



June 1, 2021

Mr. Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 East Seventh Place, Suite 350
St. Paul, MN 55101-2147

**RE: Initial Filing by CenterPoint Energy and the City of Minneapolis To Introduce a
Tariffed On Bill Pilot
Docket No. G-008/M-21-_____**

Dear Mr. Seuffert:

CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Minnesota Gas, ("CenterPoint Energy" or the "Company") and the City of Minneapolis ("Minneapolis") respectfully submit the following filing regarding a Tariffed On Bill ("TOB") Pilot.

In its March 1, 2021, Order in Docket No. G-008/GR-19-524, the Minnesota Public Utilities Commission ("Commission") required Minneapolis and Company to consult with interested parties and submit a filing in a new docket to allow for development of the City of Minneapolis and CenterPoint Energy's TOB proposal in greater detail.¹

As discussed in this filing, Minneapolis and the Company have worked to engage interested parties and develop a design for a pilot program, however, there are key pilot design features that require additional development. The Company and Minneapolis submit this progress report to update the Commission and interested parties on the work completed to date and to highlight pilot design features that will require additional development. The Company and Minneapolis request an extension of the Commission's March 1, 2021, Order so that we can continue the work to develop the TOB program. The Company and Minneapolis request an extension to file a proposed TOB pilot and tariff on or before September 1, 2021. As discussed herein, we have

¹ Specifically, the Commission required that CenterPoint Energy and the City of Minneapolis consult with six specific stakeholders that intervened in CenterPoint Energy's rate case or filed Comments on the TOB proposal. The Commission listed thirteen categories of information to include in the filing relating to the objectives of the proposed pilot, alternatives considered, details about the proposed pilot's structure and goals, an evaluation plan, cost recovery, stakeholder engagement including with people of color, interaction with CIP, opportunities for electricity conservation, and plans to expand the pilot beyond the City of Minneapolis.

additional stakeholder work to be completed over the summer, and we request the Commission take no action on this filing at this time. Rather, we propose the Commission proceed by Notice and Comment upon the filing of our proposed TOB tariff, on or before September 1, 2021.²

CenterPoint Energy and the City of Minneapolis thank the Commission for the opportunity to present this Initial Filing and progress report. Questions about this report may be directed to Amber Lee, with CenterPoint Energy, at 612-321-4625 or amber.lee@centerpointenergy.com or Kim Havey, with the City of Minneapolis, at 612-673-3666 or kim.havey@minneapolismn.gov.

Sincerely,

/s/ Amber S. Lee

/s/ Kim Havey

Amber S. Lee
Director, Regulatory Affairs,

Kim Havey
Director, Sustainability Division

CenterPoint Energy

City of Minneapolis

C: Service List

² The Company and Minneapolis are not aware of any opposition to our proposed process and timeline.

**STATE OF MINNESOTA
BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION**

121 Seventh Place East, Suite 350
St. Paul, MN 55101-2147

Katie Sieben
Valerie Means
Matt Schuerger
Joseph Sullivan
John Tuma

Chair
Commissioner
Commissioner
Commissioner
Commissioner

In the Matter of a Petition by CenterPoint Energy
and the City of Minneapolis to Introduce
a TOB Pilot

Docket No. G-008/M-21-_____

INITIAL FILING AND PROGRESS REPORT

I. Introduction

CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Minnesota Gas, (“CenterPoint Energy” or the “Company”) and the City of Minneapolis (“Minneapolis”) respectfully submit the following initial filing to the Minnesota Public Utilities Commission (“Commission”).

In the Company’s last rate case, Minneapolis proposed the development of a pilot program to enable Minneapolis homeowners and renters to more easily invest in making their homes more energy efficient. Under the Tariff on Bill Financing Pilot (“TOB”) proposal, CenterPoint Energy would play a role in investing in capital improvements and would recover these costs from each participating customer on the customer’s natural gas bills. The program is designed to provide energy savings that more than offset program costs.

As designed, participating customers would benefit through greater access to capital so that projects that would reduce each customer’s energy bills could move forward. More globally, the program would provide benefits through improved housing stock, reduced demand for energy and electric and natural gas utility capacity, reduced emissions of greenhouse gasses, and reduced racial inequities arising from inadequate access to credit.

During the pendency of the rate case, the City and Company filed a stipulation that established a framework for developing a three-year TOB pilot program. The parties proposed a participation goal of 3,000 customers over three years. To qualify, participants would need to pursue energy efficiency projects that would generate savings forecast to exceed costs by at least 25 percent. The program would be available to Minneapolis homeowners and renters with landlord consent. As designed in the stipulation, the program included annual billing reviews to ensure that each participant realized the expected cost savings, and an annual pilot evaluation

filed with the Commission, including a third-party evaluation. After the three-year pilot, the program would be expanded to CenterPoint Energy customers beyond Minneapolis.

Though the Commission found that the goals of the TOB proposal, intending to help renters, reduce economic racial inequities, conserve energy, and limit greenhouse gas emissions, were widely shared goals among various parties, ultimately, the Commission determined the program proposal needed further development and ordered the Company to make an initial filing in a new docket to provide a venue for interested parties and stakeholders to participate and allow for the development of the program in further detail.³ The Commission also required the Company to develop or expand low-income Conservation Improvement Program (“CIP”) programming to focus on renters. The Company has filed an update on that work, dated June 1, 2021, in Docket No. G-008/GR-19-524.

To date, Minneapolis and the Company have made significant progress in the development of a TOB pilot proposal in consultation with interested parties, but work remains. In this filing we will report on progress made since the Commission’s Order and next steps for additional engagement with interested parties to continue to develop a TOB pilot. The Company and Minneapolis will file a pilot proposal and tariff on or before September 1, 2021, to fully address all elements identified in the Commission’s March 1, 2021, Order.

The Company submits the following Exhibits in support of this filing:

- Exhibit A: City of Minneapolis TOB Pilot Principles and Objectives Memorandum
- Exhibit B: Ameren Missouri TOB Electric Tariff (Approved) and Natural Gas Tariff (Pending)
- Exhibit C: Comparison of TOB, On-Bill Loan Repayment, and Property Assessed Clean Energy (“PACE”)
- Exhibit D: Potential TOB Pilot Natural Gas Efficiency Measures
- Exhibit E: Potential Metrics for TOB Pilot Monitoring and Evaluation

II. Stakeholder Engagement

On February 11, 2021, the City of Minneapolis issued a Memorandum to the Minneapolis Clean Energy Partnership outlining Minneapolis’s principles and objectives for an energy efficiency pilot program.⁴ Minneapolis summarized TOB pilot program elements it viewed as necessary to

³ *In the Matter of the Application by CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Minnesota Gas for Authority to Increase Natural Gas Rates in Minnesota*, Docket No. G-008/GR-19-524, Order Accepting and Adopting Agreement Setting Rates, and Initiating Development of Conservation Programs for Renters, Order Point 8 (Mar. 1, 2021).

⁴ See February 11, 2021, Memorandum, attached to this filing as Ex. A.

more comprehensively reach renters, low- and moderate-income households, and communities of color.

Following the March 1, 2021 Commission Order, Minneapolis and the Company continued to lead stakeholder engagement and discussions about the possible development of a TOB pilot. Both the Company and Minneapolis, together and individually, engaged interested parties via a variety of formats, including a facilitated large-group meeting held on April 14, 2021.⁵

Additionally, the Company has researched other TOB programs and, in particular, a new TOB program offered by Ameren in Missouri. Most of the TOB programs in place today are based on the Pay As You Save® or PAYS® model and implemented by electric cooperatives or municipalities. Ameren, however, is one of the first investor-owned utilities to launch a PAYS® program. Ameren has launched its PAYS program to serve its 1.2 million electric customers, and it has a PAYS® program pending with the Missouri Public Utilities Commission to serve its 130,000 natural gas customers.⁶ The Company will continue to monitor the implementation of these programs in Missouri and engage with other utilities that offer TOB programs to learn best practices and other lessons learned.

Throughout this process, Minneapolis and the Company continued to build their shared understanding of stakeholder interests in consideration of a potential TOB pilot that addresses concerns and aligns common interests. Though much progress has been made, several key elements of a TOB pilot program are yet to be fully designed. The City of Minneapolis and CenterPoint Energy plan to continue stakeholder engagement and pilot program development as described further below.

III. TOB Elements in Development

a. Typical Features of a TOB Program

TOB allows for the completion of energy efficiency upgrades, not through a loan, but rather through a utility offering that invests in the upgrades under the terms of a specific tariff. This tariff includes a cost recovery charge on the utility bill, but the recovery charge is less than the

⁵ Since the Commission's March 1 Order, CenterPoint Energy and the City have engaged the following interested parties regarding a TOB pilot: Center for Energy and Environment, Citizen's Utility Board, Community Power, Minnesota Department of Commerce, Energy Cents Coalition, Institute for Local Self Reliance, Minneapolis Energy Vision Advisory Committee, Minnesota Legal Aide, Liberty Homes, Minnesota Center for Environmental Advocacy, Minnesota Office of the Attorney General, Sierra Club, Suburban Rate Authority, and Xcel Energy. The City and CenterPoint Energy also consulted with external parties with expertise in TOB programs such as Clean Energy Works, Renew Missouri, EETility, Green Bank, Inclusive Prosperity Capital, and Ameren Missouri.

⁶ The Ameren TOB tariffs are attached to this filing as Exhibit B.

estimated bill savings created by the installation of the energy efficiency upgrade, saving the customer money.

Typically, TOB program eligibility is limited to cases where annual program costs to participants are no greater than 80 percent of the estimated annual participant energy bill savings, including both gas and electric bills. The on-bill charge is associated with the utility meter at the premise where upgrades are installed, meaning that subsequent occupants at the property would be charged for upgrades until costs are fully recovered, and the cost recovery charge is treated as equal to other regulated charges on the bill in terms of payment priority. See Exhibit C which lists the typical features of TOB compared to traditional on-bill loan and PACE programs.

b. Particular TOB Features Under Development for Proposed Pilot

The particular elements listed below have been a focus of stakeholder conversations so far, and Minneapolis and the Company will work in the coming months to finetune and finalize these elements in the development of the TOB tariff proposed to be submitted on or before September 1, 2021.

i. Participant Eligibility

At this time, the City of Minneapolis and CenterPoint Energy envision a TOB pilot program available to residential and multifamily properties throughout CenterPoint Energy's Minnesota service areas.

ii. Eligible Measures

TOB eligible upgrades are typically limited to those that pass the 80/20 Rule. That is, to be eligible for the TOB program, energy efficiency upgrades must be able to be installed so that the annual participant's payment, including any fees as allowed in the defined tariff, are no greater than 80 percent of the estimated annual energy cost savings for a duration not to exceed 80 percent of the estimated life of the upgrades, often maxed out at 12 years.

