414 Nicollet Mall
Minneapolis, MN 55401

August 16, 2024

—Via Electronic Filing—

Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

RE: SUPPLEMENT
IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY, DBA XCEL ENERGY, FOR APPROVAL OF A RESIDENTIAL TIME OF USE RATE DESIGN
DOCKET NO. E002/M-23-524

Dear Mr. Seuffert:

Northern States Power Company, doing business as Xcel Energy, submits this Supplement providing a revised proposal pursuant to the Minnesota Public Utilities Commission's August 8, 2024 Fourth Notice of Extended Comment Period.

We have electronically filed this document with the Minnesota Public Utilities Commission, and copies have been served on the parties on the attached service list. Please contact Brandon Kirschner at Brandon.M.Kirschner@xcelenergy.com or me at Holly.R.Hinman@xcelenergy.com if you have any questions regarding this filing.

Sincerely,

/s/

HOLLY HINMAN
DIRECTOR, REGULATORY & STRATEGIC ANALYSIS

Enclosures
cc: Service List

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Katie J. Sieben	Chair
Hwikwon Ham	Commissioner
Valerie Means	Commissioner
Joseph K. Sullivan	Commissioner
John A. Tuma	Commissioner

IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY, DBA XCEL ENERGY, FOR APPROVAL OF A RESIDENTIAL TIME OF USE RATE DESIGN	DOCKET NO. E002/M-23-524 **SUPPLEMENT**

INTRODUCTION

Northern States Power Company, doing business as Xcel Energy (Company), submits this Supplement providing a revised proposal pursuant to the Fourth Notice of Extended Comment Period issued August 8, 2024 by the Minnesota Public Utilities Commission (Commission). In this Supplement, we respond to the substantial feedback received to date and present a modified approach to Residential Time of Use (TOU) rate implementation for the Commission's consideration.

The Company appreciates the engagement of many parties, stakeholders, and individual customers on the substance of our compliance proposal and for those that offered potential alternatives to it. Indeed, the voluminous participation in the record has provided considerable insight to the Company and has helped shape the direction of the Company's modified proposal for implementing Residential TOU rates. The Company's original compliance proposal reflected the guidance of parties and agencies at the time to position TOU rates as the default rate design for residential customers. The Company is also aware that automatic enrollment without sufficient communication or opportunity to react could result in declining customer satisfaction.

In addition to reviewing the significant public comments submitted in this proceeding, the Company has sought out several additional sources of information in the preparation of this Supplement, including new research and refreshed analysis.

The Company has undertaken several actions since receiving the feedback in this record. These actions include:

1) conducting a "pulse" survey of Minnesota customers for additional customer insights related to rate transition preferences;
2) engaging expert consultants Opinion Dynamics to conduct research on industry best practices related to rate transitions and customer engagement;
3) refreshing the rate design analysis developed in the prior proceeding (Residential TOU Pilot, Docket E002/M-17-775) using the updated hourly load forecast data from our February 2024 Integrated Resource Plan (2024 IRP);
4) re-engaging the Measurement and Verification consultants, Guidehouse, who performed the pilot study to gather additional findings related to the pilot's bill protection feature; and
5) consulting with stakeholders to find alignment on next steps in this proceeding.

These actions have provided additional helpful context for the Company's modified proposal, and the results of these activities are discussed further in this Supplement.

As we reflect on the public feedback, the additional research, our refreshed analysis, and further discussions with stakeholders, we believe a series of modifications to the Company's original compliance proposal are warranted. First and foremost, as encouraged by nearly all parties, we are being even more deliberate with implementation by including in our modified implementation timeline additional time after a final rate is approved to finalize communication plans and stand-up key implementation tools ahead of opening the rate to new customers. We also have taken in the public feedback, both through public comments and survey results, with vast support for implementing TOU rates as a voluntary "opt in" structure. Finally, in reassessing our rate design analysis and through discussions with stakeholders, we have concluded that a modified rate design that relies on the methodology originally tested in our Residential TOU Rate Service Pilot, but updated with current load forecast data and other considerations, is appropriate, as is a modified on-peak period to better align with future net load forecast.

The Company's modified proposal includes the following elements:

- Replace current Residential TOU rates with this modified TOU design.[1]
- Implement the rate as a voluntary option for all Residential customers.
- Upon launch, the Company will test targeted communication approaches and garner feedback. Thereafter, the Company will begin active marketing to recruit voluntary enrollments.

[1] Current Residential TOU rates include the three period TOU rates serving pilot participants, the two-period whole home Time of Day rates, and the TOU EV Charging rates. These rates would be automatically transitioned after a period of notice and preparation.

- The rate design features a shortened and later on-peak period of 7 p.m. to 10 p.m. for non-holiday weekdays.[2]
- The rate design features reduced ratios between on-peak and off-peak periods and moderates the seasonal difference in rates from the design presented in the Company's original compliance proposal.
- Modifications to our net-metering tariffs to align with the residential TOU rate service.
- Modifications to our Space Heating Rate proposal.

We respectfully request that the Commission approve the modified proposal as set forth in this Supplement.

This modified proposal, and the reasoning behind it, is discussed in greater detail in the balance of this Supplement. This Supplement is organized in the following sections:

- Rate Design
- Rate Implementation
- Customer Engagement and Education
- Net-metering Customers
- Coordinating with Demand Response Programs
- Additional Pilot Result Analysis
- Proposed Tariff Changes

The Company includes the following Attachments in support of this Supplement:

Attachment A	Cost Duration Method Explanation
Attachment B	Opinion Dynamics Memorandum
Attachment C	Proposed Tariff Changes
Attachment D	Bill Impact Distributions
Attachment E	Cumulative Bill Impacts

SUPPLEMENT

I. RATE DESIGN

In response to stakeholder requests, and to ensure that our proposed rates and peak time periods align with our load and service cost data, the Company completed a

[2] This compares to the current 3 p.m. to 8 p.m. on-peak period.

refreshed analysis of the cost duration model and an assessment of net system load data. This new assessment is based on load forecast data as presented in the Company's 2024 IRP, which was filed after our initial filing in this docket.

Based on the refreshed analysis of forecasted load and system cost data and informed by feedback in the record and our recent discussions with parties, the Company proposes modifications to the Residential TOU rate design. Namely, the Company proposes:

1) a modified on-peak time period for use in Residential TOU rate design,
2) modified pricing, including moderated on-to-off peak ratios and reduced seasonal differentiation, and
3) modified TOU electric space heating rates.

A. Refreshed Analysis of Load Data and System Costs

i. System Load Analysis

The Company updated the comparison of peak hours analysis that had been done for the Residential TOU pilot, using the hourly net NSP system profile from the Company's 2024 IRP. This analysis compares average weekday hourly loads, net of renewables, for the month of July, and shows each average hourly load as a percentile of the peak load hour for that year. The analysis is shown in Table 1 below, with our original analysis on the left, and the more recent 2024 IRP system profile analysis on the right.

Table 1
Net System Average Weekday Loads – July Forecasts
Percentile of Peak Hour

Residential TOU Pilot Analysis

Hr Ending	TOU Period	2017	2024	2030
1	Off	0.621	0.637	0.639
2	Off	0.583	0.603	0.612
3	Off	0.563	0.582	0.602
4	Off	0.555	0.572	0.597
5	Off	0.570	0.585	0.601
6	Off	0.617	0.632	0.641
7	Mid	0.697	0.699	0.698
8	Mid	0.773	0.758	0.759
9	Mid	0.828	0.802	0.791
10	Mid	0.867	0.832	0.809
11	Mid	0.916	0.884	0.839
12	Mid	0.942	0.905	0.850
13	Mid	0.965	0.933	0.872
14	Mid	0.976	0.959	0.890
15	Mid	0.984	0.972	0.913
16	On	0.993	0.974	0.922
17	On	0.999	0.985	0.939
18	On	1.000	1.000	0.986
19	On	0.984	0.995	1.000
20	On	0.948	0.975	0.995
21	Mid	0.909	0.947	0.963
22	Mid	0.880	0.906	0.924
23	Mid	0.792	0.782	0.815
24	Mid	0.701	0.676	0.710

Residential TOU Voluntary Rate Offering Analysis

Hr Ending	TOU Period	2025	2026	2027	2028	2029	2030
1	Off	0.551	0.615	0.585	0.485	0.467	0.471
2	Off	0.499	0.555	0.524	0.422	0.403	0.397
3	Off	0.468	0.514	0.476	0.354	0.340	0.336
4	Off	0.450	0.494	0.457	0.324	0.319	0.320
5	Off	0.461	0.496	0.459	0.331	0.328	0.348
6	Off	0.517	0.554	0.524	0.422	0.416	0.421
7	Mid	0.598	0.603	0.589	0.482	0.467	0.478
8	Mid	0.676	0.640	0.629	0.547	0.520	0.516
9	Mid	0.690	0.638	0.634	0.563	0.556	0.538
10	Mid	0.819	0.769	0.758	0.690	0.681	0.673
11	Mid	0.840	0.793	0.782	0.702	0.690	0.691
12	Mid	0.860	0.808	0.783	0.730	0.693	0.690
13	Mid	0.886	0.829	0.797	0.769	0.729	0.705
14	Mid	0.921	0.859	0.828	0.800	0.759	0.732
15	Mid	0.937	0.874	0.848	0.823	0.774	0.735
16	Mid	0.956	0.889	0.874	0.839	0.812	0.772
17	Mid	0.970	0.903	0.896	0.860	0.843	0.811
18	Mid	0.979	0.917	0.910	0.891	0.886	0.856
19	Mid	0.976	0.929	0.928	0.906	0.903	0.884
20	On	1.000	0.986	0.982	0.984	0.986	0.973
21	On	0.983	1.000	1.000	1.000	1.000	1.000
22	On	0.940	0.968	0.973	0.959	0.961	0.967
23	Mid	0.801	0.826	0.832	0.794	0.781	0.790
24	Mid	0.656	0.683	0.692	0.624	0.595	0.593

The analysis shows that with the addition of more renewables on our system, we anticipate the net peak hour to fall later in the day. In 2025, we anticipate the net peak hour to be from 7:00 pm – 8:00 pm, and beyond 2025 it moves to the 8:00 pm to 9:00 pm hour. As discussed below, based on this analysis and stakeholder input, we propose to set the on-peak hours to 7:00 pm to 10:00 pm for non-holiday weekdays. The Company recognizes that the 6:00 pm to 7:00 pm hour is near the peak load level, and we note that an on-peak timeframe of 6:00 pm to 10:00 pm would also be reasonable.

ii. Cost Duration Method

The Cost Duration Method was first used to develop the Residential TOU Pilot rates. This method links the recovery of system costs to the time periods during which system assets are being utilized. Thus, the rates resulting from this analysis reflect the underlying costs to serve demand during each TOU period. Costs are assigned to each

hour of the year using the characteristics of the load duration curve. A description of the Cost Duration Method is provided in Attachment A.

