	$ 5,053,871		Line 6 + Line 7 + (Line 8 / 2)
	Carrying Charges														
11	Carrying Charges, Monthly	$ 2,907	$ 4,648	$ 5,415	$ 6,501	$ 7,429	$ 7,350	$ 8,416	$ 10,418	$ 12,182	$ 12,257	$ 12,012	$ 11,770		Line 10 x Line 15
12	Carrying Charges, Cumulative	$ 2,907	$ 7,555	$ 12,970	$ 19,471	$ 26,900	$ 34,250	$ 42,666	$ 53,084	$ 65,266	$ 77,523	$ 89,535	$ 101,305	$ 101,305	Cumulative Line 11
13	Cumulative Over (Under) Recovery	$ 2,820,834	$ 3,805,725	$ 3,791,857	$ 4,456,405	$ 4,525,301	$ 4,168,023	$ 5,223,443	$ 6,283,180	$ 6,703,939	$ 6,382,940	$ 5,818,055	$ 4,480,527	$ 4,480,527	Line 9 + Line 12
14	**Annual Interest Rate**	1.7384%	1.6859%	1.7153%	1.8991%	1.9954%	2.0436%	2.1684%	2.1911%	2.2720%	2.2725%	2.3957%	2.7946%	2.0977%	Treasury
15	Monthly Interest Rate	0.1449%	0.1405%	0.1429%	0.1583%	0.1663%	0.1703%	0.1807%	0.1826%	0.1893%	0.1894%	0.1996%	0.2329%		Line 14/ 12

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
2018 EWR Electric Cummulative Over (Under) Recovery (By Class and Total)

Case No.: U-20372
Exhibit No.: A-16 (SL-1)
Page: 3 of 4
Witness: SLykhytska
Date: August 2019

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
Line	Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Source
	C&I														
1	Surcharge Revenue	$ 5,455,745	$ 7,799,604	$ 7,777,822	$ 7,666,382	$ 7,823,234	$ 7,706,377	$ 7,710,634	$ 7,675,755	$ 7,627,681	$ 7,593,393	$ 7,546,135	$ 7,465,748	$ 89,848,510	Per Books
2	Program Expenses	$ 8,040,321	$ 4,584,700	$ 5,254,553	$ 5,632,727	$ 5,020,876	$ 5,066,155	$ 4,638,803	$ 4,095,786	$ 5,933,816	$ 6,430,655	$ 8,716,214	$ 17,675,260	$ 81,089,866	Per Books
3	2009-2014 Low-Income Accounting Adjustment	$ (166,110)	$ (164,836)	$ (164,081)	$ (161,675)	$ (165,094)	$ (162,567)	$ (162,649)	$ (161,861)	$ (160,889)	$ (160,150)	$ (158,866)	$ (164,176)	$ (1,952,954)	Per Books
4	Annual Transfer of Low-Income Funding	$ (198,365)	$ (201,103)	$ (225,191)	$ (211,699)	$ (263,733)	$ (205,550)	$ (352,130)	$ (261,106)	$ (261,983)	$ (377,409)	$ (549,542)	$ (753,110)	$ (3,860,921)	
5	Change in Over (Under) Recovery	$ (2,949,051)	$ 2,848,965	$ 2,133,997	$ 1,660,281	$ 2,373,531	$ 2,272,105	$ 2,557,052	$ 3,157,002	$ 1,270,993	$ 625,179	$ (1,878,487)	$ (11,126,798)	$ 2,944,769	Line 1 - Line 2 + Line 3 + Line 4
	Program Over/(Under) Recovery														
6	Over (Under) Recovery Beg.Bal.	$ (23,503,520)	$ (26,492,807)	$ (23,643,842)	$ (21,509,845)	$ (19,849,564)	$ (17,476,033)	$ (15,203,928)	$ (12,646,876)	$ (9,489,874)	$ (8,218,881)	$ (7,593,702)	$ (9,472,189)		Line 9 Prior Month/Year
7	Prior Year Carrying Charges	(40,236)	-	-	-	-	-	-	-	-	-	-	-		Prior Year Ending
8	Change in Balance	(2,949,051)	2,848,965	2,133,997	1,660,281	2,373,531	2,272,105	2,557,052	3,157,002	1,270,993	625,179	(1,878,487)	(11,126,798)		Line 5
9	Over (Under) Recovery Ending Bal.	$ (26,492,807)	$ (23,643,842)	$ (21,509,845)	$ (19,849,564)	$ (17,476,033)	$ (15,203,928)	$ (12,646,876)	$ (9,489,874)	$ (8,218,881)	$ (7,593,702)	$ (9,472,189)	$ (20,598,987)		Line 6 + Line 7 + Line 8
10	Over (Under) Recovery Average Bal.	$ (25,018,282)	$ (25,068,325)	$ (22,576,844)	$ (20,679,705)	$ (18,662,799)	$ (16,339,981)	$ (13,925,402)	$ (11,068,375)	$ (8,854,378)	$ (7,906,292)	$ (8,532,946)	$ (15,035,588)		Line 6 + Line 7 + (Line 8 / 2)
	Carrying Charges														
11	Carrying Charges, Monthly	$ (36,243)	$ (35,219)	$ (32,272)	$ (32,727)	$ (31,034)	$ (27,827)	$ (25,163)	$ (20,210)	$ (16,764)	$ (14,973)	$ (17,035)	$ (35,015)		Line 10 x Line 15
12	Carrying Charges, Cumulative	$ (36,243)	$ (71,462)	$ (103,734)	$ (136,461)	$ (167,495)	$ (195,322)	$ (220,485)	$ (240,695)	$ (257,459)	$ (272,432)	$ (289,467)	$ (324,482)	$ (324,482)	Cumulative Line 11
13	Cumulative Over (Under) Recovery	$ (26,529,050)	$ (23,715,304)	$ (21,613,579)	$ (19,986,025)	$ (17,643,528)	$ (15,399,250)	$ (12,867,361)	$ (9,730,569)	$ (8,476,340)	$ (7,866,134)	$ (9,761,656)	$ (20,923,469)	$ (20,923,469)	Line 9 + Line 12
14	Annual Interest Rate	1.7384%	1.6859%	1.7153%	1.8991%	1.9954%	2.0436%	2.1684%	2.1911%	2.2720%	2.2725%	2.3957%	2.7946%	2.0977%	Treasury
15	Monthly Interest Rate	0.1449%	0.1405%	0.1429%	0.1583%	0.1663%	0.1703%	0.1807%	0.1826%	0.1893%	0.1894%	0.1996%	0.2329%		Line 14/ 12

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
2018 EWR Electric Cummulative Over (Under) Recovery (By Class and Total)

Case No.: U-20372
Exhibit No.: A-16 (SL-1)
Page: 4 of 4
Witness: SLykhytska
Date: August 2019