The Company compiled a list of eligible natural gas cost saving measures under consideration to include in a TOB pilot offering.⁷ This list includes measures listed in the Minnesota Technical Resources Manual or otherwise included in the Company's current CIP Triennial offerings for residential or multifamily buildings application. The list identifies the natural gas savings measures, a proxy for anticipated natural gas savings, a proxy for incremental cost, the equipment lifetime, and sources for these assumptions.

⁷ See Exhibit D, detailing the gas saving measures that could be eligible for inclusion in the proposed TOB program.

iii. Gas and Electric Savings

Minneapolis, CenterPoint Energy, and many stakeholders acknowledge the importance of including all energy conservation measures to help more projects meet the 80/20 Rule to reduce the need for customer co-pays, and to more comprehensively serve the customer while energy professionals are on site. The City of Minneapolis and CenterPoint Energy are exploring to what extent electric cost savings can be included in the project evaluation for the benefit of customers. It is likely that the ancillary electric savings that result from gas efficiency measures will need to be included for the TOB pilot to be most successful. For example, while air sealing and insulation are primarily gas savings measures, they may also reduce air conditioning load in summer months. Energy modeling software can be used to model both the electric and natural gas savings of measures installed. The Company is exploring how these ancillary electric savings benefits can be utilized in a CenterPoint Energy TOB program. The City of Minneapolis and CenterPoint Energy are also continuing discussions with Xcel Energy about their participation.

iv. Third-Party Capital

Minneapolis and the Company continue to evaluate program costs as several pilot program elements are yet to be defined.

According to tariff terms of existing TOB program models like PAYS®, a utility typically provides the capital investment for energy efficiency upgrades which are repaid by customers on their utility bill. In this model, the cost of capital is often passed to the participating customers and/or socialized amongst ratepayers.

Many interested parties recommend evaluating third-party capital sources with lower interest rates to use in place of the Company's cost of capital. The benefits of lower borrowing costs may help to limit participant and rate-payer costs and make the program more cost effective overall.

The Company and Minneapolis consulted with a financial institution, with experience in utility TOB programs about the possibility of developing a third-party funded, utility TOB program, however we do not see a path forward for lower cost third party capital as part of the pilot program. The Company and Minneapolis are interested in exploring the options further once a pilot program is in place.

v. Participant Consent and Notification

The Company and Minneapolis are considering the contents of a TOB participation agreement that specifies the terms of payment obligations as well as the energy savings benefits projected from participation. If the customer is not the building owner, the building owner would be required to sign an agreement, agreeing to not remove or damage the upgrades, to maintain them, and to provide notice of the benefits and obligations associated with the upgrades at the location to the next owner or customer before the sale or rental of the property. The owner

would also have to agree to have an informational notice attached to their property records. Minneapolis has engaged Hennepin County to evaluate the process and cost of recording property notices, and we will continue to define and refine the particular approach that will be included in our proposed September 1, 2021, TOB program filing.

vi. Disconnection Policies

While the risk of disconnection is shown to decrease among existing TOB participants, a utility follows standard disconnection procedures for non-payment of the TOB charge. As the stakeholder process continues, we will evaluate whether and how the TOB pilot will affect the Company's disconnection process for participating customers. Utilities with experience administering a TOB program to date have not had any instances where a participating customer's service has been disconnected.⁸

vii. Program Administration

The City of Minneapolis and CenterPoint Energy envision the pilot as a CenterPoint Energy program. In consultation with Minneapolis, the Company would select a third-party program implementer via a competitive request for proposal process.

viii. Project Verification

Implementers operating under the PAYS® framework compare each participant's post-installation actual annual savings to estimated annual savings at least once for each location. If any instances are identified where actual costs are less than the location's estimated savings. Minneapolis and CenterPoint Energy understand that PAYS® implementers work with installers with robust warranties, so that if measures are not performing as anticipated, the implementer can seek repair or compensation from the installer with no additional cost to the customer or utility. Minneapolis and Company are evaluating and discussing with stakeholders whether additional verification beyond what is standard in the PAYS® framework is warranted for the pilot program to be proposed.

ix. Inclusivity

Some interested parties have a strong interest in ensuring that People of Color are included in the development of the final program design to ensure just and equitable outcomes for communities of color, renters, and households with low incomes. The Company and Minneapolis will extend an invitation to engage these groups as we consider outreach and engagement in Minneapolis Green Zones and Areas of Concentrated Poverty to participate in a potential TOB program.

⁸ Tom Stanton and Scott Sklar. Utility Tariff On-Bill Financing: Provisions and Precautions for Equitable Programs. NRRl insights: Practical Perspectives on critical policy issues. Jan 2020. <https://pubs.naruc.org/pub/0E0B2716-947E-B0A8-2899-3DCA0F0C8F16>

Minneapolis will also work with community members to increase community awareness and encourage participation in the Commission's public comment process.

Additionally, if the program is approved, Minneapolis plans to continue to work with neighborhood organizations, city commissions, environmental justice groups and other interested parties to raise awareness about how to participate in the program among Indigenous, Black, Latino, and Asian people.

x. Other Elements

Among the issues listed above, the Company and Minneapolis will also continue to work on the scope of the TOB pilot in terms of participation goals and program cost. Additionally, we will continue to define and refine the program's annual evaluation process, and attached as Exhibit E the Company and Minneapolis include a list of possible metrics for evaluating pilot success, which we will continue to refine in collaboration with stakeholders over the course of the summer.

IV. Next Steps

Minneapolis and the Company intend to follow the schedule laid out below as we continue to develop a proposed TOB pilot offering. The City of Minneapolis and CenterPoint Energy will meet individually and in small groups with interested parties to engage in topics for consideration in the development of a program tariff. We plan for two large group meeting discussions to collect input on consumer disclosure and participant consent processes as well as provide input on a draft tariff by early August. We plan to file our pilot proposal on or before September 1, 2021.

Table 2: Timeline for Additional Stakeholder Engagement		
Month	Activity	Topics
June	1-on-1 and small group meetings	General Q&A and topics of interest
Mid-July	Large group meeting with interested parties	Participant consent and property recordings – documents and process
Early-August	Large group meeting with interested parties	Proposed program design
Aug	1-on-1 and small group meetings	General Q&A and topics of interest
Sept 1	Proposed TOB Program Filing	

V. Conclusion

A TOB pilot, based on the PAYS® model which has demonstrated success among utilities in other states, may provide an opportunity to accelerate the achievement of energy savings goals in Minnesota, especially among traditionally hard to reach market segments like rental properties and low-income customers. We thank the Commission for its attention to this issue and we look forward to further engagement after the TOB pilot tariff is submitted on or before our proposed date of September 1, 2021.

**Exhibit A: City of Minneapolis Tariffed On-
Bill Pilot Principles and Objectives
Memorandum**

June 1, 2021



MEMORANDUM

To: Amber Lee, Brad Tutunjian, Bria Shea, John Marshall

Cc: Clean Energy Partnership Planning Team and Energy Vision Advisory Committee (EVAC)

From: Mayor Jacob Frey, Council Member Cam Gordon, Council Member Jeremy Schroeder, Council Member Steve Fletcher

Date: February 11, 2021

Subject: City of Minneapolis principles and objectives for an energy efficiency pilot program

Minneapolis appreciates CenterPoint and Xcel's on-going interest in and support for advancing a tariffed on bill pilot program proposal to the MN Public Utilities Commission (PUC), including commitments made in the [2019-2021 Clean Energy Partnership Work Plan](#). We also appreciate the broad consensus we heard at the PUC hearings on January 12 and 14, 2021 regarding the need to more equitably serve a broader set of customers with clean energy programs that reach renters, low- and moderate-income households, and communities of color.

Minneapolis looks forward to continuing to work collaboratively with CenterPoint and to re-engaging Xcel to fulfill the goals outlined in our mutually adopted Clean Energy Partnership Work Plan and to meet the requirements of the pending Order from the MPUC.¹ In fulfillment of the CenterPoint/City of Minneapolis Decision Option 1a from the Jan. 14, 2021 hearing,² this Memo includes a summary of City of Minneapolis' objectives for a new pilot program proposal.

Based on the interest in electricity measures and electricity savings expressed by Commissioners during the January hearings, Minneapolis requests the active engagement of both our utility partners, CenterPoint and Xcel, as we develop a new filing due within 90 days of the Commission Order.

¹ Docket 19-524, Order Pending.

² Require CenterPoint and City of Minneapolis to submit a filing in a new docket within 90 days of the Commission order to allow for development of the CenterPoint Energy and City's proposal in greater detail and to provide a forum for review by interested parties and stakeholders... The filing shall: a. Outline the objectives of the City's proposed pilot...

The City of Minneapolis holds these principles and objectives for a residential clean energy pilot program filed with the Public Utilities Commission in fulfillment of the pending PUC Order:

- Independent certification that the recommended energy upgrades are appropriate, and savings estimates exceed payments in both the near- and long-term for an individual program participant:
 - The monthly charge must be lower than the measure's estimated savings and it remains on the bill for that location until all costs are recovered
 - Analysis must be completed by an independent third party (the program operator) who does not have a financial interest in a customer's participation
- No up-front payment and no debt obligation to participate.
- Analysis performed on site, customized for each particular home
- Allows both gas and electricity measures to comprehensively count toward savings
- Allows comprehensive upgrades (both gas- and electricity-savings) to be completed
- A review of the customer's realized savings at the end of the first year, at minimum
- A third party advocate for a participating customer if estimated savings don't materialize.
- Allows for payment over time, but unlike a loan, the payment obligation ends when occupancy ends or if the measure fails
- Terms are cost-based, non-discriminatory, just, reasonable, and fair for participants and non-participants
- Program operator must offer information to interested customers about programs for income eligible customers
- Participants must be allowed to access existing CIP programs or other incentives available to them
- Program must serve the needs of more Minneapolis residents, including interested renters and low-income customers, who have opportunities for cost effective upgrades
- Program participation does not require personal debt/credit worthiness
- Cost of financing is such that it does not burden participants or non-participating customers
- Contractors and workers are compensated fairly for their work
- Participation reduces energy burden and reduces risk of disconnection
- To the extent possible, the program coordinates with reputable local training efforts, such as the CIP Workforce development
- Program outreach should prioritize BIPOC, Green Zone, and low-income households
- Program includes adequate consumer protections
- Program can be expanded to other geographies
- Program should be of a scale and size so as to have a meaningful impact on energy burden, customer savings, and achievement of City Climate Action Goals

**Exhibit B: Ameren Missouri Tariffed On-Bill Electric
Tariff (Approved) and Natural Gas Tariff
(Pending)**

June 1, 2021

MO.P.S.C. SCHEDULE NO. 6 1st Revised SHEET NO. 245

CANCELLING MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 245

APPLYING TO MISSOURI SERVICE AREA

ENERGY EFFICIENCY MEEIA 2019-21

*** Residential Pay As You Save® Program**

PURPOSE

The objective of the Pay As You Save® Program (Program) is to promote the installation of energy efficient Measures and increase deeper, long-term energy savings and bill reduction opportunities for Participants through a tariffed on bill charge tied to the meter for delivery of MEEIA 2019-21 Demand-Side Management Plan Measures.