The Company updated the Cost Duration analysis with hourly load and cost data from our 2024 IRP and our most recent rate case and used this as the basis for our rate design proposal noted below.

B. Rate Design: Time Periods

i. On-Peak Period

As discussed above, to align with the load forecast in future years, the Company proposes an on-peak period from 7 p.m. to 10 p.m., during non-holiday weekdays. Our initial proposal was an on-peak period from 3 p.m. to 8 p.m., so this recommendation shortens the on-peak period from five hours to three hours and shifts the start of the on-peak period later by four hours.

In addition to aligning with the load forecast, shortening the on-peak period is responsive to many stakeholders in this proceeding. For example, the Minnesota Department of Commerce (Department) noted that a shorter on-peak period may be more psychologically manageable for participating customers.[3] In addition, Fresh Energy commented that shortening the on-peak period will allow for greater customer response and noted that research shows that focusing on maximizing participation and reducing complexity is most effective.[4] The City of Minneapolis asserted that the initially proposed on-peak period was likely too long to be practical for participants and longer than necessary to manage critical system demand hours.[5] The Citizens Utility Board of Minnesota (CUB) expressed a similar sentiment, commenting that it may be difficult for customers to shift usage outside of the on-peak period if it is too long.[6] Finally, the Minnesota Office of the Attorney General (OAG) suggested that shorter on-peak periods lead to a larger average peak reduction when compared to longer on-peak periods.[7]

ii. Off-Peak Period

The Company proposes no modifications to the current off-peak period from 12 a.m. to 6 a.m. Following an on-peak period, there is a potential for a "snap-back" effect, or

[3] See Page 17 of the Department's May 17, 2024 Comments
[4] See Page 7 of Fresh Energy's May 17, 2024 Comments
[5] See Page 5 of the City of Minneapolis's May 17, 2024 Comments
[6] See Page 7 of CUB's May 17, 2024 Comments
[7] See Page 4 of the OAG's May 17, 2024 Comments

a period of sharply increased demand immediately following the on-peak period. By maintaining the off-peak period start time at 12 a.m., the rate design maintains a two-hour mid-peak period between the on-peak period and the beginning of the off-peak period to absorb post-peak energy usage and allow for a ramp up of additional load. This feature is designed in part to avoid unintended outcomes, such as the creation of a new peak in the late evening.

The proposed off-peak period will provide very low energy costs overnight when wind production tends to be highest and net system load is lowest. This incentivizes customers with major energy usage applications, such as EV charging and central air conditioning, to manage this load in consideration of the rate. To the extent customers are able to shift this load off-peak, this behavior modification takes advantage of low-cost wind production. The Company will help customers who opt into the new rate design with these adjustments through communication and education.

C. Rate Design: Pricing

In this Supplement, the Company presents modifications to the pricing in its originally proposed Residential TOU rate design. Table 2 below shows our revised proposed Residential TOU rate design.

Table 2
Revised Proposed Residential TOU Rate Design
(Rates in cents per kWh)[8]

TOU Rate Period	Time Period	Summer Energy Rate	Winter Energy Rate	Summer Ratio	Winter Ratio
On-Peak	7 PM-10 PM Weekdays	20.443	16.247	2.7	2.2
Mid-Peak	All Other Hours	13.313	11.364	1.8	1.5
Off-Peak	12 AM-6 AM, All Days	7.479	7.479	1.0	1.0

During the summer months, the moderated price signals result in lower on-peak and mid-peak period rates, but higher off-peak period rates. During the winter months, the moderated price signals result in lower on-peak period rates, but higher rates during mid-peak and off-peak periods. Table 3 below compares these revised rates with the rates shown in our original proposal.

[8] Does not include fuel costs.

Table 3
Comparison of Revised and Original Energy Rates
(Rates in cents per kWh)[9]

TOU Rate Period	Revised Proposal	Original Proposal	Difference
Summer			
On-Peak	20.443	27.845	-7.402
Mid-Peak	13.313	14.824	-1.511
Off-Peak	7.479	3.825	3.654
Winter			
On-Peak	16.247	19.125	-2.878
Mid-Peak	11.364	9.563	1.801
Off-Peak	7.479	3.825	3.654

The Company notes that these revised proposed rates are very close to the Department's recommendation. The Department recommended in initial comments that a 50 percent differential for peak periods during summer months and 25 percent differential for peak periods during winter months would be a reasonable adjustment to the rates.[10] The Company calculated the rates that would result from the Department's initial recommendation, which are very close to the rates the Company is now proposing. Table 4 below shows the relative similarity between the revised rates proposed here and the Company's calculation of the Department's recommendation.

[9] Does not include fuel costs.
[10] See Page 19 of the Department's May 17, 2024 Comments.

Table 4
Comparison of Revised Rates and Department's Recommendation
(Rates in cents per kWh)[11]

TOU Rate Period	Revised Proposal	Department Recommendation	Difference
Summer			
On-Peak	20.443	19.626	0.817
Mid-Peak	13.313	13.229	-0.084
Off-Peak	7.479	7.325	0.154
Winter			
On-Peak	16.247	15.478	0.769
Mid-Peak	11.364	11.364	0.000
Off-Peak	7.479	7.325	0.154

1. Energy Charge Impact of Revised Rate Design

In our initial compliance filing, we showed a comparison of estimated average monthly energy charges for both the summer and winter months. The initial rates were designed where the average customer's bill would go up during the summer months but decrease during the winter months. The revised TOU rates are designed so that the average customer should experience no difference in bills during both summer and winter months. Because of this we have not provided an updated energy charge impact analysis. We discuss the differentiation in seasonal rates below.

D. Rate Design: Seasonal Rate Differentiation

The Company's initial compliance proposal in this docket applied a differential between summer and winter rates during the on-peak period that was higher than the seasonal differential used during the pilot phase. The initial reasons for proposing this strong seasonal differential were in part to respond to feedback received during the Company's most recent electric rate case, and to reflect that the Company routinely sees higher system costs during the summer months compared to winter. However, after considering the comments from parties and as a part of the moderation of our proposed rate design, we are proposing to also moderate the seasonal difference in the rates. Table 5 below provides a comparison of our summer and winter rates between our revised proposal and our initial proposal.

[11] Does not include fuel costs.

Table 5
Comparison of Summer and Winter Rates From Initial Compliance to Revised (Rates in cents per kWh)[12]

TOU Rate Period	Summer Energy Rate	Winter Energy Rate	Percent Difference
Revised			
On-Peak	20.443	16.247	25.8%
Mid-Peak	13.313	11.364	17.2%
Off-Peak	7.479	7.479	0.0%
Initial Proposal			
On-Peak	27.845	19.125	45.6%
Mid-Peak	14.824	9.563	55.0%
Off-Peak	3.825	3.825	0.0%
Difference			
On-Peak	(7.402)	(2.878)	(19.8%)
Mid-Peak	(1.511)	1.801	(37.9%)
Off-Peak	3.654	3.654	0.0%

Our moderated seasonal differentiation also aligns with the recommendation of the Department. The Department estimated that the cost during summer months is about 30 percent higher than during winter months, and as such recommended using a differential of 30 percent between summer pricing and winter pricing. In our revised proposal, the differences between our summer and winter rates are less than 30 percent for both the on-peak and mid-peak periods.

E. Space Heating Rate

The Company proposed a new three-period space heating rate to complement the proposed standard TOU rates. Several parties offered support for the proposal and recommend approval as designed, including Center for Energy and Environment (CEE), CUB, the Department, and Fresh Energy. In this Supplement, the Company offers modifications to the Space Heating Rate proposal to conform it with the revised Residential TOU rate design the Company now supports.

Under the revised space heating rate proposed here, the energy charge will be the same during all TOU rate periods in the winter months. Our revised proposal includes flat rates during the winter months because the standard off-peak rates are higher than the on-peak period space heating rate. As a result, we will still be able to provide space heating customers a lower off-peak rate during winter months when compared to the standard rate. As with our initial proposal, the revised space heating

[12] Does not include fuel costs.

rate offering uses the same TOU rates as the standard rate during the summer months. We also are still proposing to begin offering the new space heating rate at the same time the standard rates become available to all residential customers. Table 6 below compares the revised winter space heating rates to the space heating rates shown in our initial filing.

Table 6
Comparison of Revised and Initial Winter Space Heating Rates
(Rates in cents per kWh)[13]

TOU Rate Period	Revised Winter Space Heating Rates	Initial Winter Space Heating Rates	Difference
On-Peak	6.537	8.778	(2.241)
Mid-Peak	6.537	5.657	0.880
Off-Peak	6.537	3.825	2.712

The American Council for an Energy-Efficient Economy (ACEEE) recommended that the new space heating rate should be limited to customers with heat pumps only, excluding customers who use electric resistance heat sources. We do not believe it is advisable to restrict the application of our electric space heating rates to just those customers with heat pumps. That requirement may be a reasonable component of a rate that is specifically designed to encourage adoption of heat pumps, particularly in a context where there is no pre-existing space-heating rate. However, the Company's space heating rate has been available to Minnesota customers for decades and likely includes many customers using electric resistance. Adding a new restriction could cause them to become ineligible, driving up their heating costs with no obvious benefit.

Moreover, ACEEE's recommendation would be challenging to implement, since the Company has no way of knowing which space-heating technology customers are using. The current requirement, which the Company has not proposed to modify, is simply that a customer indicate that their primary form of space heating is electric; the Company does not track the specific form of electric space heating used. As a result, the only fair and practical way to implement ACEEE's suggestion would likely be to remove all customers from the space heating rate and allow those with qualifying heating systems to re-enroll. This would be disruptive and frustrating for customers. The proposed revised space heating rate should help make the operating cost of heat pumps more favorable, but the Company is working towards multiple objectives with

[13] Does not include fuel costs.

the rate and restricting it to customers using heat pumps would create significantly more difficulty than it would justify.

Communicating with our space heating customers will be a component of our customer engagement and education plan.[14] CEE has recommended that we include information about the new space heating rates along with our applications for heat pump rebates through our Energy Conservation and Optimization (ECO) program. This is an excellent suggestion, and we will look for ways to cross market this opportunity to customers and trade allies. CEE also recommended that our heat pump rebate forms include an option to allow customers to opt-in to the space heating rates at the same time they submit the forms. At this time, we do not have the capabilities to include this automatic enrollment process, but this is the type of customer-facing enhancement that we can explore in the future.