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
Line	**Description**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
	Grand Total													
1	Surcharge Revenue	$ 8,976,681	$ 10,559,599	$ 10,298,136	$ 10,188,407	$ 10,007,558	$ 10,412,256	$ 11,149,593	$ 10,934,124	$ 10,748,695	$ 9,922,251	$ 9,937,203	$ 10,314,204	$ 123,448,707
2	Program Expenses	$ 10,303,666	$ 6,730,391	$ 8,183,422	$ 7,870,079	$ 7,572,560	$ 8,504,779	$ 7,545,537	$ 6,727,803	$ 9,069,125	$ 9,630,328	$ 12,392,587	$ 22,790,300	$ 117,320,577
3	2009 - 2014 Low-Income Accounting Adjustment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Annual Transfer of Low-Income Funding	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Change in Over (Under) Recovery	$ (1,326,985)	$ 3,829,208	$ 2,114,714	$ 2,318,328	$ 2,434,998	$ 1,907,477	$ 3,604,056	$ 4,206,321	$ 1,679,570	$ 291,923	$ (2,455,384)	$ (12,476,096)	$ 6,128,130
	Program Over/(Under) Recovery													
6	Over (Under) Recovery Beg.Bal.	$ (22,343,111)	$ (23,674,880)	$ (19,845,672)	$ (17,730,958)	$ (15,412,630)	$ (12,977,632)	$ (11,070,155)	$ (7,466,099)	$ (3,259,778)	$ (1,580,208)	$ (1,288,285)	$ (3,743,669)	
7	Prior Year Carrying Charges	(4,784)	-	-	-	-	-	-	-	-	-	-	-	
8	Change in Balance	(1,326,985)	3,829,208	2,114,714	2,318,328	2,434,998	1,907,477	3,604,056	4,206,321	1,679,570	291,923	(2,455,384)	(12,476,096)	
9	Over (Under) Recovery Ending Bal.	$ (23,674,880)	$ (19,845,672)	$ (17,730,958)	$ (15,412,630)	$ (12,977,632)	$ (11,070,155)	$ (7,466,099)	$ (3,259,778)	$ (1,580,208)	$ (1,288,285)	$ (3,743,669)	$ (16,219,765)	
10	Over (Under) Recovery Average Bal.	$ (23,011,388)	$ (21,760,276)	$ (18,788,315)	$ (16,571,794)	$ (14,195,131)	$ (12,023,894)	$ (9,268,127)	$ (5,362,939)	$ (2,419,993)	$ (1,434,247)	$ (2,515,977)	$ (9,981,717)	
	Carrying Charges													
11	Carrying Charges, Monthly	$ (33,336)	$ (30,571)	$ (26,857)	$ (26,226)	$ (23,605)	$ (20,477)	$ (16,747)	$ (9,792)	$ (4,582)	$ (2,716)	$ (5,023)	$ (23,245)	
12	Carrying Charges, Cumulative	$ (33,336)	$ (63,907)	$ (90,764)	$ (116,990)	$ (140,595)	$ (161,072)	$ (177,819)	$ (187,611)	$ (192,193)	$ (194,909)	$ (199,932)	$ (223,177)	$ (223,177)
13	Cumulative Over (Under) Recovery	$ (23,708,216)	$ (19,909,579)	$ (17,821,722)	$ (15,529,620)	$ (13,118,227)	$ (11,231,227)	$ (7,643,918)	$ (3,447,389)	$ (1,772,401)	$ (1,483,194)	$ (3,943,601)	$ (16,442,942)	$ (16,442,942)
14	Annual Interest Rate	1.7384%	1.6859%	1.7153%	1.8991%	1.9954%	2.0436%	2.1684%	2.1911%	2.2720%	2.2725%	2.3957%	2.7946%	2.0977%
15	Monthly Interest Rate	0.1449%	0.1405%	0.1429%	0.1583%	0.1663%	0.1703%	0.1807%	0.1826%	0.1893%	0.1894%	0.1996%	0.2329%	

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
2018 EWR Electric Cummulative Over (Under) Recovery (By Class and Total)

Case No.: U-20372
Exhibit No.: A-17 (SL-2)

Witness: SLykhytska
Date: August 2019

	(a)	(b)	(c)	(d)
Line	**Description**	**Residential**	**C&I**	**Total**
	Annual Summary			
1	Surcharge Revenue	$ 33,164,181	$ 27,898,922	$ 61,063,103
2	Program Expenses	$ 37,788,271	$ 16,345,387	$ 54,133,658
3	2009 - 2014 Low-Income Accounting Adjustment (1)	$ 4,155,847	$ (4,155,847)	$ -
4	Annual Transfer of Low-Income Funding	$ 4,406,869	$ (4,406,869)	$ -
5	Change in Over (Under) Recovery	$ 3,938,626	$ 2,990,819	$ 6,929,445
	Program Over/(Under) Recovery			
6	Over (Under) Recovery Beginning Balance	$ (6,483,913)	$ (9,787,108)	$ (16,271,021)
7	Prior Year Carrying Charges	(16,872)	(717)	(17,589)
8	Change in Balance	3,938,626	2,990,819	6,929,445
9	Over (Under) Recovery Ending Balance	$ (2,562,159)	$ (6,797,006)	$ (9,359,165)
	Carrying Charges			
10	Carrying Charges, Cumulative	$ 30,706	$ (95,962)	$ (65,256)
11	Cumulative Over (Under) Recovery	$ (2,531,453)	$ (6,892,968)	$ (9,424,421)
12	Annual Interest Rate	2.10%	2.10%	2.10%

Notes:
(1) The low-income accounting adjustment refunded to Residential customers is $4,136,350. $19,497 difference is due to a timing of billing and it will be eliminated in future billing periods. The cumulative difference is $45,776.

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
2018 EWR Electric Cummulative Over (Under) Recovery (By Class and Total)

Case No.: U-20372
Exhibit No.: A-17 (SL-2)
Page: 2 of 4
Witness: SLykhytska
Date: August 2019

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
Line	**Description**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**	**Source**
	Residential														
1	Surcharge Revenue	$ 6,567,489	$ 5,440,891	$ 4,319,530	$ 4,104,073	$ 2,054,432	$ 778,183	$ 562,607	$ 517,120	$ 546,406	$ 912,367	$ 2,769,780	$ 4,591,303	$ 33,164,181	Per Books
2	Program Expenses	$ 2,612,783	$ 2,025,994	$ 3,239,513	$ 2,930,431	$ 2,248,913	$ 2,711,016	$ 2,959,122	$ 2,634,259	$ 2,811,320	$ 3,781,201	$ 4,092,749	$ 5,740,970	$ 37,788,271	Per Books
3	2009 - 2014 Low-Income Accounting Adjustment	$ 728,311	$ 673,337	$ 526,925	$ 492,040	$ 301,318	$ 135,523	$ 104,880	$ 99,006	$ 104,526	$ 123,400	$ 325,012	$ 541,569	$ 4,155,847	Per Books
4	Annual Transfer of Low-Income Funding	$ 210,656	$ 221,790	$ 200,979	$ 408,562	$ 247,667	$ 209,684	$ 309,333	$ 373,702	$ 268,186	$ 535,642	$ 563,440	$ 857,228	$ 4,406,869	
5	Change in Over (Under) Recovery	$ 4,893,673	$ 4,310,024	$ 1,807,921	$ 2,074,244	$ 354,504	$ (1,587,626)	$ (1,982,302)	$ (1,644,431)	$ (1,892,202)	$ (2,209,792)	$ (434,517)	$ 249,130	$ 3,938,626	Line 1 - Line 2 + Line 3 + Line 4
	Program Over/(Under) Recovery														
6	Over (Under) Recovery Beg.Bal.	$ (6,483,913)	$ (1,607,112)	$ 2,702,912	$ 4,510,833	$ 6,585,077	$ 6,939,581	$ 5,351,955	$ 3,369,653	$ 1,725,222	$ (166,980)	$ (2,376,772)	$ (2,811,289)		Line 9 Prior Month/Year
7	Prior Year Carrying Charges	(16,872)	-	-	-	-	-	-	-	-	-	-	-		Prior Year Ending
8	Change in Balance	4,893,673	4,310,024	1,807,921	2,074,244	354,504	(1,587,626)	(1,982,302)	(1,644,431)	(1,892,202)	(2,209,792)	(434,517)	249,130		Line 5
9	Over (Under) Recovery Ending Bal.	$ (1,607,112)	$ 2,702,912	$ 4,510,833	$ 6,585,077	$ 6,939,581	$ 5,351,955	$ 3,369,653	$ 1,725,222	$ (166,980)	$ (2,376,772)	$ (2,811,289)	$ (2,562,159)		Line 6 + Line 7 + Line 8
10	Over (Under) Recovery Average Bal.	$ (4,053,949)	$ 547,900	$ 3,606,873	$ 5,547,955	$ 6,762,329	$ 6,145,768	$ 4,360,804	$ 2,547,438	$ 779,121	$ (1,271,876)	$ (2,594,031)	$ (2,686,724)		Line 6 + Line 7 + (Line 8 / 2)
	Carrying Charges														
11	Carrying Charges, Monthly	$ (5,873)	$ 770	$ 5,156	$ 8,781	$ 11,245	$ 10,466	$ 7,880	$ 4,651	$ 1,475	$ (2,409)	$ (5,179)	$ (6,257)		Line 10 x Line 15
12	Carrying Charges, Cumulative	$ (5,873)	$ (5,103)	$ 53	$ 8,834	$ 20,079	$ 30,545	$ 38,425	$ 43,076	$ 44,551	$ 42,142	$ 36,963	$ 30,706	$ 30,706	Cumulative Line 11
13	Cumulative Over (Under) Recovery	$ (1,612,985)	$ 2,697,809	$ 4,510,886	$ 6,593,911	$ 6,959,660	$ 5,382,500	$ 3,408,078	$ 1,768,298	$ (122,429)	$ (2,334,630)	$ (2,774,326)	$ (2,531,453)	$ (2,531,453)	Line 9 + Line 12
14	Annual Interest Rate	1.7384%	1.6859%	1.7153%	1.8991%	1.9954%	2.0436%	2.1684%	2.1911%	2.2720%	2.2725%	2.3957%	2.7946%	2.0977%	Treasury
15	Monthly Interest Rate	0.1449%	0.1405%	0.1429%	0.1583%	0.1663%	0.1703%	0.1807%	0.1826%	0.1893%	0.1894%	0.1996%	0.2329%		Line 14/ 12