DEFINITIONS APPLICABLE TO RESIDENTIAL PAY AS YOU SAVE® PROGRAM ONLY

Analysis - Initial Program visit, walk through and report, Tier 1 upgrades, and customer education.

Assessment - Detailed home performance data collection, analysis of qualifying upgrades, and preparation and one-on-one presentation of Program offer.

Efficiency Upgrade Agreement - Agreement signed by Participants (who own the property) defining customer benefits and obligations, including Service Charges and duration of payments.

Energy Efficiency Plan (Plan) - Prepared by Program Administrator to identify recommended upgrades.

Estimated Life - The expected duration in years of the savings for each individual measure.

Property Notice - Attached by the Program to property records outlining benefits and obligations associated with the upgrades. In jurisdictions in which the Program cannot attach a Property Notice to property records, and in any case where a subsequent tenant is executing a rental agreement, Property Notice form must be signed by successor customer or purchaser indicating they accept benefits and obligations associated with the upgrades at the location before the sale or rental of the property.

Owners Agreement - A separate required document indicating the owner's obligations (if Participant is not the building owner).

Project - Scope of work determined by the Program based on home characteristics, program data collection, and analysis.

Qualifying Project - Project scope of work meeting Program criteria (Project cost, including Program Partner pricing and Program fees, is equal to or less than 80% of the estimated post upgrade cost savings over 80% of the upgrade Estimated Life).

Service Charge - Monthly charge assigned to the premises recovering Program costs for upgrades, fees, any required taxes, cost of capital for financing of four percent (4%), or costs for customer-caused repairs as described in section 5.

*Indicates Addition.

DATE OF ISSUE	<u>November 18, 2020</u>	DATE EFFECTIVE	<u>December 18, 2020</u>
ISSUED BY	<u>Martin J. Lyons</u>	<u>Chairman & President</u>	<u>St. Louis, Missouri</u>
	NAME OF OFFICER	TITLE	ADDRESS

MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 245.1

CANCELLING MO.P.S.C. SCHEDULE NO. _____ SHEET NO. _____

APPLYING TO MISSOURI SERVICE AREA

ENERGY EFFICIENCY MEEIA 2019-21

Residential Pay As You Save® Program (Cont'd.)

AVAILABILITY

The Program is available to qualifying customers receiving service under the Residential Service Rate 1(M) up to the financed amounts and for the portion of the Program Period described in the Unanimous Stipulation and Agreement Regarding The Implementation Certain MEEIA Programs Through Plan Year 2022 approved by the Commission in EO-2018-0211.

In order to qualify as a Participant, customers must either own the building or the building owner must sign an Owner Agreement agreeing to not remove or damage the upgrades, to maintain them, and to provide Property Notice of the benefits and obligations associated with the upgrades at the location to the next owner or customer before the sale or rental of the property.

Projects that address upgrades to existing buildings deemed unlikely to be habitable or to serve their intended purpose for the duration of Company's cost recovery will not be approved unless repairs are made by the building owner that will extend the life through the Company's cost recovery period. If a building is a manufactured home, it must be built on a permanent foundation and fabricated after 1982 to be eligible.

PROGRAM DESCRIPTION

The Company will hire a Program Administrator to implement this Program. The Program Administrator will provide the necessary services to effectively implement the Program.

1. Participation: To become a Participant in the Program, a customer must: 1) request from the Company an analysis of qualifying upgrades, 2) agree to the terms of the Analysis fee as described in section 3, and 3) sign the Efficiency Upgrade Agreement and implement any Qualifying Project that does not require an upfront payment from the Participant as described in section 2(c).
 - a. The owner must agree to have a Property Notice attached to their property records through either i) Owners Agreement if the Participant is not the owner or ii) as part of the Efficiency Upgrade Agreement if the Participant is the owner.
 - b. Failure to obtain the signature on the Property Notice form, of a successor customer who is renting the premises or a purchaser, in jurisdictions in which the Company cannot attach the Property Notice to the property records, indicating that the successor customer received Property Notice will constitute the owner's acceptance of consequential damages and permission for a tenant or purchaser to break their lease or sales agreement without penalty.
 - c. The customer authorizes the use of energy usage history by the Program Administrator in order to true up its energy analysis and determine qualifying recommendations.

DATE OF ISSUE November 18, 2020 DATE EFFECTIVE December 18, 2020

ISSUED BY Martin J. Lyons Chairman & President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 245.2

CANCELLING MO.P.S.C. SCHEDULE NO. _____ SHEET NO. _____

APPLYING TO MISSOURI SERVICE AREA

ENERGY EFFICIENCY MEEIA 2019-21

Residential Pay As You Save® Program (Cont'd.)

PROGRAM DESCRIPTION (Cont'd.)

2. Energy Efficiency Plans: The Company will have its Program Administrator or Program Partner perform an assessment and prepare a Plan identifying recommended upgrades to improve energy efficiency and lower energy costs.
 - a. **Incentive payment:** The Company will offer incentives currently available for an eligible residential Measure and as defined in Company's MEEIA 2019-21 Demand-Side Management Plan.
 - b. **Net Savings:** Recommended upgrades shall be limited to those where the annual Service Charge, including program fees and applicable charges for capital, are no greater than 80% of the estimated annual savings to a participating customer based on current retail rates for electricity, and may include gas savings if the program is co-delivered with a gas utility.
 - c. **Copay Option:** In order to qualify a Project that does not meet the criteria for a Qualifying Project, customers may agree to pay the portion of a Project's cost that prevents it from qualifying for the Program as an up-front payment to the Program Partner. Company will assume no responsibility for such up-front payments to the Program Partner. Copayments will be applied after applying relevant incentive payments as defined in 2(a).
3. Analysis fee: The Company will not recover Analysis fee costs from participants through a Service Charge. Analysis fee costs will be treated as Program Administrative costs.
4. Services Charge: The Company will recover the costs for its investments including any fees as allowed in this tariff through a monthly Service Charge assigned to the premises where upgrades are installed and paid by the Participant or a successor occupying that location until all Company costs have been recovered. The Service Charge will also be set for a duration not to exceed the greater of i) the length of a full parts and labor warranty or ii) 80 percent (80%) of the estimated life of the upgrades, and in no case longer than twelve years. The Service Charge and duration of payments will be included in the Efficiency Upgrade Agreement.
 - a. **Cost Recovery:** No sooner than 45 days after approval by the Company or its Program Administrator, the Participant shall be billed the monthly Service Charge as determined by the Program. The Company will bill and collect the Service Charge until cost recovery is complete except in cases discussed in section 4. Prepayment of Service Charges will not be permitted.
 - b. **Eligible Upgrades:** All upgrades must have Energy Star certification, if applicable.

DATE OF ISSUE	<u>November 18, 2020</u>	DATE EFFECTIVE	<u>December 18, 2020</u>
ISSUED BY	<u>Martin J. Lyons</u>	<u>Chairman & President</u>	<u>St. Louis, Missouri</u>
	NAME OF OFFICER	TITLE	ADDRESS

MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 245.3

CANCELLING MO.P.S.C. SCHEDULE NO. SHEET NO.

APPLYING TO MISSOURI SERVICE AREA

ENERGY EFFICIENCY MEEIA 2019-21

Residential Pay As You Save® Program (Cont'd.)

PROGRAM DESCRIPTION (Cont'd.)

4. Services Charge: (Cont'd.)

- c. **Ownership of Upgrades:** During the period of time when the Service Charge is billed to customers at locations where upgrades have been installed, the Company will retain ownership of the installed upgrades. Upon completion of the cost recovery, ownership will be transferred to the building owner.
- d. **Maintenance of Upgrades:** Participating customers and building owners (if the customer is not the building owner) shall keep the installed upgrades in place, in working order, and maintained per manufacturer's instructions for the duration of the cost recovery. Participating customers shall report the failure of the installed upgrades to the Program Administrator or Company as soon as possible. If an upgrade fails, the Company is responsible for determining its cause and for repairing the equipment in a timely manner. If the owner, customer, or occupants caused the damage to the installed upgrades, they will reimburse the Company as described in section 4.
- e. **Termination of Service Charge:** Once the Company's cost recovery is complete, Company will discontinue the Service Charge, except as described in sections 4(d) and 4(h).
- f. **Vacancy:** If a location at which upgrades have been installed becomes vacant for any reason and electric service is disconnected, the Service Charge will be suspended until a successor customer takes occupancy. If a building owner maintains electric service at the location, the building owner will be billed the Service Charge as part of any charges it incurs while electric service is turned on.
- g. **Extension of Program Charge:** If the monthly Service Charge is reduced or suspended for any reason, once repairs have been successfully effected or service reconnected, the number of total monthly payments shall be extended until the total collected through the Service Charge is equal to the Company's cost for installation as described in section 4, including costs associated with repairs, deferred payments, and missed payments as long as the current occupant is still benefiting from the upgrades.
- h. **Tied to the Location:** Until cost recovery for upgrades at a location is complete or the upgrades fail as described in section 6(g), the terms of this tariff shall be binding on the metered structure or facility and any future customer who shall receive service at that location.
- i. **Disconnection for Non-Payment:** As a charge paid in furtherance of an approved energy efficiency program, and the Company may disconnect the metered structure for non-payment of the Service Charge under the same provisions as for any other electric service.

DATE OF ISSUE November 18, 2020 DATE EFFECTIVE December 18, 2020

ISSUED BY Martin J. Lyons Chairman & President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 245.4

CANCELLING MO.P.S.C. SCHEDULE NO. _____ SHEET NO. _____

APPLYING TO MISSOURI SERVICE AREA

ENERGY EFFICIENCY MEEIA 2019-21

Residential Pay As You Save® Program (Cont'd.)

PROGRAM DESCRIPTION (Cont'd.)