CEE also encouraged the Company to explore education and awareness of our space heating rates with parties who operate complementary programs (local governments, energy advocates, the Minnesota State Energy Office). They also recommended that the Company work with contractors to understand how the new rates can make dual-fuel space heating systems with lower switchover temperatures more economically viable. We plan for a robust customer engagement and education plan for our TOU rates, including the space heating component. CEE's suggestions are appreciated, and we will explore them to ensure that key stakeholder groups are informed of the new rate.

Along with communicating with key stakeholder groups connected to the implementation of heat pumps and other electric heating advocates, we will also complete a robust communication plan with our existing space heating rate customers, as recommended by Fresh Energy, to ensure that those customers understand the rate options available to them going forward. We discuss our planned customer engagement and education plan later in this Supplement.

F. Fuel Adjustment Factor

As we noted in our initial proposal, in conjunction with proposing a residential rate design with three-period energy charges, we are also requesting approval of a three-period fuel adjustment factor. We are still requesting approval of the three-period fuel adjustment factor and the revisions proposed in this Supplement do not have an

[14] The Company notes that it has a variety of other tools designed to support customers considering adopting heat pumps through its ECO portfolio. While rate design can complement such tools by addressing operating cost concerns, as the Company has proposed, it is not generally very effective for influencing customer investment decisions, which are more amenable to incentives that address equipment costs (such as rebates).

impact of what was proposed initially. These time-varying fuel adjustment factors would be used to create fuel rates to be applied to the bills of customers who are on the Residential TOU rate. As a reminder the proposed fuel adjustment factors are shown in Table 7 below.

Table 7
Proposed Fuel Adjustment Factors

Time Period	Fuel Adjustment Factor
On-Peak	1.3653
Mid-Peak	1.0700
Off-Peak	0.5361

Our initial proposal did not show the required tariff changes to incorporate these proposed fuel adjustment factors. The required tariff changes are shown as a part of the proposed tariff changes shown in Attachment C.

G. Revenue True-up

We have designed these rates to be revenue neutral, such that revenues under current rate offerings would be equal to revenue under this TOU offering. However, it is unknown at this time which customers may opt into TOU rates. It is reasonable to assume those customers who are "structural winners" (meaning those who would benefit from lower bills due to their normal usage patterns) may opt in. Others who opt in may make behavioral changes due to the price signals they receive through the TOU rates. The Company continues to believe that a revenue true-up mechanism such as our current Sales True-up mechanism helps enable rate design such as our TOU offering, by providing the Company a reasonable opportunity for cost recovery while ensuring customers are not overpaying. We are not proposing such a mechanism in this request but may do so in a future rate case.

II. RATE IMPLEMENTATION

As a part of this Supplement, we are proposing modifications to our initially proposed implementation plan. As set forth below, a primary modification is our proposed opt-in onboarding plan. We also discuss details about several key aspects of implementing the rate, including an estimated budget to implement the rate in the form proposed in this filing and details of the digital insight tools that we plan to offer to customers to help them be successful on the rate. In addition, we also discuss several topics in response to the comments of parties, including bill protections, the exiting Time-of-day (TOD) rate, medical equipment dependent customers, and the electric vehicle

(EV) charging subscription service program. Finally, we provide more information about our experience implementing a TOU rate in Colorado and details of our proposed reporting requirements for this rate.

A. Voluntary Opt-in Structure

The rate implementation feature that has generated significant interest in this proceeding is how customers gain access to new rate designs: whether through a voluntary process of electing to participate in a new rate (opt-in) or transitioning to a new default rate with a process to be removed and restored to the original rate (opt-out). There are other implementation variations, including providing customers with rate options held open for a period, and if no election is made, then transitioning to a new rate. Another variation, raised by the Department and others, is to transition customers in waves or phases, or to do so only upon certain triggering events.

The Company's original compliance proposal reflected the guidance of parties and agencies at the time to position TOU rates as the default rate design for residential customers (opt-out). However, after considering the public feedback submitted to this record, as well as the results of customer surveying, there is significant customer concern about implementing a residential TOU rate as a default, opt-out rate.

Over 70 public comments were submitted in response to our initial proposal. The comments generally opposed the original proposal, with the on-peak pricing and a lack of flexibility inherent in an opt-out rate being two major criticisms. As public feedback about this rate implementation feature came in, the Company undertook various efforts to better understand industry and customer perspective on this issue.

The Company conducted a brief customer pulse survey. When asking residential customers about their enrollment preference if a new TOU rate was introduced in their area, 63 percent of the 439 respondents from Minnesota indicated they would prefer to stay on their current rate with the option to opt-in to the new rate. Comparatively, 18 percent indicated their preference to be automatically enrolled on the new rate with the option to opt-out, while 19 percent did not have a preference.

The Company also reflected on its own experience. Xcel Energy has experience with both opt-in and opt-out implementations of TOU rates from recent years: an opt-out pilot conducted in Minnesota from 2020-2022, and an opt-in pilot conducted in Colorado from 2017-2019.

The opt-out pilot in Minnesota yielded results of 2.6 percent peak reduction, with 86 percent of customers reporting neutral to positive satisfaction with their pilot

experience across the 9,024 participants. The average impact on customer bills across all participants was less than $1.50 per month. The pilot had an opt-out rate of less than 4 percent, well under national averages for similar pilot programs.

The opt-in pilot in Colorado, which featured a different rate structure than Minnesota, yielded results of 7.6 percent summer peak reduction in year one, and a 3.2 percent summer peak reduction in year two from 7,927 participants. Overall, 84 percent of participants reported they would recommend TOU rates to family or friends.

The Company further engaged consultants from Opinion Dynamics on research to identify best practices in the industry for engaging customers with these rate implementation strategies. Our plan to engage customers is discussed later in Section III. The research memorandum prepared by Opinion Dynamics is provided at Attachment B.

Multiple parties, including GridX and Fresh Energy, have advocated for a TOU rate to be made available temporarily on an opt-in basis, with the rate becoming opt-out later. In its initial comments, the Department recommends an opt-out rate be implemented with a phased implementation approach. While we acknowledge that an opt-out rate may lead to higher participation, lack of customer support indicates that participation may come at the cost of customer satisfaction and may not lead to behavior-changing outcomes, such as desired peak reduction. With the research we have done, our revised proposal focuses on an opt-in rate with a robust, active marketing campaign to encourage greater participation, satisfaction, and peak reduction rather than moving directly to an opt-out rate. We discuss our marketing and engagement plans later in this Supplement.

B. Timing of Implementation

The Company has shared an illustrative timeline for implementing its revised Residential TOU rates with stakeholders in informal discussions. Given the extended procedural schedule, and that this illustrative timeline relies on certain assumptions that are still subject to change, the timeline is likely to be pushed out by one or two quarters.

Illustrative Timeline

Q4 2024 – Commission Order approving rate design
Q1-Q2 2025 – Company to present communications and reporting plan in a Compliance Filing
Q1-Q4 2025 – Stand up billing and technical capabilities

Q3 2025 – Launch Rate Advisor Tool
Q3-Q4 2025 – Communications with residential customers on current TOU rates, including customers on EV tariffs with pricing based on residential TOU rates, to provide notice and preparation for rate change
Q1 2026 – New TOU rate replaces existing residential TOU rate
Q1-Q2 2026 – Test targeted communications approaches and garner feedback with customers transitioned to newly approved TOU rates
Q3-Q4 2026 – Active marketing begins to seek additional voluntary enrollments for customers with advanced metering infrastructure (AMI) meters.

This illustrative timeline strikes a balance between releasing new TOU rates, creating supportive customer tools, ensuring technical capabilities are available, and fully developing marketing and engagement plans that will be designed to incorporate the Commission's decisions in this proceeding.

C. Rate Implementation Budget

The Company estimates that the total cost, excluding labor, to implement the Residential TOU rate as an opt-in rate as presented in this Supplement is between $6 million and $8 million. This cost is comparable to what we had estimated for implementing the rate as an opt-out rate. However, it is important to acknowledge that these costs may change based on what is ultimately approved in this docket and how the rate implementation is ultimately established.

The primary cost driver for the program is education and awareness efforts. We estimate these costs to be between $5 million and $6.8 million over the next several years. The education and awareness efforts will help us inform customers of the new rate, provide resources to help them learn how to be successful on the rate, and help make the transition for customers easier.

In addition, we estimate that an additional approximately $50,000 will be needed for ongoing engagement efforts over the first several years of the rate being available. These efforts will be focused on engaging customers on the TOU rates to encourage them to shift energy usage to off-peak times.

Finally, we anticipate incurring costs of around $1,000,000 for billing implementation for an opt-in TOU rate. These costs are needed to develop an enrollment process as well as to ensure that the billing system is configured for the new rate and able to handle transitioning new customers onto the rate when they enroll.

D. Digital Energy Insights Tools

Another key to rate implementation is the availability of supportive customer tools. Digital tools can help inform customers of their rate options and compare options so that customers can make decisions suited to their lifestyle. When the digital tools are available and leveraged by customers, they can be more engaged and aware of the rate options available and have a better understanding of the impact of the TOU rate design.

The Company will offer digital tools that can better educate and help customers understand the behavioral impact of TOU rates, including what to expect when they receive their energy bill. Some of these tools require the installation of an AMI meter. The Company is planning to make the following tools available to customers:

Bill Analyzer / Bill Factors Tool. This tool provides a picture of how cost drivers impact a customer's bill It presents factors such as weather, days in billing cycle, usage, and base rate.

Bill Simulator / Rate Advisor Tool. This tool will enable customers to explore rates by applying different rates to their actual historical usage to see the difference in results. This tool will rely on a minimum of three months of historical usage data.

Mobile App / MyAccount. This tool allows customers to visually analyze their electric usage down to 15-minute interval data, including comparisons of usage over time. It includes the ability to see how changes in how they manage their usage can impact their energy bill and encourages them to shift their usage to off-peak periods.

GridX recommends that the Commission authorize cost recovery for additional customer engagement tools including proactive and personalized marketing, education, and outreach tools and self-serve tools to support individual customer success. The potential tools they highlight include self-service personalized rate comparisons, tools to help customers learn how to be successful with TOU rates, and software to allow the Company to measure customers' success on the rates.[15] We agree with GridX on the importance of cost recovery for our engagement and outreach strategies, as it is essential to providing customers with a robust education and outreach plan.