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
2018 EWR Electric Cummulative Over (Under) Recovery (By Class and Total)

Case No.: U-20372
Exhibit No.: A-17 (SL-2)
Page: 3 of 4
Witness: SLykhytska
Date: August 2019

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
Line	**Description**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**	**Source**
	C&I														
1	Surcharge Revenue	$ 3,230,406	$ 4,818,232	$ 3,794,846	$ 3,548,431	$ 2,172,022	$ 976,356	$ 755,029	$ 712,929	$ 751,785	$ 888,703	$ 2,343,495	$ 3,906,688	$ 27,898,922	Per Books
2	Program Expenses	$ 1,555,029	$ 909,905	$ 1,029,978	$ 937,600	$ 1,098,731	$ 979,644	$ 985,676	$ 1,438,040	$ 851,313	$ 1,180,603	$ 1,543,369	$ 3,835,499	$ 16,345,387	Per Books
3	2009 - 2014 Low-Income Accounting Adjustment	$ (728,311)	$ (673,337)	$ (526,925)	$ (492,040)	$ (301,318)	$ (135,523)	$ (104,880)	$ (99,006)	$ (104,526)	$ (123,400)	$ (325,012)	$ (541,569)	$ (4,155,847)	Per Books
4	Annual Transfer of Low-Income Funding	$ (210,656)	$ (221,790)	$ (200,979)	$ (408,562)	$ (247,667)	$ (209,684)	$ (309,333)	$ (373,702)	$ (268,186)	$ (535,642)	$ (563,440)	$ (857,228)	$ (4,406,869)	
5	Change in Over (Under) Recovery	$ 736,410	$ 3,013,200	$ 2,036,964	$ 1,710,229	$ 524,306	$ (348,495)	$ (644,860)	$ (1,197,819)	$ (472,240)	$ (950,942)	$ (88,326)	$ (1,327,608)	$ 2,990,819	Line 1 - Line 2 + Line 3 + Line 4
	Program Over/(Under) Recovery														
6	Over (Under) Recovery Beg.Bal.	$ (9,787,108)	$ (9,051,415)	$ (6,038,215)	$ (4,001,251)	$ (2,291,022)	$ (1,766,716)	$ (2,115,211)	$ (2,760,071)	$ (3,957,890)	$ (4,430,130)	$ (5,381,072)	$ (5,469,398)		Line 9 Prior Month/Year
7	Prior Year Carrying Charges	$ (717)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -		Prior Year Ending
8	Change in Balance	$ 736,410	$ 3,013,200	$ 2,036,964	$ 1,710,229	$ 524,306	$ (348,495)	$ (644,860)	$ (1,197,819)	$ (472,240)	$ (950,942)	$ (88,326)	$ (1,327,608)		Line 5
9	Over (Under) Recovery Ending Bal.	$ (9,051,415)	$ (6,038,215)	$ (4,001,251)	$ (2,291,022)	$ (1,766,716)	$ (2,115,211)	$ (2,760,071)	$ (3,957,890)	$ (4,430,130)	$ (5,381,072)	$ (5,469,398)	$ (6,797,006)		Line 6 + Line 7 + Line 8
10	Over (Under) Recovery Average Bal.	$ (9,419,620)	$ (7,544,815)	$ (5,019,733)	$ (3,146,137)	$ (2,028,869)	$ (1,940,964)	$ (2,437,641)	$ (3,358,981)	$ (4,194,010)	$ (4,905,601)	$ (5,425,235)	$ (6,133,202)		Line 6 + Line 7 + (Line 8 / 2)
	Carrying Charges														
11	Carrying Charges, Monthly	$ (13,646)	$ (10,600)	$ (7,175)	$ (4,979)	$ (3,374)	$ (3,305)	$ (4,405)	$ (6,133)	$ (7,941)	$ (9,290)	$ (10,831)	$ (14,283)		Line 10 x Line 15
12	Carrying Charges, Cumulative	$ (13,646)	$ (24,246)	$ (31,421)	$ (36,400)	$ (39,774)	$ (43,079)	$ (47,484)	$ (53,617)	$ (61,558)	$ (70,848)	$ (81,679)	$ (95,962)	$ (95,962)	Cumulative Line 11
13	Cumulative Over (Under) Recovery	$ (9,065,061)	$ (6,062,461)	$ (4,032,672)	$ (2,327,422)	$ (1,806,490)	$ (2,158,290)	$ (2,807,555)	$ (4,011,507)	$ (4,491,688)	$ (5,451,920)	$ (5,551,077)	$ (6,892,968)	$ (6,892,968)	Line 9 + Line 12
14	Annual Interest Rate	1.7384%	1.6859%	1.7153%	1.8991%	1.9954%	2.0436%	2.1684%	2.1911%	2.2720%	2.2725%	2.3957%	2.7946%	2.0977%	Treasury
15	Monthly Interest Rate	0.1449%	0.1405%	0.1429%	0.1583%	0.1663%	0.1703%	0.1807%	0.1826%	0.1893%	0.1894%	0.1996%	0.2329%		Line 14/ 12

MICHIGAN PUBLIC SERVICE COMMISSION
Consumers Energy Company
2018 EWR Electric Cummulative Over (Under) Recovery (By Class and Total)