4. Services Charge: (Cont'd.)

- j. **Confirm Savings Actually Exceeded Tariffed-Charge:** Program Administrator will perform an annual analysis to evaluate weather-normalized 12-month post-upgrade Project cost savings and confirm that the Service Charge remains lower than estimated Project cost savings. In the event that analysis indicates that the Service Charge exceeds the estimated Project cost savings due to inaccurate saving estimates, the Service Charge may be reduced or eliminated to the extent needed in order for the Participant to realize Project savings
- k. **Repairs:** Should, at any future time during the billing of the Service Charge, the Company determine that the installed upgrades are no longer functioning as intended and that the occupant or building owner, as applicable, did not damage or fail to maintain the installed upgrades, the Company shall reduce or suspend the Service Charge until such time as the Company and/or its Program Partner can repair the upgrades. If the upgrades cannot be repaired or replaced cost effectively, the Company will waive remaining Service Charges. If the Company determines the occupant or building owner, as applicable, did damage or fail to maintain the upgrades in place as described in section 4(a), it will seek to recover all costs associated with the installation, including any fees, incentives paid to lower Project costs, and legal fees. The Service Charge will continue until Company's cost recovery is complete as long as the upgrades continue to function. Company will not guarantee perfect operation of installed upgrades in every circumstance, and any suspension or waiver of unbilled Service Charges shall not entitle the Participant or owner to any refund or cancellation of previously billed Service Charges.

ELIGIBLE MEASURES AND INCENTIVES

Measures filed in File No. EO-2018-0211 or other measures not included in the TRM but that, due to the complexity in the design and configuration of the particular measure in the Qualifying Project, may be subject to a more comprehensive custom engineering algorithm and financial analysis that more accurately characterize the energy efficiency savings within a Qualifying Project are eligible for Program benefits and Incentives and may be offered for promotion during the Program Period. Eligible Measures for this Program are limited to residential energy efficiency Measures and do not include residential demand response Measures. A description of Eligible Measures and Incentives directly paid to customers may be found at amerenmissourisavings.com/PAYS.

DATE OF ISSUE November 18, 2020 DATE EFFECTIVE December 18, 2020
ISSUED BY Martin J. Lyons Chairman & President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

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Residential Pay As You Save® Program

PURPOSE

The objective of the Pay As You Save® Program (Program) is to promote the installation of energy efficient Measures and increase deeper, long-term energy savings and bill reduction opportunities for Participants through a tariffed on bill charge tied to the meter.

DEFINITIONS APPLICABLE TO RESIDENTIAL PAY AS YOU SAVE® PROGRAM ONLY

Analysis - Initial Program visit, walk through and report, Tier 1 upgrades, and customer education.

Assessment - Detailed home performance data collection, analysis of qualifying upgrades, and preparation and one-on-one presentation of Program offer.

Efficiency Upgrade Agreement - Agreement signed by Participants (who own the property) defining customer benefits and obligations, including Service Charges and duration of payments.

Energy Efficiency Plan (Plan) - Prepared by Program Administrator to identify recommended upgrades.

Estimated Life - The expected duration in years of the savings for each individual measure.

Measure - The replacement of less efficient natural gas equipment with high efficient ENERGY STAR® Qualified natural gas equipment and other high efficiency equipment and building shell measures.

Participant - An energy-related decision maker who implements one or more end-use Measures as a direct result of a demand-side program.

Program Administrator - The Company or entity selected by the Company to provide program design, promotion, administration, implementation, and delivery of services.

Program Partner - A retailer, distributor, or other service provider that the Company or the Program Administrator has approved to provide specific program services through execution of a Company-approved service agreement.

Property Notice - Attached by the Program to property records outlining benefits and obligations associated with the upgrades. In jurisdictions in which the Program cannot attach a Property Notice to property records, and in any case where a subsequent tenant is executing a rental agreement, Property Notice form must be signed by successor customer or purchaser indicating they accept benefits and obligations associated with the upgrades at the location before the sale or rental of the property.

*Indicates Change.

Residential Pay As You Save® Program (Cont'd.)

DEFINITIONS APPLICABLE TO RESIDENTIAL PAY AS YOU SAVE® PROGRAM ONLY (Cont'd.)

Owners Agreement - A separate required document indicating the owner's obligations (if Participant is not the building owner).

Project - Scope of work determined by the Program based on home characteristics, program data collection, and analysis.

Qualifying Project - Project scope of work meeting Program criteria (Project cost, including Program Partner pricing, Program fees, and interest, is equal to or less than 80% of the estimated post upgrade cost savings from all major fuel sources, over 80% of the upgrade Estimated Life).

Service Charge - Monthly charge assigned to the premises recovering Program costs for upgrades, fees, any required taxes, cost of capital for financing of four percent (4%), or costs for customer-caused repairs as described in section 4.

AVAILABILITY

The Program is available to qualifying customers receiving service under the Residential Service Rate up to the financed amounts.

In order to qualify as a Participant, customers must either own the building or the building owner must sign an Owner Agreement agreeing to not remove or damage the upgrades, to maintain them, and to provide Property Notice of the benefits and obligations associated with the upgrades at the location to the next owner or customer before the sale or rental of the property.

Projects that address upgrades to existing buildings deemed unlikely to be habitable or to serve their intended purpose for the duration of Company's cost recovery will not be approved unless repairs are made by the building owner that will extend the life through the Company's cost recovery period. If a building is a manufactured home, it must be built on a permanent foundation and fabricated after 1982 to be eligible.

PROGRAM DESCRIPTION

The Company will hire a Program Administrator to implement this Program. The Program Administrator will provide the necessary services to effectively implement the Program.

1. Participation: To become a Participant in the Program, a customer must: 1) request from the Company an analysis of qualifying upgrades, 2) sign the Efficiency Upgrade Agreement and implement any Qualifying Project that does not require an upfront payment from the Participant as described in section 2(c).

Residential Pay As You Save® Program (Cont'd.)

PROGRAM DESCRIPTION (Cont'd.)

1. Participation: (Cont'd.)

- a. The owner must agree to have a Property Notice attached to their property records through either i) Owners Agreement if the Participant is not the owner or ii) as part of the Efficiency Upgrade Agreement if the Participant is the owner.
- b. Failure to obtain the signature on the Property Notice form, of a successor customer who is renting the premises or a purchaser, indicating that the successor customer received Property Notice will constitute the owner's acceptance of consequential damages and permission for a tenant or purchaser to break their lease or sales agreement without penalty.
- c. The customer authorizes the use of energy usage history (from the utility or utilities of all major fuel sources) by the Program Administrator in order to true up its energy analysis and determine qualifying recommendations.

2. Energy Efficiency Plans: The Company will have its Program Administrator or Program Partner perform an assessment and prepare a Plan identifying recommended upgrades to improve energy efficiency and lower energy costs.

- a. **Net savings:** Recommended upgrades shall be limited to those where the annual Service Charge, including program fees and applicable charges for capital, are no greater than 80% of the estimated annual savings to a participating customer based on current retail rates for all major fuel sources, including electric and propane savings as well as natural gas.
- b. In cases of co-delivery, program administration costs and financed project costs will be allocated to the natural gas and electric budgets, respectively.
- c. **Copay option:** In order to qualify a Project that does not meet the criteria for a Qualifying Project, customers may agree to pay the portion of a Project's cost that prevents it from qualifying for the Program as an up-front payment to the Program Partner. Company will assume no responsibility for such up-front payments to the Program Partner.

3. Analysis fee: The Company will not recover Analysis fee costs from participants through a Service Charge. Analysis fee costs will be treated as Program Administrative costs.

Residential Pay As You Save® Program (Cont'd.)

PROGRAM DESCRIPTION (Cont'd.)

4. **Service Charge:** The Company will recover the costs for its investments including any fees as allowed in this tariff through a monthly Service Charge assigned to the premises where upgrades are installed and paid by the current Participant or any future successor occupying that location until all Company costs have been recovered. The Service Charge will also be set for a duration not to exceed the greater of i) the length of a full parts and labor warranty or ii) 80 percent (80%) of the estimated life of the upgrades, and in no case longer than twelve years, except in cases discussed in section 4. The Service Charge and duration of payments will be included in the Efficiency Upgrade Agreement.
 - a. **Cost Recovery:** No sooner than 45 days after approval by the Company or its Program Administrator, the Participant shall be billed the monthly Service Charge as determined by the Program. The Company will bill and collect the Service Charge until cost recovery is complete except in cases discussed in section 4. Prepayment of Service Charges will not be permitted.
 - b. **Eligible Upgrades:** All upgrades must have Energy Star certification, if applicable.
 - c. **Ownership of Upgrades:** During the period of time when the Service Charge is billed to customers at locations where upgrades have been installed, the Company will retain ownership of the installed upgrades. Upon completion of the cost recovery, ownership will be transferred to the building owner.
 - d. **Maintenance of Upgrades:** Participating customers and building owners (if the customer is not the building owner) shall keep the installed upgrades in place, in working order, and maintained per manufacturer's instructions for the duration of the cost recovery. Participating customers shall report the failure of the installed upgrades to the Program Administrator or Company as soon as possible. If an upgrade fails, the Company is responsible for determining its cause and for repairing the equipment in a timely manner. If the owner, customer, or occupants caused the damage to the installed upgrades, they will reimburse the Company as described in section 4.
 - e. **Termination of Service Charge:** Once the Company's cost recovery is complete, Company will discontinue the Service Charge, except as described in section 4(g).

Residential Pay As You Save® Program (Cont'd.)

PROGRAM DESCRIPTION (Cont'd.)

4. Service Charge: (Cont'd.)

- f. **Vacancy:** If a location at which upgrades have been installed becomes vacant for any reason and gas service is disconnected, the Service Charge will be suspended until a successor customer takes occupancy. If a building owner maintains gas service at the location, the building owner will be billed the Service Charge as part of any charges it incurs while gas service is turned on.
- g. **Extension of Program Charge:** If the monthly Service Charge is reduced or suspended for any reason, once repairs have been successfully effected or service reconnected, the number of total monthly payments shall be extended until the total collected through the Service Charge is equal to the Company's cost for installation as described in section 4, including costs associated with repairs, deferred payments, and missed payments as long as the current occupant is still benefiting from the upgrades.
- h. **Tied to the Location:** Until cost recovery for upgrades at a location is complete or the upgrades fail as described in section 4(d), the terms of this tariff shall be binding on the metered structure or facility and any future customer who shall receive service at that location.
- i. **Disconnection for Non-Payment:** As a charge paid in furtherance of an approved energy efficiency program, the Company may disconnect the metered structure for non-payment of the Service Charge under the same provisions as for any other gas service.
- j. **Confirm Savings Actually Exceeded Tariffed-Charge:** Program Administrator will perform an annual analysis to evaluate weather-normalized 12-month post-upgrade Project cost savings and confirm that the Service Charge remains lower than estimated Project cost savings. In the event that analysis indicates that the Service Charge exceeds the estimated Project cost savings due to inaccurate saving estimates, the Service Charge may be reduced or eliminated to the extent needed in order for the Participant to realize Project savings.
- k. **Repairs:** Should, at any future time during the billing of the Service Charge, the Company determine that the installed upgrades are no longer functioning as intended and that the occupant or building owner, as applicable, did not damage or fail to maintain the installed upgrades, the Company shall reduce or suspend the Service Charge until such time as the Company and/or its Program Partner can repair the upgrades. If the upgrades cannot be repaired or replaced cost

Residential Pay As You Save® Program (Cont'd.)