As we noted above, and aligning with GridX's recommendation for a self-service rate comparison tool, the Company is developing a personalized rate analysis tool that will

[15] *See* Pages 2 through 4 of GridX's May 17, 2024 comments.

allow customers to assess what their bills may look like on the TOU rate when compared to whatever rate they may be switching from. The expectation is that this rate analysis tool will be available in conjunction with the start of general TOU rate availability.

We will continue to explore other high- and low-technology tools to help customers learn how best to shift energy usage to take advantage of the TOU rate. We had more low-technology versions of this type of outreach during our pilot, such as magnets placed on key appliances highlighting lower cost time periods, that proved to be effective. We will look for ways to continue and expand on those successes.

E. Bill Protections and "Shadow Billing"

The Company has not proposed any bill protections or "shadow billing" as a part of the TOU rate, either as initially proposed or in this Supplement. Bill protections were of interest to both the Department and OAG, and "shadow billing" was a topic of interest to both Uplight, Inc. and CUB. The bill protections included as part of the Minnesota TOU pilot were primarily to retain customers in the opt-out pilotby providing customers peace of mind that if they were unable to respond to the price signals built into the pilot rate design that their bill would not substantially increase. With the limited term of the pilot, this feature was in place to support gathering useful learnings. In the end, less than three percent of pilot participants opted-out of the pilot, and the Company was able to gather information that has been useful in informing our proposal in this docket.

Under this voluntary opt-in TOU rate, however, the Company is not offering this bill protection feature. It is unnecessary: customer participation in the rate is completely voluntary, and to the extent a participant is unable to experience savings on the rate, they could opt out at any time. Further, through the planned tools, customers will be empowered with information to help them understand, anticipate, and plan for outcomes under new TOU rates.

Like bill protections, the Company does not plan to offer "shadow billing" for individual customers as it is not a native feature in our current billing system and, as a result, would considerably increase the time, resources, and cost necessary to implement the overall rate. Developing an extensive new platform for shadow billing is also unnecessary under an opt-in rate implementation, where customers have access to a rate advisor tool prior to making a decision as to whether to opt-in to the rate.

F. Existing Time-of-day Rate

The City of Minneapolis advocated that the existing two-period TOD rate continue as an option for residential customers, citing customers who may have made electrical equipment decisions around their homes based on the TOD rate. Nevertheless, the Company intends to close the two-period TOD rate and transition the about 1,000 customers on the rate to the new three-period TOU rate. The TOD rate was originally established in the 1980s. The Company proposes closing this rate in order to update the rate design with one that more accurately sends price signals to reflect the cost of providing service at different times of the day and to minimize complexity and customer confusion with a single residential TOU rate.

The Company's implementation plan aims to provide a positive transition experience for those customers currently on the TOD rate. The Company will engage those customers to help them understand that their rate option will be going away and provide them with information of how they can best adapt and pursue savings under the new TOU rate.

The cancellation of the existing residential TOD rate also requires several tariff changes as shown in our proposed tariff changes at Attachment C.

G. Medical Equipment Dependent Customers

Customers who are flagged in our systems as medical equipment dependent were excluded from eligibility in the TOU pilot to avoid potential adverse bill impacts to customers whose medical equipment usage would come at higher cost times. Under a voluntary opt-in rate, and with new insights into their energy usage and the addition of rate analysis tools, we believe these customers will have the information they need to decide whether they wish to take service under TOU rates.

H. Electric Vehicle Charging Subscription Service Program

The Commission has approved the structure of the Residential EV Charging Subscription Service to use the three-part TOU rate structure also used for the EV Accelerate At Home Program.[16] The change to the Subscription Service Program aligns the charging periods in the Program with the periods in use for our EV Accelerate At Home Program, ensuring that participants in either charging program have the same charging periods. The only change needed in this docket is to align the

[16] *See* ORDER APPROVING XCEL ENERGY'S 2023 TRANSPORTATION ELECTRIFICATION PLAN WITH MODIFICATIONS (May 9, 2024), Docket No. E002/M-23-452, Order Points 2 and 6

pricing of the EV Charging Subscription Service Program with the final TOU rates approved.

The City of Minneapolis recommended that the Commission order the Company to lower the monthly customer charge for our EV Charging Subscription Service Program to offer six hours of off-peak charging per day rather than twelve hours per day during weekdays and all weekend hours. The Company has considered this recommendation and does not support it for several reasons. First, the City's recommendation does not account for the Commission's previous approval to use the three-party TOU rate structure for this program. In other words, the program no longer offers the charging arrangement on which the City's recommendation is premised.

Second, the City's recommendation does not accurately represent how the monthly customer charge is determined. The monthly customer bill for our Subscription Program is calculated to cover participating customers' assumed usage during a month, providing participants with bill consistency and predictability. The monthly bill is not based on the number of off-peak hours a customer has access to. If customers believe the Program no longer offers them the service they need, they can choose to switch to the EV Accelerate At Home Program, which is a pay-as-you-go complement to the Subscription Service option that also uses the three-period TOU rate.

For these reasons we do not support the City of Minneapolis's recommendation to change the Subscription program monthly bill based on available off-peak hours.

I. Colorado TOU Implementation Experience

As set forth in our initial petition, a default (opt-out) residential TOU rate has been rolled out in a phased approach in Xcel Energy's Colorado service territory, beginning in 2022. In the eight months since the initial filing in this docket, we have gathered additional information and learnings from the Colorado experience.

As of July 31, 2024, there are about 992,000 customers, about 73 percent of total residential customers in Colorado, enrolled in the TOU rate, which is called Schedule RE-TOU. Customers who opt-out of the TOU rate are placed on Schedule R-OO. In 2023, the average monthly bill under Schedule RE-TOU was $67.53. If they had been billed under Schedule R-OO instead, the average monthly bill would have been $67.32, a difference of $0.21 or 0.3 percent per month. In 2023, TOU resulted in a 3 to 5 percent reduction in coincident system peak.

Currently, Colorado Post-TOU Transition survey results reveal a mixed response to the RE-TOU rate. 71 percent of respondents (down from 80 percent noted as of the time of our initial filing), indicated a high understanding of the basic concept of TOU rates, recognizing that electricity costs fluctuate depending on the time of day, with higher rates during on-peak hours and lower rates during off-peak hours. Despite this understand, customers have less clarity regarding the availability of an opt-out option, the breakdown of charges on billing statements, the impact on solar customers, the effect of different rates on their bills, and whether the TOU rate applies to natural gas usage for combination gas-electric customers.

Overall, Colorado customer sentiment toward the RE-TOU rate currently skews negative, with 53 percent of respondents expressing an unfavorable opinion and 20 percent a favorable opinion. Many customers report feeling anxious and stressed about managing their electricity use, especially during on-peak hours, which often coincide with times when electricity is most needed for daily activities like cooking, cleaning, and family time. Additionally, customers have expressed frustration with the absence of tools to compare usage and costs, the perceived lack of choice in the automatic enrollment process, and the limited understanding about the opt-out option. Quality digital tools (many of which are detailed above) and educational campaigns must be developed as part of a robust, ongoing customer experience strategy. The Company believes a tool such as a Rate Advisor will help customers understand the impact of TOU on their bills and why TOU is important while empowering them to make educated decisions about the rate that best meets their needs.

Recognizing the differences between the jurisdictions, the Colorado experience continues to help us think about and develop our strategies for Minnesota. First, it provides an important counterpoint to the presently proposed opt-in rate that will allow us to compare two different implementation options and consequent customer and load outcomes. Second, the Colorado communications approach, customer feedback, and overall bill and load impacts indicate that both initial and ongoing communication, as well as additional self-service rate comparison tools for customers, are likely important to support both optimal outcomes and customer satisfaction.[17] For example, Colorado customers have not yet had the benefit of the quality digital tools such as a Rate Advisor to help customers understand the impact of a TOU rate on their bills. We plan to assess Minnesota implementation and outcomes with the benefit of these comparisons.

[17] For example, the Colorado residential TOU pilot, conducted from 2017 through 2019 and predating the current rollout, showed that peak reduction dropped 4.5 percent from year one to year two.

J. Reporting Requirements

The Company appreciates the recommendation of the Department for a 90-day compliance filing in this matter with a detailed engagement plan. We support this concept and agree to provide a more detailed plan on the suggested timeline.

Additionally, we propose filing an annual report providing information and data about the TOU rate. We propose including the following information as a part of this annual report:

- Participation metrics, including the number of customers who have enrolled, number of customers leaving the rate, and reasons for customers leaving the rate if known,
- Customer satisfaction survey results,
- Energy usage statistics, and
- Overview of marketing outreach efforts and insights gathered.

As a part of their comments, Fresh Energy provided a list of recommended items and information to be included in any future Compliance Filing related to the implementation of the TOU rate.[18] Given that Fresh Energy's reporting recommendations are more relevant to our initial proposal to implement the rate as a default option with a different timeframe, we do not respond directly to their recommendation.

III. CUSTOMER ENGAGEMENT AND EDUCATION

The following plan leverages the findings from our Minnesota TOU pilot and our opt-out TOU roll out in Colorado, research conducted by Opinion Dynamics as well as the education and communication insights derived from other Xcel Energy residential customer programs. The plan will educate customers through Awareness, Education and Engagement phases. This plan also addresses the anticipated cost of implementation and ongoing support.

The Company plans to develop specific messaging and channel plans targeted to specific customer groups who may be negatively impacted by the TOU rate or who may uniquely benefit from it. These groups may include non-English speakers, electric heat customers such as Income Qualified customers, Senior Citizens, solar rooftop customers, space heating customers, current TOD rate customers, etc.

[18] *See* Attachment B to Fresh Energy's May 17, 2024 Comments.

The marketing and communications strategy for an opt-in TOU rate scenario is divided into two phases. The phased approach supports the Company's TOU rate objectives and is designed to attract, engage, and educate customers through each stage of the rate implementation process. The Company intends to use an iterative approach to refining its communications and education efforts over time and plans to incorporate additional lessons learned throughout implementation of our customer engagement plan.