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
Line	**Description**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
	Grand Total													
1	Surcharge Revenue	$ 9,797,895	$ 10,259,123	$ 8,114,376	$ 7,652,504	$ 4,226,454	$ 1,754,539	$ 1,317,636	$ 1,230,049	$ 1,298,191	$ 1,801,070	$ 5,113,275	$ 8,497,991	$ 61,063,103
2	Program Expenses	$ 4,167,812	$ 2,935,899	$ 4,269,491	$ 3,868,031	$ 3,347,644	$ 3,690,660	$ 3,944,798	$ 4,072,299	$ 3,662,633	$ 4,961,804	$ 5,636,118	$ 9,576,469	$ 54,133,658
3	2009 - 2014 Low-Income Accounting Adjustment	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Annual Transfer of Low-Income Funding	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Change in Over (Under) Recovery	$ 5,630,083	$ 7,323,224	$ 3,844,885	$ 3,784,473	$ 878,810	$ (1,936,121)	$ (2,627,162)	$ (2,842,250)	$ (2,364,442)	$ (3,160,734)	$ (522,843)	$ (1,078,478)	$ 6,929,445
	Program Over/(Under) Recovery													
6	Over (Under) Recovery Beg.Bal.	$ (16,271,021)	$ (10,658,527)	$ (3,335,303)	$ 509,582	$ 4,294,055	$ 5,172,865	$ 3,236,744	$ 609,582	$ (2,232,668)	$ (4,597,110)	$ (7,757,844)	$ (8,280,687)	
7	Prior Year Carrying Charges	(17,589)	-	-	-	-	-	-	-	-	-	-	-	
8	Change in Balance	5,630,083	7,323,224	3,844,885	3,784,473	878,810	(1,936,121)	(2,627,162)	(2,842,250)	(2,364,442)	(3,160,734)	(522,843)	(1,078,478)	
9	Over (Under) Recovery Ending Bal.	$ (10,658,527)	$ (3,335,303)	$ 509,582	$ 4,294,055	$ 5,172,865	$ 3,236,744	$ 609,582	$ (2,232,668)	$ (4,597,110)	$ (7,757,844)	$ (8,280,687)	$ (9,359,165)	
10	Over (Under) Recovery Average Bal.	$ (13,473,569)	$ (6,996,915)	$ (1,412,861)	$ 2,401,819	$ 4,733,460	$ 4,204,805	$ 1,923,163	$ (811,543)	$ (3,414,889)	$ (6,177,477)	$ (8,019,266)	$ (8,819,926)	
	Carrying Charges													
11	Carrying Charges, Monthly	$ (19,519)	$ (9,830)	$ (2,019)	$ 3,802	$ 7,871	$ 7,161	$ 3,475	$ (1,482)	$ (6,466)	$ (11,699)	$ (16,010)	$ (20,540)	
12	Carrying Charges, Cumulative	$ (19,519)	$ (29,349)	$ (31,368)	$ (27,566)	$ (19,695)	$ (12,534)	$ (9,059)	$ (10,541)	$ (17,007)	$ (28,706)	$ (44,716)	$ (65,256)	$ (65,256)
13	Cumulative Over (Under) Recovery	$ (10,678,046)	$ (3,364,652)	$ 478,214	$ 4,266,489	$ 5,153,170	$ 3,224,210	$ 600,523	$ (2,243,209)	$ (4,614,117)	$ (7,786,550)	$ (8,325,403)	$ (9,424,421)	$ (9,424,421)
14	Annual Interest Rate	1.7384%	1.6859%	1.7153%	1.8991%	1.9954%	2.0436%	2.1684%	2.1911%	2.2720%	2.2725%	2.3957%	2.7946%	2.0977%
15	Monthly Interest Rate	0.1449%	0.1405%	0.1429%	0.1583%	0.1663%	0.1703%	0.1807%	0.1826%	0.1893%	0.1894%	0.1996%	0.2329%	

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

DIRECT TESTIMONY

OF

RICHARD A. MORGAN

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

Q. Please state your name and business address.

A. My name is Richard A. Morgan. I am President of Morgan Marketing Partners, LLC ("MMP"). My business address is 6205 Davenport Drive, Madison, Wisconsin, 53711-2447.

Q. Can you describe MMP?

A. MMP is a professional services firm formed in 1995 that partners with utility and governmental clients to provide energy efficiency consulting services including program design and development, cost-effectiveness modeling, strategic marketing consulting, implementation and operations assistance, new product and service development, management assistance, and evaluation and assessments. MMP has worked with clients including, but not limited to, DTE Energy Company, Duke Energy, California Public Utility Commission, Energy Trust of Oregon, Entergy, Missouri River Energy Services, Kansas City Power & Light, Jacksonville Electric Authority, Rochester Public Utilities, MidAmerican Energy, Hawaii Electric, Northwest Energy Efficiency Alliance, the State of Indiana, and Wisconsin Focus on Energy.

One of the programs MMP designed for Duke Energy was recognized by The American Council for an Energy Efficient Economy ("ACEEE") as an award-winning program for low-income customers. From 2001 to 2011, MMP served as planner and advisor to the State of Wisconsin on the statewide residential and business public benefits efficiency program, *Wisconsin Focus on Energy*. MMP has also developed comprehensive energy efficiency program portfolios for DTE Energy Company, Kansas City Power & Light, NIPSCO, Vectren, and Missouri River Energy Services. MMP served as one of two principal auditors to complete a management audit of the Energy

Trust of Oregon. As part of the audit, MMP reviewed all aspects of the Trust, including organizational structure, program design/delivery, support systems, public involvement, and overall management. The California Public Utility Commission retained MMP to participate on an independent review team to provide advice regarding the portfolio of utility energy efficiency programs developed for 2006 through 2008. In 2012, MMP also completed a portfolio program assessment with a team of evaluators to assess all the energy efficiency programs offered by utilities in California.

Q. Can you summarize your educational background and professional qualifications?

A. I earned a Bachelor of Science degree in Resource Management from Ohio State University, School of Natural Resources in 1976. I am the past President of the American Marketing Association, Madison Chapter, a past board member and Vice President, Business Development, for the Association of Energy Services Professionals ("AESP"), and a past board member of the Midwest Energy Efficiency Alliance. I have had numerous papers and research published at AESP and ACEEE. I am also the winner of the *2002 AESP B.H. Prasad Outstanding Contributor of the Year*.

Q. Can you describe your professional background and experience?

A. I have over 40 years of management, planning, program design, implementation, low-income program, and marketing experience in the energy field. Prior to starting MMP in 1995, I spent four years as a manager and consultant with A&C Enercom, a leading energy services and consulting company. I was also Marketing Manager for EWI Engineering, a 100-person engineering consulting firm. Before joining EWI Engineering, I spent over eleven years with Wisconsin Power and Light Company, a combined gas and electric company now a part of Alliant Energy, in its marketing and

energy efficiency department. I held numerous positions managing many different services including low-income programs, residential services, commercial and industrial gas services, demand-side management programs, and marketing/sales initiatives. Within my various positions my responsibilities included program planning, evaluation oversight, new product/service development, program design, market research, advertising/promotion planning, implementation and operations management, evaluation, budgeting, tracking, training, government interface, sales, field customer service support, quality control, and business center operations. Prior to joining Wisconsin Power and Light, I worked for the Oregon Department of Energy and the Western SUN, a federally-funded regional solar center.

Q. Have you previously provided testimony before the Michigan Public Service Commission ("MPSC" or the "Commission")?

A. Yes, I testified on behalf of Consumers Energy Company ("Consumers Energy" or the "Company") in its 2011 Energy Optimization ("EO") Reconciliation, Case No. U-16736; 2012 EO Reconciliation, Case No. U-17281; 2013 EO Reconciliation, Case No. U-17601; 2014 EO Reconciliation, Case No. U-17831; 2015 EO Reconciliation, Case No. U-18025; 2016 EO Reconciliation, Case No. U-18331; 2017 Energy Waste Reduction ("EWR") Reconciliation, Case No. U-20028; and 2018 EWR Reconciliation, Case No. U-20365. I also sponsored direct testimony on behalf of Consumers Energy in its 2014-2017 EO Biennial Plan, Case No. U-17351; 2016-2017 EO Biennial Plan, Case No. U-17771; and 2018-2021 EWR Plan, Case No. U-18261. In addition, I testified on behalf of DTE Energy Company in its EO plan case which was approved by the Commission in its June 2, 2009 Order in Case No. U-15806, and in Case No. U-15890 on

behalf of Michigan Consolidated Gas Company ("MichCon"). I also filed testimony in support of Detroit Edison's and MichCon's 2010 amended EO plan to expand that program under that same docket.

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

A. The purpose of my direct testimony is to: (i) describe how MMP helped Consumers Energy model the cost-effectiveness of its 2020-2023 EWR program plan; (ii) describe the cost-effectiveness modeling for the EWR programs; and (iii) provide the results demonstrating that the EWR portfolio included in the Plan is cost effective using the Utility System Resource Cost Test ("UCT" or "USRCT") (excluding the low-income customers).

Q. Are you sponsoring any exhibits?

A. No.

Q. Will you describe the services your firm has provided for Consumers Energy?

A. MMP provided cost-effectiveness modeling services utilizing the DSMore modeling tool to calculate and report cost-effectiveness of the Company's proposed EWR programs. In addition, MMP created and supplied the Michigan Energy Measures Database ("MEMD") as a basis for development of initial energy efficiency savings calculations and potential savings for energy efficiency programs for use by all Michigan utilities in their cost-effectiveness modeling.

Q. How was cost-effectiveness of the Company's EWR programs determined?

A. The DSMore cost analysis tool was used to calculate and report cost-effectiveness for the Company's EWR programs using the UCT, as defined by 2008 PA 295, as amended in 2016 PA 342. Consumers Energy's programs must be cost effective utilizing the UCT,

but several other cost-effectiveness tests were performed and their results along with the UCT are tabulated in Exhibit A-2 (TAY-2).