PROGRAM DESCRIPTION (Cont'd.)

4. Service Charge: (Cont'd.)

- k. **Repairs:** (Cont'd.) effectively, the Company will waive remaining Service Charges. If the Company determines the occupant or building owner, as applicable, did damage or fail to maintain the upgrades in place as described in section 4(d), it will seek to recover all costs associated with the installation, including any fees, incentives paid to lower Project costs, and legal fees. The Service Charge will continue until Company's cost recovery is complete as long as the upgrades continue to function. Company will not guarantee perfect operation of installed upgrades in every circumstance, and any suspension or waiver of unbilled Service Charges shall not entitle the Participant or owner to any refund or cancellation of previously billed Service Charges.

ELIGIBLE MEASURES AND INCENTIVES

A description of Eligible Measures and Incentives directly paid to customers may be found at AmerenMissouri.com/naturalgas.

Exhibit C: Comparison of Tariffed On-Bill, On-Bill Loan Repayment, and Property Accessed Clean Energy Programs

June 1, 2021

Attributes	PAYS®	On-bill loan	PACE
Customer eligibility			
• Residential customers are eligible	✓	✓	✓
• Commercial customers are eligible	✓	✓	✓
• Renters are eligible	✓		
• No credit score check	✓	¹	
• Eligibility includes all customers in a utility's service territory	✓		
• Utility uses bill payment history to confirm good standing	¹	✓	
Customer experience			
• On-site energy assessment identifies cost-effective upgrades	✓		
• Customer chooses contractor for installation	✓	✓	✓
• No upfront customer cost	✓	✓	✓
• Estimated savings must exceed cost recovery charges over the estimated lifetime of the upgrades	✓		
• Immediate net savings to customer	✓		
• Payments end if upgrade fails and is not repaired	✓		²
• Customer signs a promissory note to accept a debt obligation		✓	✓
• Customer opts into a utility tariff tied to the location	✓		
• Customer agrees to disconnection for not paying utility bills	✓		
• Cost recovery is through a fixed charge on utility bill	✓	✓	
• Customer agrees to a lien on the property			✓
• Cost recovery is through property tax bill			✓
• Participant's charges end when they leave the location if they have fulfilled their responsibilities, e.g., maintaining upgrades	✓	³	^{3,4}
• Cost recovery runs with the location and remains in effect for subsequent customers at that site until cost recovery is complete	✓		

¹ This attribute applies in some cases² One PACE project developer markets a performance guarantee.³ The loan obligation may be transferred to a successive property owner, provided they accept the debt obligation.⁴ Because real estate negotiations may result in adjustment of the sale price based on the value of outstanding liens, the negotiations may ultimately obligate the seller to pay the outstanding balance on the investment.

Exhibit D: Potential Tariffed On-Bill Pilot Natural Gas Measures

June 1, 2021

Measure	Savings/Unit	Savings Type	Savings Source	Incremental Cost/Unit	Incremental Cost Type	Incremental Cost Source	Life	Equipment Life Source	Notes
Residential Measures									
FURNACES AND BOILERS									
92% AFUE furnace (replacement)	13.43	DC	MN TRM 3.1, page 81	\$637	D	MN TRM 3.1, page 83	20	MN TRM 3.1, page 81	Uses 2017-2018 averages of 66,000 Btu/hr, 92.2% high AFUE, and a deemed 80% base AFUE
94% AFUE furnace (replacement)	16.75	DC	MN TRM 3.1, page 81	\$736	D	MN TRM 3.1, page 83, 95% is used since that's what our program averages	20	MN TRM 3.1, page 81	Uses 2017-2018 averages of 65,000 Btu/hr, 95.1% high AFUE, and a deemed 80% base AFUE
96% AFUE furnace (replacement)	20.34	DC	MN TRM 3.1, page 81	\$950	D	MN TRM 3.1, page 83	20	MN TRM 3.1, page 81	Uses 2017-2018 averages of 72,000 Btu/hr, 96.3% high AFUE, and a deemed 80% base AFUE
83.5% efficient boiler	3.87	DC	MN TRM 3.1, page 81	\$1,445	D	MN TRM 3.1, page 83	20	MN TRM 3.1, page 81	Uses 2017-2018 averages of 97,000 Btu/hr, 84.2% high AFUE, and a deemed 82% base AFUE; disregards the furnace fan component from the TRM
91% efficient boiler	26.41	DC	MN TRM 3.1, page 81	\$2,379	D	MN TRM 3.1, page 83	20	MN TRM 3.1, page 81	Uses 2017-2018 averages of 112,000 Btu/hr, 95.0% high AFUE, and a deemed 82% base AFUE; disregards the furnace fan component from the TRM
92% AFUE furnace (new construction)	1.00	DC	MN TRM 3.1, page 81	\$66	D	MN TRM 3.1, page 83	20	MN TRM 3.1, page 81	Uses 2017-2018 averages of 67,000 Btu/hr, 92.3% high AFUE, and a deemed 90% base AFUE
95% AFUE furnace (new construction)	5.05	DC	MN TRM 3.1, page 81	\$379	D	MN TRM 3.1, page 83, 96% is used since that's what our program averages	20	MN TRM 3.1, page 81	Uses 2017-2018 averages of 67,000 Btu/hr, 95.9% high AFUE, and a deemed 90% base AFUE
High-efficiency single package vertical unit (replacement)	5.01	D	MN TRM 3.1, page 81	\$400	D	Cost based on discussions with Trade Ally	20	MN TRM 3.1, page 81	Btuh_in = 36,000; Eff_high = 90%; EFF_base = 80%; MultiFamily EFLH = 1904 (from Table 1 of page 340 of MN TRM 3.1 - comm boiler)
THERMOSTATS									
Tier 1 thermostat replacing manual	2.48	D	MN TRM 3.1, page 99	\$30	D	MN TRM 3.1, page 100	10	MN TRM 3.1, page 98	
Tier 2 thermostat (NPAH only)	3.73	D	MN TRM 3.1, page 99	\$91	D	MN TRM 3.1, page 100	10	MN TRM 3.1, page 98	
Tier 3 thermostat replacing manual	7.52	D	MN TRM 3.1, page 99	\$189	D	MN TRM 3.1, page 100	10	MN TRM 3.1, page 98	
Tier 3 thermostat replacing unknown T-stat type	3.80	D	MN TRM 3.1, page 99	\$174	D	MN TRM 3.1, page 100	10	MN TRM 3.1, page 98	
Tier 2 thermostat replacing Tier 1 (NPAH only)	1.24	D	MN TRM 3.1, page 99	\$61	D	MN TRM 3.1, page 100	10	MN TRM 3.1, page 98	
Tier 3 thermostat replacing Tier 1	5.04	D	MN TRM 3.1, page 99	\$159	D	MN TRM 3.1, page 100	10	MN TRM 3.1, page 98	
Tier 3 thermostat replacing Tier 2	3.80	D	MN TRM 3.1, page 99	\$98	D	MN TRM 3.1, page 100	10	MN TRM 3.1, page 98	
TUNE UPS									
Furnace tune-up	2.11	D	MN TRM 3.1, page 77	\$120	D	our own costs	2	MN TRM 3.1, page 77	Uses 2017-2018 replacement furnace average of 71,000 Btu/hr
Boiler tune-up	3.03	D	MN TRM 3.1, page 77	\$120	D	our own costs	2	MN TRM 3.1, page 77	Uses 2017-2018 replacement furnace average of 102,000 Btu/hr
WATER HEATERS									
Tank Water Heater (<55 gallons; atmospheric)	1.65	DC	MN TRM 3.1, page 143	\$88	D	From Home Depot website research. 4 ENERGY STAR atmospheric models and 2 non-ENERGY STAR atmospheric models.	15	MN TRM 3.1, page 143	Uses "High-Draw", 48-gallon, and a single-family application, all of which were the most frequently used categories. Uses 0.695 UEF, which is the average of UEFs from the 2019 rebated water heaters.
Tank Water Heater (<55 gallons; power vent)	1.65	DC	MN TRM 3.1, page 143	\$577	D	MN TRM 3.1, page 144	15	MN TRM 3.1, page 143	Assumes "High-Draw", 50-gallon, 0.68 UEF model in a single-family application
Tank Water Heater (>55 gallons)	0.27	DC	MN TRM 3.1, page 143	\$814	D	MN TRM 3.1, page 144	15	MN TRM 3.1, page 143	Assumes "High-Draw", 75-gallon, 0.80 UEF model in a single-family application
88% thermal efficiency water heater (>75,000 Btu/hr, commercial water heater in residential application)	2.18	DC	MN TRM 3.1, page 425	\$1,350	D	MN TRM 3.1, page 428	11	MN TRM 3.1, page 428	Uses Polaris's GTP 130 200, a common commercial unit installed in residential applications. It has a 95% thermal efficiency in a 50-gallon package.
Indirect water heater	4.47	D	MN TRM 3.1, page 168	\$989	D	MN TRM 3.1, page 168	15	MN TRM 3.1, page 168	Assumes a 40 gallon model in a single family application.
.87 UEF tankless water heater (replacing tank water heater)	5.92	DC	MN TRM 3.1, page 143	\$1,097	D	MN TRM 3.1, page 144	20	MN TRM 3.1, page 143	Uses 0.63 UEF for a baseline tank model. Uses 0.95 UEF for the proposed model, which is the average of UEFs from the 2019 rebated water heaters.
.87 UEF EF tankless water heater (replacing tankless water heater)	2.01	DC	MN TRM 3.1, page 143	\$400	D	From NREL National Residential Efficiency Measures Database. https://remdb.nrel.gov/measures.php?glid=6&ctid=270	20	MN TRM 3.1, page 143	Uses 0.81 UEF for a baseline tankless model. Uses 0.95 UEF for the proposed model, which is the average of UEFs from the 2019 rebated water heaters.
LAUNDRY									
ENERGY STAR clothes washer (NPAH only)	0.17	D	MN TRM 3.1, page 174	\$163	D	MN TRM 3.1, page 174, with a ratio between annual gas savings and total energy savings multiplied by the total cost	11	MN TRM 3.1, page 172	uses "unknown" categories for water heater and dryer fuel types.
ENERGY STAR clothes dryer	0.39	D	MN TRM 3.1, page 178	\$152	D	MN TRM 3.1, page 178	12	MN TRM 3.1, page 178	
DIRECT INSTALL/DIY									
Low-flow showerhead	1.57	D	MN TRM 3.1, page 155	\$12	D	MN TRM 3.1, page 155	10	MN TRM 3.1, page 155	uses "SF" for both "people per household" and "showerheads per household" categories
Low-flow kitchen aerator	0.57	D	MN TRM 3.1, page 136	\$7	D	MN TRM 3.1, page 136	10	MN TRM 3.1, page 136	uses "SF" category
1.0 GPM Low-flow bathroom aerator	0.22	D	MN TRM 3.1, page 136	\$7	D	MN TRM 3.1, page 136	10	MN TRM 3.1, page 136	uses "SF" category
0.5 GPM bathroom aerator	0.33	D	MN TRM 3.1, page 136	\$7	D	MN TRM 3.1, page 136	10	MN TRM 3.1, page 136	uses "SF" category