A. Communications Plan

i. *Phase 1:* Customer Enrollment Targeting

In this initial phase, the Company will undertake a deliberate and focused campaign to disseminate information about the advantages of TOU pricing. Our outreach will extend to customers, communities, and employees, with the primary objective of preparing them for the forthcoming program enrollment opportunity. Specifically, our initial customer targeting efforts prioritize individuals who exhibit a strong likelihood of participating in the TOU rate. This includes customer segments actively engaged in other Xcel Energy programs that ask them to shift when they use energy. Additionally, we will recognize and engage customers who integrate sustainable practices into their daily lives—such as driving EVs or opting for electric appliances over fossil fuel-powered alternatives. By strategically reaching out to these informed and environmentally conscious groups, we aim to foster awareness and encourage participation in the TOU rate. We believe a larger portion of our budget will be needed to drive awareness and participation among these customers but expect they will need fewer reminders to continue shifting their energy use once enrolled.

a. Messaging

Our messaging strategy for awareness and enrollment will concentrate on explaining the concept of TOU rates and the associated potential benefits for consumers. To ensure the messages resonate across our diverse customer base, we will deploy language that is simple and clear. Our awareness and educational efforts will underscore the cost-savings opportunities afforded by the TOU model as well as convenient ways to change energy usage behaviors. This approach is substantiated by the results of our Residential TOU Pilot, which showed that satisfaction with the pilot rates was correlated with the perception of saving money on the rates.

b. Customer Decision-Making Support

To help customers understand if the TOU rate is right for them, our marketing will drive customers to our website for more information and will also provide options for those that prefer personal assistance. The website will provide a digital rate advisor tool. This tool will offer customers personal energy use insights, enabling them to make well-informed selections regarding the rate plan that best aligns with their energy consumption patterns, while building and maintaining trust and transparency with our customers.

ii. *Phase 2*: Ongoing Engagement

To maximize the benefits of the TOU rate, it is imperative that customers are well-informed about the necessary behavioral modifications and energy load shift strategies that will generate cost savings on their utility bills within the TOU rate framework. Insights gleaned from the Minnesota TOU pilot and the TOU rate implementation in Colorado indicate that customers who actively engaged in the program and receive education on optimizing their energy usage to benefit from TOU rates tend to have a more positive perception of the program and realize greater financial savings. Considering this, we will implement an ongoing communication campaign directed at customers subscribed to the TOU rate, with the aim to motivate, inform, and maintain engagement with the program.

B. Overall Plan and Options

While the pilot focused on the rate design, there are additional pieces to consider for a successful rollout at scale. One lesson learned with the Company's Colorado TOU experience is that a price signal by itself will not cause the behavioral lifestyle changes that would help customers reduce their bills and achieve the goals of shifting usage to non-peak timeframes.

Digital energy insights tools will be made available to customers. When customers have the energy data insights into the options available and the guidance when selecting and leveraging their energy rates, they are more likely to make the behavioral changes necessary to achieve the goals of the rate design. The intent of these tools is to build trust in the rate design and empower customers to conveniently make the behavioral changes to maximize the benefits of the rate design.

The customer's AMI meter is the foundation to building the energy data insights within the digital tools. One example is usage disaggregation. Disaggregation of energy data informs customers how they use their energy, and digital tools provide related coaching for behavioral encouragement to maximize the impact on their energy bill. Other applications can support the customer-driven curiosity to acquire a

deeper level of knowledge about how to modify their usage patterns. Anecdotally, customers that are not as curious about their energy data insights, but are aware that these tools are available, are also likely to modify their behaviors to leverage the benefits of the TOU rates.

The tools we will develop will help all customers understand when they should be using their appliances to manage their bills (for both flat and TOU rate customers). Customers during the Minnesota pilot and the Colorado roll-out did not have the benefit of a rate advisor or other digital tools. With these tools in place for future participants on a TOU rate, we anticipate an easier environment for customers to change their behavior by using the additional information at their disposal.

C. Resources for Low-income Customers

We appreciate the concern by parties regarding income qualified customers and the impact to bills because of a TOU rate. It is with this concern that the Company specifically piloted a TOU rate with this customer group in mind. In our Minneapolis cohort of the pilot, 35 percent of customers were income qualified. Their bill impact not only showed a three percent reduction on average, but these customers were significantly more satisfied than the general population in the pilot.

The Department, Fresh Energy and CUB commented on whether the Company had additional resources for income qualified customers to help manage their utility bills under a TOU rate. We note that these parties were responding to the Company's original compliance proposal which featured a default "opt out" rate implementation. The present proposal, an opt-in approach, means low-income customers would experience no change to their flat rates unless and until they voluntarily elected to take service under TOU rates. Despite this change in proposed implementation, the Company provides responsive information about other resources available for income qualified customers.

The Company has a robust portfolio of programs to support energy savings for our income qualified customers, including Affordable Efficient New Home Construction, Home Energy Savings, Low-Income Home Energy Squad, and Low-Income Multi-family Building Efficiency. These programs offer assessments, comprehensive energy efficiency upgrades (including appliances and HVAC measures) and often include no cost, direct install opportunities. Smart thermostats and programmable thermostats are provided at a discount through many of these programs and can be part of the direct install of equipment during an energy audit.

We continue to expand our reach to these customers as described in our 2024-2026 ECO Triennial Plan.[19] In the Triennial, we describe an expansion of our eligibility requirements and the development of a network of non-profits serving the income qualified market through the Non-Profit Energy Savings Program, which assists non-profits with helping customers reduce energy bills through direct distribution and additional resources. We will continue to provide customers with opportunities and educate them of options available through these important energy efficiency programs.

In addition, the Company has proposed an Automatic Bill Credit Pilot Program which is designed to reduce energy burden for low-income customers.[20] Under this proposed two-year pilot, monthly electric bill credits would be automatically provided to all households in census blocks identified to have high energy burdens. We estimate that this would cover approximately 23,000 households. We await a Commission decision on this proposal, but this is another potential option that will help at least some low-income customers lessen the impact of their energy bills.

IV. NET-METERING CUSTOMERS

In our initial proposal, we noted that several changes would need to be made to our net-metering tariffs to account for this new TOU rate. Since our initial proposal, we have considered the changes that will align our net-metering tariffs with the residential TOU rate. We discuss our proposed changes to the net-metering tariffs in this section. We also briefly discuss how the pricing of our net-metering tariffs will be reassessed in the future.

One tariff change needed is to our Excess Generation-Average Retail Utility Energy Service tariff.[21] We propose to offer this tariff to any qualified residential customer on TOU rates who wants to take service on this net-metering option. This tariff is the most common net-metering rate for residential customers, and currently this tariff only allows customers on our standard residential rate to participate:

> *Available to any qualifying facility (QF) of less than 40 kW AC capacity who receives <u>non-time of day</u> retail electric service from Company and offsets energy delivered by Company.*

To make this tariff applicable to all residential customers with eligible generating systems, we propose tariff language changes that will allow customers on TOU rates to take net metering service on the A50 rate. The proposed language includes details

[19] Docket No. G,E002/CIP-23-92.
[20] Docket No. E002/M-24-173
[21] Rate Code A50

on how the netting of a customer's qualified facility (QF) production against their usage will occur. Specifically, we propose to net the generation from the customer against their usage as follows:

1. All QF generation and customer usage will be netted in like time of use periods as follows:
   a. Any mid-peak QF production will be netted against mid-peak usage.
   b. Any off-peak QF production will be netted against off-peak usage.
   c. Any on-peak QF production will be netted against on-peak usage.
2. After QF generation and customer usage are netted in like time of use periods, further netting will be applied in the following order:
   a. Any remaining mid-peak QF generation will be netted against off-peak usage not already offset.
   b. Any remaining on-peak QF generation will be netted against mid-peak usage not already offset.
   c. Any remaining on-peak QF generation will be netted against off-peak usage not already offset.
3. After all netting has occurred as described above, the remaining excess QF generation during the monthly billing period will be credited at the above rate for payment per kWh for Energy Delivered to Company in Excess of Energy Used.

The pricing of our A50 net metering rate will be reassessed on a regular basis as a part of our existing annual Cogeneration and Small Power Production filings. To determine this rate, residential revenues are divided by residential sales, by season, to determine the average retail rate. This calculation currently only includes revenues and sales from the standard one-period residential rate.[22] If our residential TOU rates proposed here are approved by the Commission, we will update the formula that is used to calculate the average retail rate to include revenues and sales from this rate to ensure we are capturing the revenues and sales from most residential customers.

The City of Minneapolis advocated for net-metering customers to be compensated at the approved TOU rate based on the time of production. However, Minnesota statute and rules dictate that customers should be compensated at the average retail rate, at least for the Excess Generation-Average Retail Utility Energy Service tariff. The average retail rate will factor in revenues and sales from customers on the TOU rate if the TOU rate is approved, meaning the compensation rate will factor in the time-varying aspect of the rate in the calculated average retail rate. The average retail rate is currently higher, $0.15874 per kWh, than the mid-peak period and would likely stay

[22] Rate Codes A01, A03

that way in the future. This means that customers will be compensated for excess generation at a higher rate during all non-peak hours than they would under the City's recommendation. As a result, we do not believe that a switch to a three-period compensation structure based on any approved TOU rates is necessary at this time.

The Company also proposes to include the TOU rate for our other net metering services on tariff sheets 9-3 (Sale to Company After Customer Self-Use), 9-4 (Monthly Net Metering), and 9-4.2 (Annual Net Metering (kWh Banking Option)). Customers on the TOU rate would be eligible for these tariff options. We have proposed updated tariff language for these changes in Attachment C. The Company will file rates for these offerings with our next Cogeneration and Small Power Production annual filing, to be filed January 2, 2025. The calculation of these rates will be consistent with our TOD net metering rate calculations but will be broken down by the three-period TOU timeframes.

V. COORDINATING WITH DEMAND RESPONSE PROGRAMS

The Department's comments provided a detailed analysis of the Company's active demand response (DR) programs for residential customers and requested the Company address if any changes were considered to the residential DR portfolio. Additionally, Fresh Energy suggested reviewing additional rate options to include Critical Peak Pricing (CPP) or Peak Time Rebates (PTR), which are additions to TOU rates which typically have a higher price signal to customers to reduce load during peak periods. Currently, the Company is not contemplating additional changes to the existing programs detailed in the Department's analysis, including Saver's Switch, AC Awards, Energy Action Days, Smart Water Heaters, Residential Energy Controlled Services and Residential Limited Off-Peak Service nor have we analyzed the impact or ability to successfully implement an additional rate such as CPP or PTR, which would overlap with an optional TOU as presented.