Q. Please describe the DSMore modeling tool.

A. The DSMore tool is an award-winning modeling software that is nationally recognized and used in many states across the country to determine cost-effectiveness of energy efficiency programs. Developed and licensed by Integral Analytics based in Cincinnati, Ohio, the DSMore cost-effectiveness modeling tool takes hourly prices and hourly energy savings from the specific measures/technologies being considered for each energy efficiency program, and then correlates both to weather. The algorithm used by the modeling software looks at over 30 years of historic weather variability to fully capture the weather variances. In turn, this allows the model to capture the low probability but high consequence weather events and apply appropriate value to them. Thus, a more accurate view of the value of the efficiency measure can be captured in comparison to alternative supply options.

Q. Can you please describe the various tests run in your DSMore modeling?

A. Tables 6-10 and 6-11 in Exhibit A-2 (TAY-2) show the cost-effectiveness test results for the Company's planned electric and natural gas EWR programs in total, by residential and business classes, and for each program. The various test results shown are for the following tests:

- UCT/USRCT: this is the ratio of the net benefits of the programs to the program costs incurred by the utility for the programs. For a program to be cost-effective, this ratio needs to exceed one (a score of 1.0 or higher indicates a program that is cost-effective);

- Total Resource Cost Test: this is the total avoided cost divided by the program costs plus the participant's costs. Incentives paid to the customer are in both the cost and benefit sides of the equation, and so cancel each other out;

- Rate Impact Measure: this is the avoided cost benefits divided by the program costs and lost revenues; and
- Participant Test: this is the participant's benefits in energy savings from their bill plus their incentives divided by their costs to participate.

Q. What EWR program costs and savings were used for the cost-effectiveness calculation?

A. Energy savings and participation amounts were provided, by measure, from the Company's planning team. Participation estimates multiplied by the MEMD savings number over the life of the measure yields the lifetime savings results used in the DSMore model. Program costs and savings are based on the 2020-2023 EWR Plan model developed by the Consumers Energy Planning Team. Additional information such as measure life and incremental cost was taken from the 2019 MEMD.

Q. What type of utility information is used in the DSMore modeling tool to determine cost-effectiveness of EWR programs?

A. For utility information, DSMore utilizes utility rates; escalation rates; discount rates for the utility, society, and the participant tests; and avoided costs.

Q. What is the source of the utility information used for Consumers Energy's DSMore modeling inputs?

A. The utility inputs were provided to me by Consumers Energy and are consistent with the inputs approved in Case No. U-18261 as part of the Company's 2018-2021 EWR Plan.

Q. Within the DSMore model, how are the avoided electric benefits computed?

A. The avoided electric benefits in the Company's analysis are derived using historic hourly price data from the Midcontinent Independent System Operator, Inc. ("MISO") market and hourly weather data to determine the value of the saved electricity. The electric savings, by measure, are applied at specific hours over the year since prices vary by hour.

These prices are weighted based on the probability of weather variations over 33 years of weather history so that the full range of weather and prices are properly captured. Each hour has a unique price which is then escalated over time. This assures that the savings reflect the value you would expect to see in the market over time from the avoided energy sales.

Q. Within the DSMore model, how are the avoided gas benefits calculated?

A. The avoided benefits for gas are calculated using weather adjusted prices, similar to the electric, but are based on gas prices from the Henry Hub sales market. Gas prices are based on daily gas prices, versus hourly prices for electric. Again the purpose is to best represent the expected value of the energy savings in the marketplace.

Q. What are net benefits?

A. Net benefits are the computed avoided cost benefits, which I described previously, minus the program costs to acquire those benefits. The net benefits (not including low-income programs) for Electric are $1,161,662,022 and Gas $101,468,719 for a total net benefit of $1,263,124,278.

Q. What type of program information is used as inputs into the DSMore model?

A. Inputs into the model include participation rates, incentives paid, energy savings of the measure, life of the measure, implementation costs, administrative costs, and any incremental costs incurred by participants when installing an efficiency measure.

Q. Please provide the detailed information on the UCT calculation.

A. As described earlier, the UCT is the ratio of the net benefits of the EWR programs to the program costs incurred by the utility. For an EWR program to be cost-effective, this ratio needs to exceed one. The formula for the UCT is:

UCT = Program Benefits/ Program Costs

Program Benefits (net of free riders) were calculated by DSMore based on the avoided cost of energy and demand for electric, and the avoided cost of gas. The electric energy savings (including pilots and education energy savings) for the four years are equal to 27,231,091 net Lifetime MWh for business customers, and 2,872,678 net Lifetime MWh for residential customers. Electric demand savings for the four years total 294.0 net MW for business customers, and 50.8 net MW for residential customers. The avoided costs were calculated using the DSMore model by looking at the time of savings for each measure and the historic weather-weighted value during that time. Gas energy savings were 62,490,697 net Lifetime Mcf for business customers and 70,162,829 net Lifetime Mcf for residential customers with calculated avoided costs based on the time of savings and the historic daily weatherweighted value. Also included in the avoided value calculation were transmission and distribution avoided costs as well as line losses. Total Avoided Cost Benefits for the total Portfolio is $2,147,851,449 (present valued).

Program costs are split into four categories for each program: Incentives, Implementation, Direct Install Costs, and Support Services. In addition, other costs such as education and awareness, pilots, and performance incentives are added at the portfolio levels. The total expected 2020-2023 EWR program investment is $884,727,171 (present valued including the utility performance incentive and excluding low-income).

To complete the equation:

$2,147,851,449 in benefits divided by $884,727,171 in program costs = 2.43 UCT

Q. Please describe the cost-effectiveness results for Consumers Energy's EWR programs.

A. All Consumers Energy EWR programs are cost-effective with the Gas Program Portfolio UCT score of 1.42 and the Electric Program Portfolio UCT score of 2.80. The Combined Fuel Portfolio UCT score is 2.43. This means that the energy savings benefits are 42% greater than the program costs for gas, 180% greater than the program cost for electric, and 143% greater than the program cost for the combination of gas and electric savings.

Q. Based on the results of your work, do Consumers Energy's EWR programs meet statutory and MPSC cost-effectiveness requirements?

A. Yes. Based on the analysis I performed using the DSMore model, the Company's 2020-2023 EWR Program plan passes the cost-effectiveness test in accordance with the guidelines outlined by the MPSC and the legislative requirements of 2008 PA 295, as amended in 2016 PA 342. This analysis was performed in accordance to MPSC guidelines and did not include low-income programs. The results of my analysis are provided in Exhibit A-2 (TAY-2), Tables 6-10 and 6-11.

Q. Does this complete your direct testimony?

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

DIRECT TESTIMONY

OF

THERESA K. SCHMIDT

ON BEHALF OF

CONSUMERS ENERGY COMPANY

August 2019

Q. Please state your name and business address.

A. My name is Theresa K. Schmidt, and my business address is One Energy Plaza, Jackson, Michigan, 49201.

Q. Please describe your current position and responsibilities.

A. I am the Residential Energy Waste Reduction Operations Director for Consumers Energy Company ("Consumers Energy" or the "Company"), and I am responsible for the development and implementation of Consumers Energy's electric and gas residential Energy Waste Reduction ("EWR") programs.