Measure	Savings/Unit	Savings Type	Savings Source	Incremental Cost/Unit	Incremental Cost Type	Incremental Cost Source	Life	Equipment Life Source	Notes
6' feet of R-2 (at least) DHW pipe insulation (DI ro HES and LIW)	1.47	D	MN TRM 3.1, page 160	\$0	D	Unlike the low flow devices, these measures are free to the customer.	13	MN TRM 3.1, page 160	
Rope caulk	0.09	D	Uses the MN TRM air sealing algorithm (3.1, page 104) with an assumed cfm50 reduction of 10 cfm per measure and an application factor of 0.63	\$0	D	Unlike the low flow devices, these measures are free to the customer.	1	It is assumed that this measure will be applied in the fall and removed in the spring.	The application factor of 0.63 implies that only 63% of the people who order this product will actually use it as intended.
EDPM weather stripping	0.09	D	Uses the MN TRM air sealing algorithm (3.1, page 104) with an assumed cfm50 reduction of 10 cfm per measure and an application factor of 0.63	\$0	D	Unlike the low flow devices, these measures are free to the customer.	1	It is assumed that this measure will be applied in the fall and removed in the spring.	The application factor of 0.63 implies that only 63% of the people who order this product will actually use it as intended.
Outlet gaskets	0.09	D	Uses the MN TRM air sealing algorithm (3.1, page 104) with an assumed cfm50 reduction of 10 cfm per measure and an application factor of 0.63	\$0	D	Unlike the low flow devices, these measures are free to the customer.	1	It is assumed that this measure will be applied in the fall and removed in the spring.	The application factor of 0.63 implies that only 63% of the people who order this product will actually use it as intended.
Window film	0.09	D	Uses the MN TRM air sealing algorithm (3.1, page 104) with an assumed cfm50 reduction of 10 cfm per measure and an application factor of 0.63	\$0	D	Unlike the low flow devices, these measures are free to the customer.	1	It is assumed that this measure will be applied in the fall and removed in the spring.	The application factor of 0.63 implies that only 63% of the people who order this product will actually use it as intended.
Water heater temperature card	0.21	D	Uses the MN TRM water heater setback algorithm (3.1, page 140) with the conservative assumption that only 1 out of 4 households that order the device will implement it.	\$0	D	Unlike the low flow devices, these measures are free to the customer.	2	MN TRM 3.1, page 104; assumed to be the same as water heater setback.	
Door weatherization	0.70	D	MN TRM 3.1, page 104	\$0	D	Unlike the low flow devices, these measures are free to the customer.	2	2017-2019 Triennial Plan	uses an assumed cfm of 50 (pressurized)
Attic hatch weatherization	1.40	D	MN TRM 3.1, page 104	\$0	D	Unlike the low flow devices, these measures are free to the customer.	20	2017-2019 Triennial Plan	uses an assumed cfm of 100 (pressurized)
Water Heater Setback	0.86	D	MN TRM 3.1, page 140	\$0	D	Unlike the low flow devices, these measures are free to the customer.	2	MN TRM 3.1, page 140	
Water Heater Blanket	1.07	D	MN TRM 3.1, page 140	\$0	D	Unlike the low flow devices, these measures are free to the customer.	13	Assumed to match DHW pipe insulation: MN TRM 3.1, page 160	uses 5% instead of 4% savings factor to better match Company's research: https://www.energy.gov/energysaver/services/do-it-yourself-energy-savings-projects/savings-project-insulate-your-water
WEATHERIZATION									
Wall insulation (Home Insulation retrofit)	42.16	DC	MN TRM 3.1, page 104 with average savings from 585 projects from 2017-2019	\$2,877	D	from 2017-2019 data; a sample size of 585 wall insulation projects	20	MN TRM 3.1, page 104	
Air sealing (alone; Home Insulation retrofit)	7.29	DC	MN TRM 3.1, page 104 with average savings from 59 projects from 2017-2019	\$1,817	D	from 2017-2018 data; a sample size of 34 wall insulation projects	20	MN TRM 3.1, page 104	Uses a 50 Pa-to-natural infiltration correction factor of 15.35, which is an average of 1 and 2 story buildings in "well-shielded" and "normal" wind exposure locations.
Attic insulation + air sealing (Home Insulation, retrofit)	12.55	DC	MN TRM 3.1, page 104 with average savings from 4,255 projects from 2017-2019	\$2,333	D	from 2017-2018 data; a sample size of 2,429 wall insulation projects	20	MN TRM 3.1, page 104	
Sill plate/rim joist insulation	4.29	DC	MN TRM 3.1, page 104 with average savings from 2017-2019 NPAH participants	\$300	D	from previous triennial, which was taken from contractor estimate	20	MN TRM 3.1, page 104	
HRV/ERV	9.11	D	same energy balance as air sealing with the addition of 70% effectiveness TRM air sealing equation; MN TRM 3.1, page 104	\$980	D	From NREL National Residential Efficiency Measures Database. https://remdb.nrel.gov/measures.php?gclid=10&ctid=236	15	MN TRM 3.1, page 351, assumed to be the same as a commercial energy recovery ventilator	Assumes an 70% effectiveness and a constant 75 cfm flow.
OTHER									
Hearth with electronic ignition	4.38	D	MN TRM 3.1, page 63	\$193	D	MN TRM 3.1, page 63	15	MN TRM 3.1, page 63	
Combo unit - retrofit (.87 EF tankless water heater + air handling unit)	22.67	D	assumed to be the same as the sum of 94% furnace and retrofit tankless water heater (both from above).	\$1,833	D	assumed to be the same as the sum of 94% furnace and retrofit tankless water heater (both from above).	20	MN TRM 3.1, page 143; assumed to be the same as a tankless model.	
Duct Sealing (Home), only for unconditioned spaces	15.32		MN TRM 3.1, page 51, assume CFM reduction of 300	\$1,500		MN TRM 3.1, page 51, assume CFM reduction of 300	20	MN TRM 3.1, page 51	
Low E Storm Windows (Per Window)	0.50		MN TRM 3.1, page 115, assumes window area of 10.7 sq ft and weighted average of single vs. double pain.	\$126		MN TRM 3.1, page 115	20	MN TRM 3.1, page 115	
Drainpipe heat exchanger	3.67		MN TRM 3.1, page 123	\$742		MN TRM 3.1, page 123	20	MN TRM 3.1, page 123	
Dishwasher	0.23		MN TRM 3.1, page 181	\$50		MN TRM 3.1, page 181	12	MN TRM 3.1, page 181	
Multi-Family (Commercial) Measures									
FOODSERVICE									
Broilers - infrared, upright	87.44	DC	MN TRM 3.1, page 510	\$4,413	D	MN TRM 3.1, page 511	12	MN TRM 3.1, page 510	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in
Charbroilers - infrared	47.43	DC	MN TRM 3.1, page 510	\$2,173	D	MN TRM 3.1, page 511	12	MN TRM 3.1, page 510	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in