Demand Response programs currently provide an incentive to lower peak usage during hot summer days. These include Saver's Switch and AC Rewards, which were recently approved as a full program in the Company's ECO Triennial Plan as part of our Residential Demand Response Program (also including Energy Action Days and Smart Water Heaters).[23] Customers will continue to be encouraged to participate in these programs regardless of their chosen rate. If customers choose to be on a TOU rate, the rate will become an additional incentive to shift usage to off-peak periods. The Company is not concerned with the layering of incentives in these instances since the rebates for our residential DR programs are specific to enrollment and

[23] Decision, Department of Commerce, Docket No. G,E002/CIP-23-92, December 1, 2023.

participation in the program and not based on performance, such as TOU. Additionally, some smart thermostats may be an additional benefit to TOU as they can make their own TOU-optimized adjustments daily independent of a DR event, scaling back energy use automatically without customer action. No changes are being contemplated at this time regarding additional incentive change to these programs; however, the Company reviews these options as part of its planning process and will be reviewing savings and incentives based on TOU participation for our next triennial which will be filed on June 1, 2026.

As to Energy Action Days and Smart Water Heaters, both programs are new to market, and we are not yet contemplating additional changes. Energy Action Days is a behavioral program which has shown promise in the market to bring additional education to customers regarding peak periods. This program will continue to bring this educational component to the forefront of customers' minds during a TOU peak period. The Smart Water Heating program continues to have low participation due to supply issues that are just beginning to find resolution.

VI. Additional Pilot Result Analysis

In response to comments and to provide greater details about the bill impacts customers experienced during our TOU pilot, the Company has again worked with Guidehouse, the external consultant we originally worked with to provide measurement and verification expertise during the pilot.

As a part of this additional analysis, we compared the number of customers who received bill credits versus those who did not receive bill protection credits to see if there were segments of the population that received more bill protection credits than others. This additional analysis showed that a higher percentage of low-income customers received bill protection credits at some point of the pilot than any other segment of pilot participants. About 15 percent of low-income customers received a bill credit at some point during the pilot. This is not entirely unexpected, as low-income customers had many more opportunities to receive bill protection credits than the rest of the pilot participants. Low-income customers could receive a bill protection during any individual month during the first 12 months of the pilot term, along with an annual bill protection credit during the second year of the pilot. All other participants could only receive a bill protection once—an annual payment at the end of the first year of the pilot. Table 8 below shows the percentages of customers who received bill credits for each demographic segment.

Table 8
Percentage of Pilot Participants Receiving Bill Protection Credits

Segment[24]	% Receiving Bill Protection Credit
Low-income	15.0%
EV Drivers	6.2%
Renters	8.0%
Seniors	9.5%
Smart Thermostat Users	9.2%
All Other Customers	9.8%

While more low-income customers received bill protection credits as a percentage than any other segment, the analysis also showed that a high percentage of low-income customers showed an overall annual bill savings. About 70 percent of low-income customers showed annual bill savings on the pilot, which was comparable to the results of renters. Only the EV Drivers segment saw a higher percentage of participants have annual bill savings, while seniors, smart thermostat users, and customers not in a segment all showed bill savings at a much lower percentage. Table 9 below summarizes the percentages for each segment.

Table 9
Percentage of Pilot Participants with Annual Bill Savings

Segment	% with Annual Bill Savings
Low-income	70%
EV Drivers	80%
Renters	70%
Seniors	50%
Smart Thermostat Users	55%
All Other Customers	50%

The Company also worked with Guidehouse to estimate the number of customers who would have qualified for bill protection credits but did not receive a credit due to moving before the payment date. Guidehouse determined all customers who had bill increases greater than 10 percent and then compared that list to the list of customers who received bill protection payments. Through this analysis, we determined that there were only two customers who would have been eligible for a bill protection payment if not for moving before the credits were paid out.

[24] Segments are not exclusive. An individual customers can be a part of more than one segment (EV Driver and Senior for example). The "All Other Customers" segment is customers who do not appear in any other segment.

Using the information recently provided by Guidehouse, the Company provides two attachments with greater bill impact details. The first, Attachment D, provides a distribution of the average bill impact for each customer. The attachment includes average annual bill impacts along with bill impacts during the summer and winter months. A chart is provided for all customers along with one for each customer segment that was studied during the pilot. The second attachment, Attachment E, provides cumulative distributions of annual, summer, and winter bill impacts again broken down by customer segment. A cumulative distribution of bill impacts was specifically called out by the OAG as something that leading TOU experts specifically recommended to assess TOU rates.[25]

VII. PROPOSED TARIFF CHANGES

The proposed modifications require additional modifications to our tariff pages as included in our initial comment. These additional tariff changes include updating the TOU pricing and a new definition of peak periods. This revised pricing and peak period definition also carries over to our EV Accelerate at Home program, which uses the same pricing as our Residential TOU rates. In addition, we are also recommending a modification to the terms and conditions for the TOU rate tariff to restrict customers who opt-out of the rate from reenrolling in the rate for 12 months. This will ensure that customers are not able to opt-out at times when the rate could be disadvantageous for them, like during summer months for example, and then opt back in when the rate could be advantageous for them again.

Also as discussed previously, we are recommending several changes to our net metering tariffs that were not included in our initial petition, as well as a change to the fuel clause rider to implement a time-varying fuel adjustment factor. The Company requests that the Commission also approved those changes.

The proposed tariff changes are included in Attachment C. Attachment C includes the following pages of our Minnesota Electric Rate Book:

- Section No. 1, Sheet No. 1
- Section No. 5, Sheet No. TOC-1
- Section No. 5, Sheet No. 1
- Section No. 5, Sheet No. 2
- Section No. 5, Sheet No. 3
- Section No. 5, Sheet No. 4

[25] *See* OAG's Comments at Page 17.

- Section No. 5, Sheet No. 4.1
- Section No. 5, Sheet No. 4.2
- Section No. 5, Sheet No. 4.3
- Section No. 5, Sheet No. 7.1
- Section No. 5, Sheet No. 7.2
- Section No. 5, Sheet No. 8
- Section No. 5, Sheet No. 8.2
- Section No. 5, Sheet No. 8.3
- Section No. 5, Sheet No. 13
- Section No. 5, Sheet No. 16
- Section No. 5, Sheet No. 52.4
- Section No. 5, Sheet No. 52.5
- Section No. 5, Sheet No. 91
- Section No. 5, Sheet No. 91.3
- Section No. 5, Sheet No. 148
- Section No. 7, Sheet No. 115
- Section No. 9, Sheet No. 2
- Section No. 9, Sheet No. 2.1
- Section No. 9, Sheet No. 3
- Section No. 9, Sheet No. 4
- Section No. 9, Sheet No. 4.2

Please note that the changes shown in Attachment C also include tariff changes proposed in our initial petition that are not affected by the modifications requested in this Supplement.

The Company also proposes to maintain the pricing relationship between the Residential TOU and all the EV tariffs. As a result, when the TOU pricing is approved the Company will also update all the EV tariffs to maintain the pricing relationships.

CONCLUSION

We appreciate the opportunity to provide this Supplement with a revised proposal to implement a Residential TOU rate. The revised proposal is informed by feedback received from customers as well as further discussions with interested parties. We look forward the additional review of this revised proposal from parties and the opportunity to continue working towards a successful rate implementation.

Dated: August 16, 2024

Northern States Power Company

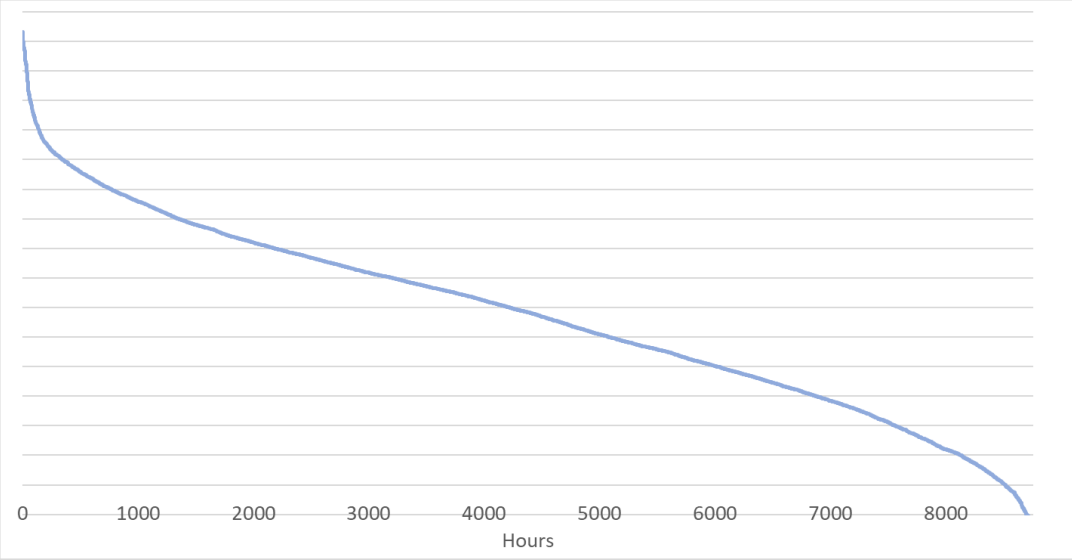
Cost Duration Method

A core principle of any rate design is to ensure the rates being charged to customers reflect cost causation. In many cases, simple annual or monthly metrics related to energy or peak demand can be used to allocate costs to customers through a single flat volumetric rate that may differ by season. With a time-of-use (TOU) rate, multiple volumetric levels must be developed for the rate design reflecting different TOU periods. As such, a methodology must be developed to ensure the costs assigned to each TOU period when developing the TOU rate are appropriate.

The "cost duration method" was developed in Docket No. E002/M-17-775 to better link the recovery of system costs to the time periods during which system assets are being utilized. In doing so, the resulting rates are intended to accomplish two goals: 1) send a time-differentiated price signal to customers to encourage peak demand reduction, 2) ensure rates for each TOU period reflect the costs of the underlying assets used to meet demand at those times (i.e. cost causation).

The load duration curve represents the MW of system demand for each hour of an entire year (8760 hours), ranked in order, and provides a time-differentiated demand profile that can be used as the basis of this methodology.

Table 1: Load Duration Curve
NSP 2025 Net System Loads



Close examination of a utility's system load duration reveals several features. For example, it's readily apparent that there are a small number of "peak" hours during which system assets necessary to meet demand are used very infrequently. Thus, it would be appropriate to assign a significant share of costs for these peaking assets to the hours that rank highest on the load duration curve. Similarly, at very low loads the system costs should be equally across all hours. The cost-duration method is designed to capture these features by assigning a share of system costs to each hour in a way that reflects the usage as illustrated by the load duration curve. The assignment of costs to specific hours can be further systematized through the steps outlined below.