Q. Please describe your education and professional experience.

A. I hold a bachelor's degree in Business Administration & Organizational Development from Spring Arbor University. In 1990, I began employment at a CMS Energy subsidiary, CMS Accounts Receivable Services, as an Executive Assistant, and was promoted to Marketing Coordinator, where I was responsible for all aspects of marketing our services, including supervising a marketing and administrative support staff. In 1998, I transferred to CMS Marketing Services & Trading as a Marketing & Sales Associate in the retail sales department, providing research, creating marketing plans and coordinating outreach efforts in the newly deregulated electric and gas markets. In 2000, I transitioned to Consumers Energy's Business Customer Operations & Strategy department supporting initiatives focused on large electric and gas business customers, and was promoted to Business Advisor working on the Electric Customer Choice ("ECC") program. This included tracking and preparing ECC participation reporting to the Michigan Public Service Commission ("MPSC" or the "Commission"). In 2006, I joined the Customer Care and Services team as a subject matter expert during the mass conversion of our

legacy systems to SAP. During this time, I also managed major projects, including the implementation of FACTA and the Company's eServices web application. After the conversion project, I was promoted to the Company's Smart Grid project in the Customer Value Services department managing the Direct Load Management pilot program. In 2011, I was promoted to Database Analyst for the Energy Efficiency programs, and soon transitioned to an Energy Efficiency Residential Program Manager in 2012. In this role, I managed many of the residential programs, including Appliance Recycling, Insulation and Windows, HVAC and Water Heating, Home Performance with ENERGY STAR®, Efficient Lighting, ENERGY STAR Appliances and the Think! Energy® Education program. In 2017, I was promoted to Residential EWR Operations Director, which expanded my responsibilities to include supervising the development and implementation of the Company's residential EWR programs.

Q. Have you previously testified before the Commission?

A. Yes, I have provided testimony in the following cases:

Case No.	Description
U-18261	2018 – 2021 Energy Waste Reduction Plan
U-18331	2016 Energy Optimization Plan Reconciliation
U-20028	2017 Energy Waste Reduction Plan Reconciliation
U-20365	2018 Energy Waste Reduction Plan Reconciliation

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

A. I am providing an overview of the residential EWR programs, energy savings, and investments contained in the Company's 2020-2023 EWR Plan.

Q. Are you sponsoring any exhibits with your direct testimony?

A. No.

Q. Please describe the most significant proposed changes to the residential programs associated with the 2020-2023 EWR Plan.

A. The Company is proposing changes to the residential programs, consistent with the increased savings goals in its approved Integrated Resource Plan ("IRP"), and in consideration of new technology standards and evolving market conditions. These changes include lower investment in ENERGY STAR Lighting and HVAC and Water Heating programs, increased investment in the Income Qualified and Multifamily programs, and implementation of electric-only programs targeting income-qualified and market rate whole-home upgrades. The Company is also proposing to increase overall residential electric and gas program investment compared to the currently approved 2018-2021 EWR Plan by more than $48 million to allow for these new market intervention strategies, account for higher acquisition costs, and ensure cost-effective delivery of a comprehensive residential EWR portfolio.

Q. Please describe why these plan changes are necessary for the success of the 2020 – 2023 EWR Plan.

A. Consumers Energy is facing numerous market disruptions and other challenges that have the potential to impact its savings forecast and the overall 2020-2023 EWR Plan results. Changing equipment standards that largely affect its residential ENERGY STAR lighting and HVAC and Water Heating programs will significantly erode residential electric savings potential in those programs. At the same time, evolving market characteristics, changing customer needs, and fluctuating costs will increase the Company's overall

acquisition costs, and present challenges to Consumers Energy's continued ability to cost-effectively achieve its residential programs savings goals. Further, as part of the Company's Clean Energy Plan, approved earlier this year in its IRP case (Case No. U-20165), EWR electric savings targets are increasing to 1.8% and 2.0% of retail electric sales for 2020, 2021, and beyond, respectively. EWR has a significant role in supporting the Company's transformative Clean Energy Plan commitment to meeting customer electric energy and capacity needs with 90% clean energy and reducing emissions 90% by 2040. To address these challenges in relation to residential programs, the Company is proposing the changes described above.

Q. What residential programs does the Company propose to provide as part of its 2020–2023 Plan?

A. The following thirteen residential programs will be offered:

- Appliance Recycling Program
- ENERGY STAR® Appliances
- ENERGY STAR® Lighting
- Home Energy Analysis
- Home Energy Report
- Home Performance with ENERGY STAR®
- HVAC and Water Heating
- Income Qualified Energy Assistance
- Insulation & Windows
- Multi-Family and Multi Family Income Qualified
- Residential New Construction

- Residential Agriculture, and
- Think! Energy® - Energy Education

Q. Please describe the Company's Appliance Recycling program.

A. The Appliance Recycling Program targets customers with older, energy-guzzling "second" refrigerators and freezers that often end up in garages, basements, or sold in the used appliance market after purchase of a new primary appliance. The program will provide the benefits of cutting energy consumption, and keeping used appliances out of the secondary market, by disposing of them in an environmentally safe manner. Incentives will be offered for working refrigerators, freezers, dehumidifiers, and room air conditioners. An appliance recycling implementation contractor will provide turnkey implementation services that include marketing, verification of customer eligibility, scheduling of pick-up appointments, appliance pick-up, rebate processing, and environmentally safe recycling services.

Q. Please describe the Company's ENERGY STAR® Appliances program.

A. The ENERGY STAR Appliances Program will employ a web-based and in-store education and promotional strategy, coupled with incentives, to influence the purchase of high-efficiency appliances through retail partners and an online store. Since appliance standards, as well as the market share of high-efficiency appliances, are gradually increasing, the program will offer specific qualifying models, and target customers in the market for new clothes washers, room air conditioners, dehumidifiers, variable speed pool pumps, and Wi-Fi thermostats. An implementation contractor will provide turnkey implementation services that include marketing, data tracking and reporting, verification

of customer eligibility, retailer education, field services, rebate processing, call center, and quality assurance.

Q. Please describe the Company's ENERGY STAR® Lighting program.

A. The residential ENERGY STAR® Lighting Program will provide incentives and marketing support through retailers who reduce the retail price of ENERGY STAR® standard and specialty Light Emitting Diode ("LED") lighting products, promote these products, and administer product discounts to build market share. Customer incentives, in the form of instant savings, will help mitigate first cost as a barrier to program participation, and will make purchasing high efficiency lighting simple. Consumers Energy marketing and general advertising support, including in-store signage, sales associate training, and an online Find-a-Retailer tool, will make participation easier for retailers. Consumers Energy will continue to offer the ENERGY STAR Lighting program throughout the 2020-2023 EWR Plan; however, due to changing lighting standards in which LED bulbs will become the market baseline for high efficiency lighting, Consumers Energy will phase out most residential lighting products during this period. The energy savings and effective useful life ("EUL") of LEDs will begin to decline in 2020 as these new equipment standards take effect and, as a result, Consumers Energy's program will initiate a transition period in 2020. Specifically, the program will deemphasize standard screw-in LED bulbs, phasing them out completely by the end of 2022, when the measure's EUL will sunset. Consumers Energy will shift its focus toward specialty lighting during the first two program years, before ramping down and phasing out these products by the end of 2023. Finally, Consumers Energy will continue to offer, and will increasingly promote, connected lighting solutions through the

ENERGY STAR Lighting program to determine the potential value of this emerging technology to its portfolio overall.

Q. Please describe the Company's Home Energy Analysis program and the line extension for electric-only customers.

A. Customers participating in the Home Energy Analysis ("HEA") program will receive direct installation of energy-savings measures, a walk through energy inspection of their homes by a trained specialist, and a customized summary report with energy saving tips and recommendations. The energy saving measures will include LED bulbs (indoor and outdoor), water heater pipe insulation, bath and kitchen water saving aerators and showerheads, and programmable and Wi-Fi-enabled thermostats, all installed free of charge for residential customers. HEA will also cross-promote other EWR programs to encourage customers to take further steps in their EWR journey. To enhance energy savings opportunities for customers in Consumers Energy's electric-only territory, the Company will add a new HEA line extension for electric-only customers. This line extension will rely on a similar delivery and administrative approach to the traditional HEA program; however, direct installation measures and other energy efficiency recommendations will be limited to those that capture electric energy savings.

Q. Please describe the Company's Home Energy Report program.

A. The Home Energy Report ("HER") program will provide residential customers with personalized energy information through direct mail that helps them put their energy use in context and make better energy-use decisions. Behavioral science research has demonstrated that peer-based comparisons are a highly motivating way to present information; the HER program will leverage a dynamically created comparison group for

each residence based on nearby households. The Company will employ this model through the comparison and ranking of each participating residence to other homes with similar size and location in terms of energy consumption. Customers will receive individually targeted savings tips based on their energy-use patterns, housing characteristics, and demographic. This behavioral approach complements the offerings of other residential EWR programs, and is a driving force behind consistent and reliable behavior-based energy savings. In addition to presenting energy use information, the reports will offer low- or no-cost energy-saving tips and cross-promote other residential EWR programs.