Measure	Savings/Unit	Savings Type	Savings Source	Incremental Cost/Unit	Incremental Cost Type	Incremental Cost Source	Life	Equipment Life Source	Notes
Combi oven	290.61	D	CA Workpaper PGECOFST100 Rev 6, page 19; CA Workpaper PGECOFST101 Rev 6, page 18; CA Workpaper PGECOFST104 Rev 6, page 15	\$3,822	D	CA Workpaper PGECOFST100 Rev 6, page 24 CA Workpaper PGECOFST101 Rev 6, page 22 CA Workpaper PGECOFST104 Rev 6, page 18	12	CA Workpaper PGECOFST100 Rev 6, page 9 CA Workpaper PGECOFST101 Rev 6, page 10 CA Workpaper PGECOFST104 Rev 6, page 8	See Appendix B for algorithm and inputs
Combi oven (CEW or ENERGY STAR®)	402.70	D	CA Workpaper PGECOFST100 Rev 6, page 19	\$7,183	D	CA Workpaper PGECOFST100 Rev 6, page 24 CA Workpaper PGECOFST101 Rev 6, page 22 CA Workpaper PGECOFST104 Rev 6, page 18	12	CA Workpaper PGECOFST100 Rev 6, page 9	See Appendix B for algorithm and inputs
Convection oven	36.10	D	CA Workpaper PGECOFST101 Rev 6, page 18	\$1,286	D	CA Workpaper PGECOFST101 Rev 6, page 22	12	CA Workpaper PGECOFST101 Rev 6, page 10	See Appendix B for algorithm and inputs
Conveyor broiler	193.28	D	CA Workpaper WPCSGNRCC171226A Rev 0, page 16	\$3,146	D	CA Workpaper WPCSGNRCC171226A Rev 0, page 16	12	CA Workpaper WPCSGNRCC171226A Rev 0, page 16	See Appendix B for algorithm and inputs
Conveyor oven	88.43	D	CA Workpaper PGECOFST117 Rev 5, page 6	\$2,230	D	CA Workpaper PGECOFST117 Rev 5, page 9	12	CA Workpaper PGECOFST117 Rev 5, page 4	See Appendix B for algorithm and inputs
Demand control ventilation - kitchen hood	131.84	DC	CA Workpaper PGECOFST116 Rev 3, page 6	\$11,777	DC	CA Workpaper PGECOFST116 Rev 3, page 12	15	CA Workpaper PGECOFST116 Rev 3, page 4	See Appendix B for algorithm and inputs
Dishwasher - ENERGY STAR, Door, High Temp	29.42	D	MN TRM 3.1, page 468	\$770	D	MN TRM 3.1, page 471	15	MN TRM 3.1, page 471	
Dishwasher - ENERGY STAR, Single, Conveyor, High Temp	17.86	D	MN TRM 3.1, page 468	\$2,050	D	MN TRM 3.1, page 471	20	MN TRM 3.1, page 471	
Dishwasher - ENERGY STAR, Multi, Conveyor, High Temp	67.78	D	MN TRM 3.1, page 468	\$970	D	MN TRM 3.1, page 471	20	MN TRM 3.1, page 471	
Fryer 50% Efficiency	70.70	D	CA Workpaper PGECOFST102 Rev 6, page 10	\$1,017	D	CA Workpaper PGECOFST102 Rev 6, page 13	12	FSTCCA Workpaper PGECOFST102 Rev 6, page 6	See Appendix B for algorithm and inputs
Fryer 51%-59% Efficiency	78.36	D	CA Workpaper PGECOFST102 Rev 6, page 10	\$1,017	D	CA Workpaper PGECOFST102 Rev 6, page 13	12	FSTCCA Workpaper PGECOFST102 Rev 6, page 6	See Appendix B for algorithm and inputs
Fryer ≥ 60% Efficiency	81.10	D	CA Workpaper PGECOFST102 Rev 6, page 10	\$2,979	D	CA Workpaper PGECOFST102 Rev 6, page 13 and pricing from AutoQuotes	12	FSTCCA Workpaper PGECOFST102 Rev 6, page 6	See Appendix B for algorithm and inputs
Griddle	37.93	D	CA Workpaper PGECOFST103 Rev 7, page 9	\$571	D	CA Workpaper PGECOFST103 Rev 7, page 13	12	CA Workpaper PGECOFST103 Rev 7, page 3	See Appendix B for algorithm and inputs
Pasta cooker	103.82	DC	MN TRM 3.1, page 510	\$2,413	D	MN TRM 3.1, page 511	12	MN TRM 3.1, page 510	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in
Rotating rack oven	211.34	DC	CA Workpaper PGECOFST109 Rev 5, page 7	\$4,128	D	CA Workpaper PGECOFST109 Rev 5, page 10	12	CA Workpaper PGECOFST109 Rev 5, page 3	See Appendix B for algorithm and inputs
Rotisserie oven	55.40	DC	MN TRM 3.1, page 510	\$2,665	D	MN TRM 3.1, page 511	12	MN TRM 3.1, page 510	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in
Salamander broiler	35.40	DC	MN TRM 3.1, page 510	\$1,006	D	MN TRM 3.1, page 511	12	MN TRM 3.1, page 510	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in
Steam equipment	370.70	D	CA Workpaper PGECOFST104 Rev 6, page 15	\$2,901	D	CA Workpaper - June 2016 PGECOFST104	12	CA Workpaper PGECOFST104 Rev 6, page 8	See Appendix B for algorithm and inputs
COMMERCIAL PRESCRIPTIVE									
Commercial steam boiler	613.60	DC	MN TRM 3.1, page 339	\$8,264	D	MN TRM 3.1, page 340 (\$1.024/kBtuh)	20	MN TRM 3.1, page 339	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in = 8,070,000; Eff_high = 84.44; EFLH = 1779.2
Turbulators for commercial boiler (hot water or steam)	166.25	DC	MN TRM 3.1, page 336	\$1,375	D	MN TRM 3.1, page 337 (\$1.375/boiler)	20	MN TRM 3.1, page 337	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in = 3,671,000; EFLH = 1960.5
Modulating burner replacement for commercial boiler (hot water or steam)	399.46	DC	MN TRM 3.1, page 336	\$22,408	D	MN TRM 3.1, page 337 (\$2.53/kBtu/h)	15	MN TRM 3.1, page 337	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in = 8,857,000; EFLH = 1952.41
Stack damper for commercial boiler (hot water or steam)	80.95	DC	MN TRM 3.1, page 336	\$3,609	D	MN TRM 3.1, page 337 (\$3.125/kBtu/h)	5	MN TRM 3.1, page 337	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in = 1,155,000; EFLH = 1820.36
Steam traps	105.94	DC	MN TRM 3.1, page 304	\$120	D	MN TRM 3.1, page 304, CenterPoint average incremental cost from 2017-2019	6	MN TRM 3.1, page 304	Savings calculated using CenterPoint Energy's average orifice size, pressure, trap type and number of participants from 2017-2019 applications.
Commercial water heater non-GAMA rated (88%+ thermal efficiency)	38.03	DC	MN TRM 3.1, page 425	\$1,350	D	MN TRM 3.1, page 428	11	MN TRM 3.1, page 428	Savings calculated using CenterPoint Energy's average participant from 2017-2019 applications.
C&I high-efficiency hot water boiler (85% - 87.9% efficient); 100,000 - 12.5 million btu	74.53	DC	MN TRM 3.1, page 339	\$2,757	D	MN TRM 3.1, page 340 (\$3.939/kBtuh)	20	MN TRM 3.1, page 339	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in = 700,000; Eff_high = 85.2; EFLH = 2127.3
C&I condensing efficiency hot water boiler (88%+ efficient); 100,000 - 12.5 million btu	313.68	DC	MN TRM 3.1, page 339	\$9,719	D	MN TRM 3.1, page 340 (\$8.099/kBtuh)	20	MN TRM 3.1, page 339	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in = 1,200,000; Eff_high = 94.5; EFLH = 1873
Boiler tune-up	71.31	DC	MN TRM 3.1, page 336	\$540	D	MN TRM 3.1, page 337, CenterPoint average cost of 2018 participants from 2017-2019 (\$0.2443/kBtu/h)	2	MN TRM 3.1, page 337	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in = 2,211,000; EFLH = 1903.85
Boiler reset control	49.23	DC	MN TRM 3.1, page 336	\$600	D	MN TRM 3.1, page 337	5	MN TRM 3.1, page 337	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in = 895,000; EFLH = 1880
Boiler cutout control	48.18	DC	MN TRM 3.1, page 336	\$141	D	MN TRM 3.1, page 337	5	MN TRM 3.1, page 337	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in = 1,876,100; EFLH = 3469

Measure	Savings/Unit	Savings Type	Savings Source	Incremental Cost/Unit	Incremental Cost Type	Incremental Cost Source	Life	Equipment Life Source	Notes
Linkageless controls	361.99	DC	MN TRM 3.1, page 336 with 3% energy savings per Focus on Energy https://focusonenergy.com/sites/default/files/deemingboilercontrols04nov09_evaluationreport.xls	\$11,337	D	CenterPoint average cost from 2017-2019	15	MN TRM 3.1, page 337 (Life of Burner)	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in = 8,375,000; EFLH = 1871.12
CO garage sensors	97.13	DC	MN TRM 3.1, page 301, With technical assumptions updates.	\$1,006	D	CenterPoint average cost from 2017-2019	15	MN TRM 2.2, page 526	See Technical Assumptions in the appendix for this measure.
Condensing unit heater	70.21	DC	MN TRM 3.1, page 343	\$676	D	MN TRM 3.1, page 343	12	MN TRM 3.1, page 343	Btuh_in = 285300; Eff High = 94.34 the CenterPoint average of the sizes from 2017-2019 measure applicants. EFLH = Average of Zone 3 Building Type = 1782.87 EFLH MN TRM 3.1
Energy recovery wheels and plates	68.30	DC	CenterPoint Energy trade allies provided the incremental cost for this measure	\$10,459	D	CenterPoint Energy trade allies provided the incremental cost for this measure	15	MN TRM 3.1, page 356	See Technical Assumptions in the appendix for this measure.
Infrared heaters	30.09	DC	MN TRM 3.1, page 293	\$1,716	D	MN TRM 3.1, page 293	15	MN TRM 3.1, page 293	Savings calculated using CenterPoint Energy's average participant from 2017-2019: Btuh_in = 91,980;; EFLH = 1545.4 MN TRM 3.1
92% AFUE furnace	16.86	DC	MN TRM 3.1, page 266	\$1,342	D	MN TRM 3.1, page 267	20	MN TRM 3.1, page 266	Btuh_in = 87,400; the CenterPoint average of the furnace sizes from 2017-2019 retrofit measure applicants Eff_high = 92.17%, EFLH = Average of Zone 3 Building Type = 1646.44 EFLH MN TRM 3.1
94% AFUE furnace	19.36	DC	MN TRM 3.1, page 266	\$1,429	D	MN TRM 3.1, page 267	20	MN TRM 3.1, page 266	Btuh_in = 85,300; the CenterPoint average of the furnace sizes from 2017-2019 retrofit measure applicants Eff_high = 94.95%, EFLH = Average of Zone 3 Building Type = 1577.46 EFLH MN TRM 3.1
96% AFUE furnace	21.45	DC	MN TRM 3.1, page 266	\$1,517	D	MN TRM 3.1, page 267	20	MN TRM 3.1, page 266	Btuh_in = 86,600; the CenterPoint average of the furnace sizes from 2017-2019 retrofit measure applicants Eff_high = 96.14%, EFLH = Average of Zone 3 Building Type = 1594.8 EFLH MN TRM 3.1
Commercial DCV - Retrofit	62.90	DC	MN TRM 3.1 page 346	\$783	D	MN TRM 3.1, page 347, 593.3 CFM x \$1.32	15	MN TRM 3.1, page 346	Savings calculated using CenterPoint Energy's average participant from 2017-2019: CFM = 593.3, SF H = 0.57 EFLH = 1670
High-efficiency single package vertical unit	5.01	D	MN TRM 3.1, page 266, With technical assumptions updates.	\$400	D	Cost based on discussions with Trade Ally	20	MN TRM 3.1, page 266	Btuh_in = 36,000; Eff_high = 90%; MultiFamily EFLH = 1904
.64/.68 UEF Tank Water Heater (<55 gallons; atmospheric)	1.06	DC	MN TRM 3.1, page 425	\$577	D	MN TRM 3.1, page 428	11	MN TRM 3.1, page 428	Savings calculated using CenterPoint Energy's average participant from 2017-2019 applications.
.64/.68 UEF Tank Water Heater (<55 gallons; power vent)	4.48	DC	MN TRM 3.1, page 425	\$577	D	MN TRM 3.1, page 428	11	MN TRM 3.1, page 428	Savings calculated using CenterPoint Energy's average participant from 2017-2019 applications.
Commercial pipe insulation - hydronic heat	26.06	DC	Illinois TRM 8.0 Vol. 2, page 234	\$3,548	D	CenterPoint average cost from 2017-2019	15	Illinois TRM 8.0 Vol. 2, page 233	Savings calculated using CenterPoint Energy's average participant from 2017-2019
Commercial pipe insulation - low pressure steam heat	29.90	DC	Illinois TRM 8.0 Vol. 2, page 234	\$837	D	CenterPoint average cost from 2017-2019	15	Illinois TRM 8.0 Vol. 2, page 233	Savings calculated using CenterPoint Energy's average participant from 2017-2019
Commercial pipe insulation - high pressure steam heat	31.95	DC	Illinois TRM 8.0 Vol. 2, page 234	\$1,104	D	CenterPoint average cost from 2017-2019	15	Illinois TRM 8.0 Vol. 2, page 233	Savings calculated using CenterPoint Energy's average participant from 2017-2019
Commercial pipe insulation - domestic hot water	11.24	DC	Illinois TRM 8.0 Vol. 2, page 234	\$881	D	CenterPoint average cost from 2017-2019	15	Illinois TRM 8.0 Vol. 2, page 233	Savings calculated using CenterPoint Energy's average participant from 2017-2019
Ozone/Low Temperature Laundry	192.37	DC	Illinois TRM 8.0 Vol. 2, page 145	\$4,790	DC	Illinois TRM 8.0 Vol. 2, page 142	10	Illinois TRM 8.0 Vol. 2, page 142	
Green Garage Doors	12.80	D	Wisconsin Focus on Energy 2019 TRM, page 36	\$340	D	Wisconsin Focus on Energy 2019 TRM, page 66	20	Wisconsin Focus on Energy 2019 TRM, page 66	
Modulating clothes dryer	16.10	DC	MN TRM 3.1, page 538	\$525	D	MN TRM 3.1, page 538	14	MN TRM 3.1, page 538	
Smart Thermostat	2.57	DC	Wisconsin Focus on Energy 2019 TRM, page 203	\$174	D	Wisconsin Focus on Energy 2019 TRM, page 201	10	Wisconsin Focus on Energy 2019 TRM, page 201	See Appendix B for algorithm and inputs
Hearth with electronic ignition	4.38	D	MN TRM 3.1, page 63	\$193	D	MN TRM 3.1, page 63	15	MN TRM 3.1, page 63	
DIRECT INSTALL									
1 GPM Low-Flow Bathroom Aerator	0.30	D	MN TRM 3.1, page 136	\$0	D	provided through program at no cost to customer	10	MN TRM 3.1, page 136	Inputs include 51.3 Tin with TRM defaults and bathroom values for Multi-family 1 gpm install
0.5 GPM Low-Flow Bathroom Aerator	0.47	D	MN TRM 3.1, page 136	\$0	D	provided through program at no cost to customer	10	MN TRM 3.1, page 136	Inputs include 51.3 Tin with TRM defaults and bathroom values for Multi-family 1 gpm install
Low-Flow Showerhead	2.07	D	MN TRM 3.1, page 155	\$0	D	provided through program at no cost to customer	10	MN TRM 3.1, page 155	Inputs include 51.3 Tin with TRM default values for Multi-family install
Kitchen Aerator	0.56	D	MN TRM 3.1, page 136	\$0	D	provided through program at no cost to customer	10	MN TRM 3.1, page 136	Inputs include 51.3 Tin with TRM defaults and kitchen values for Multi-family 1.5 gpm install
Programmable Thermostat	9.81	DC	MN TRM 3.1, page 372	\$0	D	provided through program at no cost to customer	8	MN TRM 3.1, page 372	Inputs include 1,699 EFLH, 150,000 BTU/H_IN, and ISR = 1.0
NGEA Scheduling of Existing Programmable Thermostat	6.80	DC	MN TRM 3.1, page 329	\$0	D	provided through program at no cost to customer	8	MN TRM 3.1, page 329	Inputs match the algorithm Example for heating in MN TRM 3.1, page 331
Door Weatherstripping	5.45	D	AR TRM 8.1, page 362	\$0	D	provided through program at no cost to customer	11	AR TRM 8.1, page 361	See Appendix B
Window Film	0.10	D	MN TRM 3.0, p 104, See Appendix B	\$0	D	provided through program at no cost to customer	1	one heating season lifetime	See Appendix B
Hot Water Temperature Adjustment	25.94	D	MN TRM 3.0, p 139	\$0	D	provided through program at no cost to customer	2	MN TRM 3.0, p 139	See Appendix B
OTHER									
AC Cover	0.37	D	MN TRM 3.1, p 104	\$60	D	Universal AC Cover, Molded Plastic CHILL STOP'R 1212-06	10	Based on customer communication with MFB Implementation Vendor.	See Appendix B for algorithm and inputs