Developing the Cost-Duration Curve

- *Step 1: Identify the costs and load duration curves to be used.*

NSP relied on its 2024Class Cost of Service Study for the revenue requirements to be allocated to each TOU period. Since energy, production and transmission related revenue requirements are related to system-wide demand, the system-wide load duration curve was used to allocate those costs. Meanwhile, other costs such as distribution system costs are more closely aligned with usage of the distribution system by specific customer classes. Thus, these costs were allocated according to the load duration curve for the residential customer class. Finally, customer-related costs not recovered through the customer charge were evenly divided among all hours of the year (i.e. no-load duration curve was used).

- *Step 2: Identify the average cost of system capacity for each load duration curve*

Total system costs are divided by the peak MW of the load duration curve to find an average cost per MW of system capacity. For example, in NSP's case the total Residential Production and Transmission revenue requirement is $887 M and system peak demand is 7,663 MW, leading to a system-wide average cost of $115,779/MW.

- *Step 3: Divide the load duration curve into marginal MW blocks:*

The system load duration curve is sliced horizontally into 8760 individual MW blocks. Each block represents the incremental (marginal) MW of system capacity needed to serve the next highest hour of system demand. For example, in NSP's case the 1st

ranked hour requires 34 MW of additional capacity over the 2nd ranked hour to meet its needs. The 2nd hour requires 22 MW over the 3rd hour, and so on. The lowest ranked hour will have an incremental MW value considerably higher than others since it represents the "baseload" capacity above 0 MW.

- *Step 4: Assign costs to each marginal MW block*

Costs are assigned to each MW block by multiplying the incremental MW value for the block by the average $/MW cost identified in step 1. Since each MW increase is not uniform, the incremental costs could vary considerably between blocks. For example, the 1st ranked MW block is assigned costs of $3.9M total (34 MW times $115,779/MW). The 2nd ranked MW block is assigned costs of $2.5M total (22 MW times $115,779/MW), and so on.

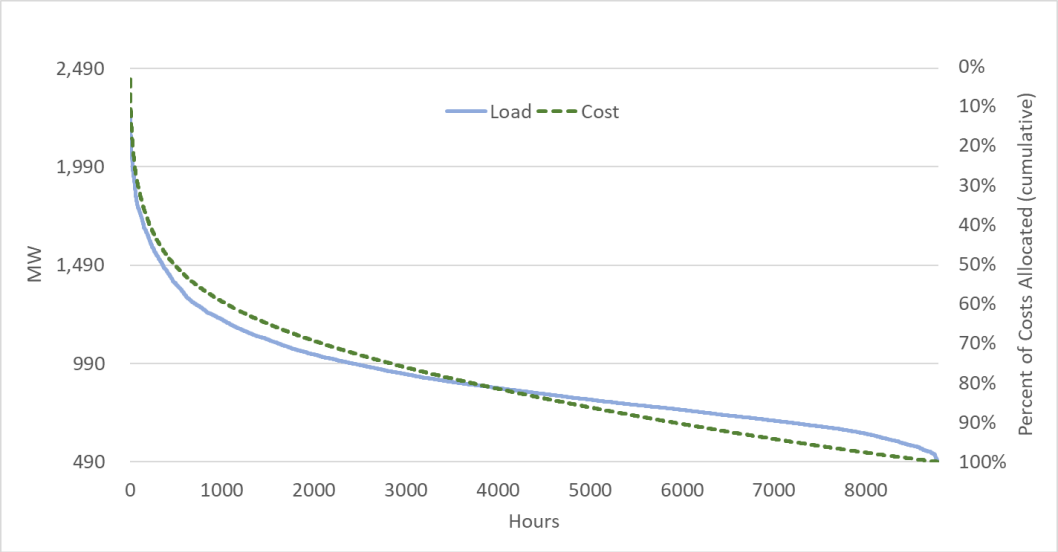
- *Step 5: Divide MW block costs between appropriate hours*

For each MW block, the assigned costs are evenly divided among the number of hours at or above that load level. For example, the 1st MW block costs are assigned solely to the 1st ranked hour. Meanwhile, the 2nd MW block costs are divided between hours 1 and 2. The 3rd MW block costs are divided between hours 1, 2 and 3, and so on.

- *Step 6: Add up the assigned MW block costs for each hour*

For each hour of demand, the assigned portion of costs from each MW block are summed. This reflects a portion of the marginal MW block costs to serve that hour, plus a portion of the MW block costs for each hour below it on the load duration curve. This ensures that the cost assigned to each hour reflects not only any incremental "peak capacity" needs but also any underlying "baseload" or "intermediate" capacity needs. The resulting cost structure will appropriately assign costs for each incremental MW to the hours when those MW of capacity are being used to serve load. As illustrated below the costs are spread to each hour in a manner that closely resembles the load duration curve and therefore reflects system use. This spread of costs to each hour is known as the "cost duration curve."

Table 2: Load and Cost Duration Curves – Residential



Once costs have been assigned to each hour, these hourly cost assignments can be readily used to construct a time-of-use rate. After the TOU time periods have been selected, the costs assigned to each hour within each TOU period are totaled. The TOU period costs are then divided by the billing determinant (i.e. MWh) associated with the hours of the TOU period.

Forecast Year Basis for TOU Rate Design

A year 2025 forecast of hourly system loads and marginal energy costs was used to develop the proposed TOU rate periods and allocations for proposed rate

differentials. Year 2025 results are not significantly different from the results with future year forecasts, as these indicate only an approximate one hour time shift in TOU rate periods. It also represents a reasonable balance as the influence of renewable resources on that system loads is expected to continue past 2025, making the selection of appropriate rate periods a moving target to some extent. Selecting a rate that has a high probability of staying steady throughout the next decade, reduces customer confusion and saves on education and marketing spend.

The system forecast also included hourly forecasts of system wind and solar resources, which were subtracted from gross system load to develop hourly net system loads. Net system loads were used for the process of allocating capacity value to TOU rate period. These loads are also predominately used to develop proposed TOU rate periods.

The use of net system loads improves the accuracy of identifying the time and pricing for both the off-peak period to recognize available wind resources on the margin as discussed earlier and for the on-peak period that is significantly affected by the availability and hourly production profile of solar resources. This approach also helps direct customer price response incentives to reduce reliance on fossil fuel resources. This applies to both energy and capacity. Relying on gross load misses the fact that future fossil assets will be built to meet the load that is left over after renewable energy production is taken into account.

Comparison of Peak Hours

A key example of the indicated time shift for TOU on-peak hours is the hourly net NSP system profile for July, which is typically the highest load month of the year. The following table, based on NSP system forecast July average weekday hourly loads, compares each hour as a percentile of the peak load hour for the forecast years. We show the results of this analysis used for our Residential Time of Use Pilot in Docket E002/M-17-775, as well as the current analysis for years 2025 through 2030. The trend of peak hours shifting to later in the day is indicated by the change provided in the table on the right.

Net System Average Weekday Loads – July Forecasts
Percentile of Peak Hour

Residential TOU Pilot Analysis

Hr Ending	TOU Period	2017	2024	2030
1	Off	0.621	0.637	0.639
2	Off	0.583	0.603	0.612
3	Off	0.563	0.582	0.602
4	Off	0.555	0.572	0.597
5	Off	0.570	0.585	0.601
6	Off	0.617	0.632	0.641
7	Mid	0.697	0.699	0.698
8	Mid	0.773	0.758	0.759
9	Mid	0.828	0.802	0.791
10	Mid	0.867	0.832	0.809
11	Mid	0.916	0.884	0.839
12	Mid	0.942	0.905	0.850
13	Mid	0.965	0.933	0.872
14	Mid	0.976	0.959	0.890
15	Mid	0.984	0.972	0.913
16	On	0.993	0.974	0.922
17	On	0.999	0.985	0.939
18	On	1.000	1.000	0.986
19	On	0.984	0.995	1.000
20	On	0.948	0.975	0.995
21	Mid	0.909	0.947	0.963
22	Mid	0.880	0.906	0.924
23	Mid	0.792	0.782	0.815
24	Mid	0.701	0.676	0.710

Residential TOU Voluntary Rate Offering Analysis

Hr Ending	TOU Period	2025	2026	2027	2028	2029	2030
1	Off	0.551	0.615	0.585	0.485	0.467	0.471
2	Off	0.499	0.555	0.524	0.422	0.403	0.397
3	Off	0.468	0.514	0.476	0.354	0.340	0.336
4	Off	0.450	0.494	0.457	0.324	0.319	0.320
5	Off	0.461	0.496	0.459	0.331	0.328	0.348
6	Off	0.517	0.554	0.524	0.422	0.416	0.421
7	Mid	0.598	0.603	0.589	0.482	0.467	0.478
8	Mid	0.676	0.640	0.629	0.547	0.520	0.516
9	Mid	0.690	0.638	0.634	0.563	0.556	0.538
10	Mid	0.819	0.769	0.758	0.690	0.681	0.673
11	Mid	0.840	0.793	0.782	0.702	0.690	0.691
12	Mid	0.860	0.808	0.783	0.730	0.693	0.690
13	Mid	0.886	0.829	0.797	0.769	0.729	0.705
14	Mid	0.921	0.859	0.828	0.800	0.759	0.732
15	Mid	0.937	0.874	0.848	0.823	0.774	0.735
16	Mid	0.956	0.889	0.874	0.839	0.812	0.772
17	Mid	0.970	0.903	0.896	0.860	0.843	0.811
18	Mid	0.979	0.917	0.910	0.891	0.886	0.856
19	Mid	0.976	0.929	0.928	0.906	0.903	0.884
20	On	1.000	0.986	0.982	0.984	0.986	0.973
21	On	0.983	1.000	1.000	1.000	1.000	1.000
22	On	0.940	0.968	0.973	0.959	0.961	0.967
23	Mid	0.801	0.826	0.832	0.794	0.781	0.790
24	Mid	0.656	0.683	0.692	0.624	0.595	0.593

The forecast out to 2030 indicates a continuing trend of net system peak loads being later in the day. Although capacity from customer distributed generation is not netted from gross system load forecasts, it can indirectly influence the definition of peak hours through its effect on load forecasts.

Based on this analysis and stakeholder input, we propose to set the on-peak hours to 7:00 pm to 10:00 pm for non-holiday weekdays. The Company recognizes that the 6:00 pm to 7:00 pm hour is near the peak load level, and we note that an on-peak timeframe of 6:00 pm to 10:00 pm would also be reasonable.