Q. Please describe the Company's Home Performance with ENERGY STAR® program.

A. The Home Performance with ENERGY STAR Program will produce long-term electric and natural gas energy savings in the residential sector by helping customers analyze their energy use and make home improvements that consider the home as a complete system. This will be accomplished by emphasizing a holistic approach to make homes safe, healthy, more comfortable and energy efficient. Building Performance Institute ("BPI")-certified contractors will offer Comprehensive Home Assessments at market-based fees that include diagnostic testing and a visual inspection for health and safety issues. Once the inspection is complete, the contractor will use energy modeling software to generate a final report that will inform the customer of energy savings, costs and payback. The program will target residential customers in single-family homes, offering various options to capture savings. Financial incentives will be available for building shell improvements and energy-efficient heating and cooling equipment.

Q. Please describe the Company's HVAC and Water Heating program.

A. The high-efficiency HVAC and Water Heating program will increase demand using market push and pull strategies to simultaneously stimulate demand and increase market providers' investment in stocking and promoting high-efficiency products. The strategy focuses on educating customers about the economic benefits and increased home comfort of high-efficiency heating, cooling, and water heating equipment, and providing incentives to help overcome the first cost barrier. The HVAC program will enlist contractor participation to promote the program and ensure equipment purchased is properly sized and correctly installed. Participating HVAC contractors will be provided specific value including training, educational materials, and marketing collateral. Financial incentives will be paid to customers, or midstream rebates will be paid to participating distributors to provide instant discounts to customers, to reduce customers' incremental cost of purchasing qualifying high-efficiency models.

Q. Please describe the Company's Income Qualified Energy Assistance program.

A. The Income Qualified Energy Assistance program will identify specific opportunities for low-income customers to lower their energy use by providing in-home energy analyses that increase customers' awareness of the benefits of EWR as well as installation of EWR measures. Consumers Energy will provide financial assistance to cover the full cost of installation for customers with limited income. For each participant, Consumers Energy will either fund 100 percent of the service and measure costs provided through the program (non-leveraged measures), or share the cost with nonprofit organizations (leveraged measures) that provide weatherization services. The non-leveraged phase one initiative will offer an in-home assessment and direct installation of lighting, water-

saving devices, and carbon monoxide detection. This assessment is generally the entry point for single-family customers to participate in the Non-leveraged Premium Measures initiative which provides single-family customers with several Premium Measures such as air conditioning, furnace, boiler, or refrigerator replacement; air conditioning or furnace tune-up; insulation; and air or duct sealing. To expand its community reach, Consumers Energy will partner with nonprofit organizations to provide weatherization services to income-qualifying customers. For example, through the program, Consumers Energy will continue to work with Habitat for Humanity in Saginaw and Flint, and with Community Homeworks of Kalamazoo. The Company will continue to expand this program to drive more participation with the low-income Manufactured Housing market to address the relatively high energy consumption of mobile home customers through direct install measures and envelope efficiency upgrades.

Q. Please describe the Company's Insulation and Windows program.

A. The Insulation and Windows program will provide rebates to customers to encourage them to install qualified energy saving windows and home insulation. The program is unique in that it will allow customers to use the services of a contractor, or to perform the improvements and apply for rebates themselves, an option particularly appealing for the do-it-yourself customer. The program will be marketed directly to customers and through a network of insulation and window installation contractors. Marketing material will also be displayed through point-of-purchase promotional material in 'Big Box" retailers throughout the state.

Q. Please describe the Company's Multifamily program.

A. The Multifamily Direct Install program will produce electric and natural gas energy savings in multi-family buildings through the direct installation of energy-saving measures in individual living units and common areas. Since this is traditionally a hard-to-reach market, the low-cost energy saving measures will be installed in targeted buildings free of charge to the property owner and tenants. The program is also designed to achieve deeper energy savings through the promotion of high efficiency equipment for prescriptive and custom retrofit projects. The Multifamily program will utilize a "one-stop-shop" approach, serving income qualified, residential, and commercial segments through one program, managed by one implementation contractor.

Q. Please describe the Company's Residential New Home Construction program.

A. The New Home Construction program will create long-term electric and natural gas savings by encouraging the construction of single-family homes and duplexes that meet the current ENERGY STAR Version 3.1 standards or a minimum HERS score. Homes built to higher EWR standards create multiple benefits for homeowners including lower long-term operating costs, better quality construction, greater comfort, and potentially higher housing value. The program will identify and recruit residential builders not consistently (or seldom) building homes to ENERGY STAR Version 3.1 standards. Participating Builders will be eligible for incentives based on the home type, level of efficiency achieved above the Michigan Uniform Energy Code, and fuel(s) delivered by Consumers Energy, and will receive training on building practices designed to achieve ENERGY STAR Version 3.1 standards. Builders will also be trained on how to promote the value of energy efficient homes to their customers.

Q. Please describe the Company's Think! Energy® – Energy Education program Grades 4-6.

A. The Think! Energy program will influence students and their families to take actions that can reduce their home energy use and increase EWR. The program will target elementary and middle school students in grades 4-6. An in-class EWR presentation will be provided along with a "take-home" kit that raises awareness on how individual actions and low-cost measures can provide reductions in consumption of electricity, natural gas, and water. The program is endorsed by the Michigan Department of Education.

Q. Please describe the Residential Agriculture program.

A. The Agriculture Program will offer residential agriculture customers incentives for energy saving measures in retrofit and major renovation projects. This program will provide participating customers the same level of rebates as the prescriptive and custom incentives from the business EWR program.

Q. Does the Company also intend to invest in residential Pilot programs?

A. Yes. Pilots provide opportunity for the Company to design and test innovative approaches and new technologies to determine if cost-effective energy savings can be realized. Given the market changes, particularly in regards to residential lighting, investment in pilots is of critical importance to identifying new energy saving programs to supplement the residential portfolio. The Company will invest, or is evaluating investment, in residential EWR pilots including but not limited to:

- The Grand Rapids area Non-Wires Alternatives (formally Geo-Targeted) pilot that is testing the ability of targeted EWR and demand response programs to provide load relief and defer infrastructure development. This pilot will continue into 2020.

- Smart Homes/Connected Homes – Currently under development, this pilot will test connected in-home technologies for energy savings through robust research and evaluation.

- Heat Pumps – Fuel Switching: Currently under development, this pilot will inform a better understanding of efforts to foster electrification via heat pump technology.

- Incentive Optimization: Conducting analysis to guide incentive structure to achieve program goals.

Additionally, Consumers Energy will participate in the Midwest Market Transformation Collaborative to identify new Market Transformation ("MT") opportunities in its service territory. MT is defined as a strategy that intends to induce long-lasting, sustainable changes in the structure or functioning of a market. This is achieved through an initiative design that reduces barriers to the adoption of energy efficient products and services in markets that sell, distribute, install, or manufacture those technologies to the point where continuation of the utility funded intervention is no longer needed because market forces can sustain the lasting change. MT initiatives offer a unique opportunity to address the challenge of capturing cost-effective EWR, by pooling resources across multiple utilities and coordinating intervention strategies to influence lasting market changes at a lower cost of delivery. Adding MT activities to this portfolio will also enable Consumers Energy to leverage the resources and motivations of non-utility market actors to secure expanded savings and reduce costs. The Company will also partner with the Consortium for Energy Efficiency ("CEE") to help accelerate the development and availability of energy efficient products and services. An immediate initiative will be to support the development of connected home products via the creation of evaluation criteria, assessment of products relative to that criteria, and promotion of the most successful products or devices. The objective is to shape the

functionality and design of connected devices being developed, and to guide players in the connected home market to develop products that meet the needs of customers and program administrators.

Q. For each of the residential programs and residential pilot programs described above, is there more detailed information available in this filing?