Exhibit E: Potential Metrics for Tariffed On-Bill Pilot Monitoring and Evaluation

June 1, 2021

The Company and the City developed a process and list of proposed metrics to measure and evaluate a potential TOB pilot program based on stakeholder comments and interests. The proposed annual reporting process envisions the Company working with a program implementer to collect data inputs for an approved set of TOB pilot metrics for reporting. The Company also anticipates hiring a third-party program evaluator in year two of a proposed TOB pilot offering via a competitive bid process.

The annual Pilot evaluation may include at least the following:

1. participation by low-income consumers;

The Program Operator will collect volunteered information from TOB pilot participants regarding their income status. The Company will track and report this information along with the following information (to the extent such information is available to the Company):

- Referrals to alternative Income-Qualifying CIP Services,
- Participant Renter/Owner status,
- Participant race/ethnicity,
- Participant location in Minneapolis Green Zones or Areas of Concentrated Poverty (ACP),
- Participation by city, zip-code, and/or census tract,

2. the costs of the program to date;

The Company will track and report TOB pilot spending by category, including:

- Program Marketing & Outreach,
- Program Delivery,
- Program Evaluation,
- Energy Efficiency Project Cost,
- Total/Average Utility Capital Investment for energy efficiency projects,
- Participant Costs, including energy efficiency co-payments, admin fee, and interest paid,
- External funding leverage, including customer co-pays, CIP incentives, external incentives, or financing,
- Any unforeseen costs including repairs.

3. the number of participants served and the average cost per pilot measure installed;

The Company will track and report the following details regarding participation and costs

- Count of enrollments, completed Energy Efficiency Plans, and signed Participant/Owner Agreements,
- Count and cost of initiated and completed energy efficiency projects by participant, by project, and by measure,
- Count and description of any customers that could not be served by the TOB pilot.

4. the greenhouse gas emissions avoided;

The Company will calculate and report the total and average participant metric tons of carbon dioxide equivalent avoided both by first-year and over the life of the measures.

5. the energy saved;

The Company will calculate and report the total and average participant gas and electric pilot savings both by first-year and over the life of the measures. The Company will analyze and report customers weather-normalized energy use in the five years before the energy efficiency project and the year following the project.

6. the cost-effectiveness of the pilot program in achieving these reductions and savings; and

The Company will analyze and report customers weather-normalized energy costs in the five years before the energy efficiency project and the year following the project. The Company will track and report the participants median and range of energy bill amounts before and after the energy efficiency project. The Company will describe whether any participants saw increased bills and how their situations were addressed, including the number of projects by type and costs of any associated repairs. The Company will also report any complaints received regarding the TOB pilot and the nature of the complaint.

7. viable alternatives that may have become available during the course of the pilot program.

The Company will describe any proposals for TOB pilot modification, expansion, or termination, if any. The Commission will evaluate and make a final determination on the prudence of TOB pilot costs incurred by the Company as part of the annual review.

During the second year of TOB pilot program operation, the Company will hire via a competitive bid process a third party evaluator to conduct a review of pilot program operation. This evaluation may include such things as customer and trade ally surveys, field visits to participating homes, and research on similar programs operated by other utilities. The third-party evaluation will be filed with the PUC in the next annual program evaluation report.

The third-party evaluation will seek to address at least the following questions:

- Whether the Program is successful at encouraging installation of energy saving upgrades;
- What barriers exist to Program participation for renters and low- to moderate-income households;

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Exhibit E – Potential Metrics for Tariffed On-Bill Pilot Monitoring and Evaluation

- Whether the Program supports energy upgrades that are cost-effective for the utility, excluding initial program startup and pilot evaluation costs;
- Whether there are reasonable modifications that would allow more projects to qualify for Program inclusion under the 80% rule; and
- Whether it would be prudent to expand the pilot to include additional areas of CenterPoint Energy's service area.

CERTIFICATE OF SERVICE

Erica Larson served the above Filing of CenterPoint Energy to all persons at the addresses indicated on the attached list by having the document delivered by electronic filing.

/s/_____

Erica Larson

Counsel

CenterPoint Energy

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Roger	Leider	roger@mnpropane.org	Minnesota Propane Association	PO Box 220 209 N Run River Dr Princeton, MN 55371	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Eric	Lindberg	elindberg@mncenter.org	Minnesota Center for Environmental Advocacy	1919 University Avenue West Suite 515 Saint Paul, MN 55104-3435	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Eric	Lipman	eric.lipman@state.mn.us	Office of Administrative Hearings	PO Box 64620 St. Paul, MN 551640620	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Michael	Loeffler	mike.loeffler@nngco.com	Northern Natural Gas Co.	CORP HQ, 714 1111 So. 103rd Street Omaha, NE 681241000	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Alice	Madden	alice@communitypowermn.org	Community Power	2720 E 22nd St Minneapolis, MN 55406	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Joseph	Meyer	joseph.meyer@ag.state.mn.us	Office of the Attorney General-RUD	Bremer Tower, Suite 1400 445 Minnesota Street St Paul, MN 55101-2131	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Mike	OConnor	moconnor@ibewlocal949.org	Local 949 IBEW	12908 Nicollet Ave S Burnsville, MN 55337	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Greg	Palmer	gpalmer@greatermngas.com	Greater Minnesota Gas, Inc. & Greater MN Transmission, LLC	1900 Cardinal Ln PO Box 798 Faribault, MN 55021	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_19-524_Official Service List 19-524
Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy	26 E Exchange St, Ste 206 St. Paul, MN 551011667	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Elizabeth	Schmiesing	eschmiesing@winthrop.com	Winthrop & Weinstine, P.A.	225 South Sixth Street Suite 3500 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th PI E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_19-524_Official Service List 19-524

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates	7400 Lyndale Ave S Ste 190 Richfield, MN 55423	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Peggy	Sorum	peggy.sorum@centerpointenergy.com	CenterPoint Energy	505 Nicollet Mall Minneapolis, MN 55402	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
James M	Strommen	jstrommen@kennedy-graven.com	Kennedy & Graven, Chartered	150 S 5th St Ste 700 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Andrew	Sudbury	Andrew.Sudbury@CenterPointEnergy.com	CenterPoint Energy Minnesota Gas	505 Nicollet Mall PO Box 59038 Minneapolis, MN 55459-0038	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Samantha	Williams	swilliams@nrdc.org	Natural Resources Defense Council	20 N. Wacker Drive Ste 1600 Chicago, IL 60606	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Joseph	Windler	jwindler@winthrop.com	Winthrop & Weinstine	225 South Sixth Street, Suite 3500 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524
Jonathan	Wolfgram	Jonathan.Wolfgram@state.mn.us	Office of Pipeline Safety	Minnesota Department of Public Safety 445 Minnesota Street Suite 147 St. Paul, MN 55101-1547	Electronic Service	No	OFF_SL_19-524_Official Service List 19-524