A. Yes. The 2020-2023 EWR Plan Report ("Plan Report"), Exhibit A-2 (TAY-2), sponsored by Company witness Theodore Ykimoff, provides detailed program sections that include: program objective, target market, program duration, program description, program logic, incentive strategy, eligible measures, implementation strategy, marketing strategy, evaluation strategy and requirements, administrative requirements, estimated participation, estimated investment, energy saving targets, and benefit-cost test results.

Q. From the residential programs and pilot programs that the Company plans to implement as part of this filing, what are the projected total annualized MWh, MW, and Mcf savings expected to be delivered for the EWR Plan period 2020-2023?

A. From residential programs, the Company projects to deliver the sum of first year energy savings of 578,120 MWh, 50.8 MW, and 6,201,241 Mcf from 2020 to 2023. Annual energy saving amounts over this time period can be found in the Company's Plan Report, Exhibit A-2 (TAY-2).

Q. How is energy savings calculated in each of the residential programs?

A. The base energy savings values for various measures are contained in the Michigan Energy Measures Database ("MEMD"). For any measures that do not have energy savings included in the MEMD, supporting documentation and engineering calculations

must be provided to support claimed energy savings. These are then reviewed by third party evaluation contractors.

Q. For this EWR Plan, are there any additional adjustments to these base energy savings used to calculate final energy savings?

A. Yes. There are "Net to Gross" adjustments and "installation adjustments."

Q. What is a "Net to Gross" adjustment?

A. The net to gross ratio is used to estimate the energy savings achieved by the Company's programs, net of that which would have occurred in the absence of the programs, i.e., freeriders.

Q. What assumption has the Company made with regard to net to gross ratios in the EWR Plan presented in this case?

A. The Company has assumed a net to gross ratio of 0.90 for all of the measures in its residential programs, except high efficiency lighting, which will use net to gross ratio of 0.57 for standard LEDs and 0.71 for specialty (e.g., reflector, globe, and candelabra) LEDs. Additionally, consistently with the current MEMD, the Company assumes a net to gross ratio of 1.0 for all measures deployed through the Income Qualified Energy Assistance program.

Q. What is an "installation adjustment"?

A. Post hoc evaluations conducted by the Company's evaluation contractors for each program verify the actual installation at customer premises of the EWR measures for which the Company is claiming energy savings. These evaluations sometimes reveal that a small percentage of the installations did not occur, occurred outside the Company's service territory, or occurred improperly such that the desired energy savings are not

being achieved, or were subsequently removed by the customer. To the extent these conditions are found, the Company takes an appropriate adjustment to claimed energy savings. This adjustment is referred to as an "installation adjustment."

Q. What assumption has the Company made with regard to installation adjustments in the EWR Plan presented in this case?

A. The Company's independent residential evaluation contractor, Cadmus Group, provided these adjustments based on evaluation research conducted and they are included as an adjustment to energy savings, where applicable. This detailed information can be found in the Company's Plan Report, Exhibit A-2 (TAY-2).

Q. Is the Company proposing to use market transformation adjustments to its energy savings?

A. No.

Q. Are the Company's proposed programs and investment sufficient to ensure the achievement of the applicable statutory energy savings target?

A. Yes. Many of the programs contained in this filing have been operating since 2009 and continue to demonstrate the strong customer interest and participation that has helped drive performance beyond the statutory energy savings target.

Q. What is the projected total residential electric and total gas program investment to deliver these energy savings over the 2020-2023 EWR Plan period?

A. To deliver the energy savings targets over the 2020-2023 EWR Plan period, the Company projects it will need $146 million residential program electric investment, and $152 million residential program gas investment. Annual program investment detail over this time period can be found in the Company's Plan Report, Exhibit A-2 (TAY-2).

Q. How did the Company determine the investment level for the residential portfolio?

A. Investment for the residential portfolio is based on a number of variables that include: historical investment and participation levels, IRP targets, projected incentives, number of measures installed, industry trends, market performance, market potential, and new initiatives offered by the Company.

Q. Will the Company's residential programs, excluding low-income residential customers, collectively be cost-effective?

A. Yes. The residential electric portfolio is projected to be delivered at an overall Utility Cost Test ("UCT") score of 1.16, and the residential gas portfolio is projected to be delivered at an overall UCT score of 1.27. The expected benefit-cost test results for each of the residential programs are detailed in the Company's Plan Report, contained in Exhibit A-2 (TAY-2).

Q. How will the Company demonstrate that its investment in the residential programs is achieving the desired results?

A. Consistent with the approach used since 2009, the Company will file annual reconciliation reports with the Commission after the end of each plan year detailing how much was invested for each program and energy saved for each program by customer class (residential, non-residential) in the previous year. Such reports will provide sufficient detail to allow the Commission to determine that the Company is complying with the Commission's orders and statutory requirements.

Q. Does this conclude your direct testimony?

A. Yes.

S T A T E O F M I C H I G A N

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 **CONSUMERS ENERGY COMPANY** to fully comply with Public Act 295 of 2008, as amended by Public Act 342 of 2016	)	Case No. U-20372

PROOF OF SERVICE

STATE OF MICHIGAN)
) SS
COUNTY OF JACKSON)

Jennifer Joy Yocum, being first duly sworn, deposes and says that she is employed in the Legal Department of Consumers Energy Company; that on August 1, 2019, she served an electronic copy of **Consumers Energy Company's Application and the Testimony and Exhibits of Company Witnesses Theodore A. Ykimoff, Eugene M. Breuring, Rudolph M. Chahine, Alex M. Gast, Shawn C. Hurd, Svitlana Lykhytska, Richard A. Morgan, and Theresa K. Schmidt** upon the persons listed in Attachment 1 hereto, at the email addresses listed therein.

Jennifer Joy Yocum

Digitally signed by Jennifer Joy Yocum
Date: 2019.08.01 16:25:11 -04'00'

Jennifer Joy Yocum

Subscribed and sworn to before me this 1st day of August, 2019.

Melissa K. Harris

Digitally signed by Melissa K. Harris
Date: 2019.08.01 16:25:56 -04'00'

Melissa K. Harris, Notary Public
State of Michigan, County of Jackson
My Commission Expires: 06/11/20
Acting in the County of Jackson

ATTACHMENT 1 TO CASE NO. U-20372
(Parties to Case Nos. U-18261 and U-27771)

Administrative Law Judge

Hon. Sally Wallace
Administrative Law Judge
7109 West Saginaw Highway
Post Office Box 30221
Lansing, MI 48909
wallaces2@michigan.gov

Counsel for the Michigan Public Service Commission Staff

Spencer A. Sattler, Esq.
Monica M. Stephens, Esq.
Assistant Attorneys General
Public Service Division
7109 West Saginaw Highway
Post Office Box 30221
Lansing, MI 48909
sattlers@michigan.gov
stephensm11@michigan.gov

Counsel for the Association of Businesses Advocating Tariff Equity ("ABATE")

Sean P. Gallagher, Esq.
Michael J. Pattwell, Esq.
Clark Hill PLC
212 East Grand River Avenue
Lansing, MI 48906-4328
sgallagher@clarkhill.com
mpattwell@clarkhill.com

Stephen A. Campbell, Esq.
Clark Hill PLC
500 Woodward, Suite 3500
Detroit, MI 48226
scampbell@clarkhill.com

Counsel for the Residential Customer Group

Don L. Keskey, Esq.
Brian W. Coyer, Esq.
Public Law Resource Center PLLC
333 Albert Avenue, Suite 425
East Lansing, MI 48823
donkeskey@publiclawresourcecenter.com
bwcoyer@publiclawresourcecenter.com

Counsel for the Natural Resources Defense Council ("NRDC") and The National Housing Trust ("NHT")

Christopher M. Bzdok, Esq.
Tracy Jane Andrews, Esq.
Lydia Barbash-Riley, Esq.
Kimberly Flynn, Legal Assistant
Karla Gerds, Legal Assistant
Marcia Randazzo, Legal Assistant
Olson, Bzdok & Howard, P.C.
420 East Front Street
Traverse City, MI 49686
chris@envlaw.com
tjandrews@envlaw.com
lydia@envlaw.com
kimberly@envlaw.com
karla@envlaw.com
marcia@envlaw.com