Opinion Dynamics

Memorandum

To: Xcel Energy NSP Residential TOU Team

From: Opinion Dynamics Study Team

Date: June 11, 2024

Re: Residential TOU Marketing, Education, and Outreach Research Findings

Executive Summary

Time-of-use (TOU) rates are an important tool for utilities trying to manage their system load, as this rate structure better aligns customer costs and incentives with the cost of energy. TOU rates also provide customers an element of choice and the opportunity to manage their bills by shifting energy usage to lower-cost times. This memo presents the results of research conducted on select residential TOU rate rollouts across the country. The research focused on customer marketing, education, and outreach (ME&O) strategies and how these correspond with outcomes and costs. There are several themes and learnings across the unique case studies presented in this memo:

- **A hybrid enrollment strategy can offer benefits compared to purely opt-in or default strategies:** Our research indicates that some utilities pursue a hybrid enrollment strategy that leverages components of both opt-in and default strategies. A hybrid approach can allow utilities to achieve the high enrollment associated with a default enrollment while managing the speed of the transition and supporting customer choice.
- **Communication is key:** Extensive, sustained, and thoughtful communication with customers is key to their enrollment, success on the rate, and satisfaction. While more communication, through more channels, is typically better, a large campaign can be costly. The communication strategy should be balanced against enrollment targets, the risks of insufficient communication to customer bills and satisfaction, and customer engagement preferences. Just as important as the quantity of messaging is the quality of messaging. Conducting customer research prior to the launch of the rate can help utilities to refine their messaging so it is effective.
- **Invest in tools and resources to support customer decision-making and success on the rate:** The utilities we spoke with consistently highlighted the importance of providing a rate comparison tool and positioning customer service representatives (CSRs) to support customers through the transition.
- **ME&O costs are influenced by several variables, and documentation is limited:** The utilities we spoke with did not track precise initial or ongoing costs for ME&O associated with TOU rates, but our research suggests that costs vary. The ME&O investment is likely to be greater in certain scenarios, such as for a new default rate with high price differentials or an opt-in rate with moderate customer participation targets. Utilities also incur costs on IT and system-related needs that support ME&O.

Introduction

Time-of-use (TOU) rates are an important tool for utilities trying to manage their system load, as this rate structure better aligns customer costs and incentives with the cost of energy. TOU rates also provide customers an element of choice and the opportunity to manage their bills by shifting energy usage to lower-cost times. When offering a new rate structure to a large number of customers for the first time, utilities need to make a variety of decisions, including:

- Will all eligible customers automatically be transitioned to the rate unless they take action to choose a different rate (opt-out/default), or will customers have the opportunity to enroll in the rate of their own volition (opt-in)?
- How will the rate be structured? For example, when and how long will the periods be, what will the pricing differentials be, and will pricing vary by season?
- Will customers just getting started on the rate be provided with bill protection in case of increased energy bills while they adjust to the rate?

These decisions are highly consequential as they affect enrollment, customer experience, and willingness to try the rate given the perceived level of risk.

In addition to these design decisions, utilities introducing new rates to their customers must carefully plan and implement their customer marketing, education, and outreach (ME&O) strategy. The ME&O strategy and its implementation affect outcomes including enrollment, customer experience and success on the rate, and the cost of the initial rate implementation as well as ongoing management.

This memo presents the results of research conducted on select residential TOU rate rollouts across the country. The goals of the research were to:

- Capture key components of each utility's rate design;
- Assess effective customer ME&O strategies for rate launch and on an ongoing basis;
- Explore how different ME&O strategies relate to rate outcomes, especially enrollment, retention, understanding, and customer experience; and
- Assess ME&O costs associated with launching and managing residential TOU rates.

In support of the research goals, we conducted a focused literature review and in-depth interviews with representatives of four utilities: Ameren Missouri, Arizona Public Service (APS), Portland General Electric (PGE), and Sacramento Municipal Utility District (SMUD). We interviewed utility staff who were knowledgeable about the initial and ongoing customer ME&O related to the residential TOU rate. The results are presented as case studies.

Findings and Considerations

We recognize that Xcel Energy is interested in identifying best practices for marketing and enrolling residential customers in a TOU rate. A variety of factors affect the decision of how and when to offer a TOU rate to your customers and the ME&O strategy. These include customer attributes and interests, pre-existing conditions such as the baseline rate and existing familiarity with TOU rates, the pricing structure of the new rate and potential bill impacts, regulatory guidance and constraints, utility objectives for the rate rollout, available resources, and implementation timelines. The case studies we compiled vary in all of these factors, and the circumstances of each case affected the outcomes of the rate implementation and associated costs. In this memo, we strive to share the individual context of each case as we

understand that Xcel Energy will also have its own unique considerations. Despite these differences, there were themes and key learnings across our research.

- **A hybrid enrollment strategy can offer benefits compared to purely opt-in or default strategies:** Utilities that employ an opt-in strategy to TOU rate enrollment market the rate to customers who can choose to switch from the default rate offering to the TOU rate. Utilities that pursue a default enrollment strategy enroll all customers in the TOU rate unless the customer indicates a different preference. Our research indicates that some utilities pursue a hybrid approach that leverages components of both opt-in and default strategies. This type of hybrid approach can allow utilities to achieve the high enrollment associated with a default strategy while managing the speed of the transition and supporting customer choice.
  - For example, utilities may offer the TOU rate as an opt-in offering for a period before defaulting customers to the rate, allowing the utility to refine its systems, processes, and marketing. Another hybrid strategy is to offer multiple TOU rates and allow customers to choose between them (opt-in) before defaulting all customers to a TOU rate (such as the simplest TOU rate offering).
- **Communication is key:** Regardless of the enrollment strategy, extensive, sustained, and thoughtful communication with customers is key to their enrollment, success on the rate, and satisfaction.
  - Multiple utilities conducted customer research (i.e., focus groups or other efforts to test language, content, and messaging) before the rate launch to inform their language and messaging and attribute this to their success.
  - Our research suggests that more communication through multiple channels is better than less; however, this has implications for costs and should be balanced against the enrollment targets, the risks of insufficient communication to customer bills and satisfaction, and your customers' engagement preferences.
    - For example, a utility might be able to rely heavily on more cost-efficient digital resources for an opt-in rate offering and highly digitally engaged customers. In contrast, investing in direct mail and mass media campaigns and engaging community partners may be necessary for a default rate or with less digitally engaged customers.
    - Even among utilities that defaulted customers to TOU rates, there was variation in the breadth and diversity of their ME&O campaigns based on the level of risk to customer bills and satisfaction that the rate posed. A rate with high price differentials incentivizes greater load shifting but also presents more risk to customers in terms of bill impacts, so this type of rate requires more thorough communications than a default TOU rate with low price differentials.
    - Across utilities, the core focus of messaging was bill savings, with another common theme being customer choice (of rate) and control (of energy costs).
- **Invest in tools and resources to support customer decision-making and success on the rate:** The utilities we spoke with consistently highlighted the importance of providing a rate comparison tool and positioning customer service representatives (CSRs) to support customers through the transition.
  - **Rate comparison tools** are digital calculators that allow customers to understand what their energy bill would be (given historical usage) on the TOU rate compared to the flat rate or between multiple TOU rates that a utility offers. Ideally, these tools also support "what if" scenarios in which customers can see what their bill would be on a given rate if they shifted their energy use to different times of day. The customer can use such tools through their online account, and the utility can leverage the underlying engines for multiple purposes. For example, CSRs can access the tool in real-time when assisting a customer who has questions about the rate or their bills, and marketing staff can use it to produce static "shadow bills" that can be mailed or emailed to customers. All the utilities we spoke with underscored the importance of a rate comparison tool to their success

and customer engagement. However, they also consistently cited this as a large expense requiring up-front planning and effort and best developed with the support of an external vendor.

  - **CSR education and support**: For customers who are unsure about signing up for an opt-in TOU rate (or opting out of a default TOU rate), those who are not digitally savvy, or nervous about the impact of the change on their bills, CSRs are an important resource. Utility staff reported that investing in both upfront and ongoing education of CSRs is key to reducing customer misunderstandings and enhancing customer satisfaction. Likewise, CSRs can provide a feedback loop on customer experience and challenges during the implementation process to identify recurring issues that can be addressed through ME&O efforts.

- **ME&O costs are influenced by several variables, and documentation is limited:** It was challenging to obtain exact costs for ME&O associated with TOU rate launches and ongoing engagement of customers on TOU rates. Often, utilities have not tracked this information in a format readily available to the public or to the utility staff most knowledgeable about ME&O. In addition, we suspect that even among reported costs, there is variation in what they represent. For example, budgets may not account for internal staff time spent on ME&O, so figures provided by a utility that undertook most efforts in-house may differ from a utility that leveraged multiple external vendors.
  - The scale of ME&O costs associated with the rollout of a residential TOU rate varies. Per the utilities we interviewed that conducted default campaigns with notable pricing differentials, it was important to make sure all customers understood the change was coming, the new rate fundamentals, and how they could opt out if they chose to do so, and this requires an effective ME&O campaign. Likewise, ME&O investments are required to achieve even modest participation in an opt-in rate due to customer proclivity for inaction. Some utilities may have rate designs or enrollment targets that fall between these two scenarios and could achieve the desired outcomes with relatively lower costs. However, high enrollment in TOU rates will require ME&O spending— either to motivate enrollment (opt-in) or to ensure all customers understand the change (default).
  - Beyond the direct ME&O costs, utilities also incur substantial costs on IT and system-related needs that are ME&O-adjacent, such as building a website and rate comparison tool.

Case Study Summary

Table 1 summarizes key details on the rate design, ME&O strategies, and outcomes across the case studies.

Table 1. Case Study Summary Table

Topic	Ameren Missouri	Arizona Public Service	Portland General Electric	Sacramento Municipal
Rate Design				
Year Introduced	2022 - 2023	2017	2021	2018
Number of TOU Rate Options [1]	4	3	1	1
Baseline Default Rate (Flat/TOU)	Flat	Flat	Flat	Flat
Prior TOU Rate Available	Yes	Yes	Yes	Yes
Rollout Type (Opt-in/Default)	Default with Opt-in Opportunities	Default with Opt-in Opportunities	Opt-in	Default
Bill Protection	No	No	Yes	No
Eligibility	All Residential	All Residential [2]	All Residential	All Residential
Marketing, Education, and Outreach				
Shadow Bills/Rate Comparison Tool	Yes	Yes	Yes	Yes
Traditional Mass Media	No	Yes	No	Yes
Digital Mass Media	Yes	Yes	No	Yes
Community Events/Partnerships	No	Yes	No	Yes
Direct Email Communications	Yes	Yes	Yes	Yes
Direct Mail Communications	Yes	Yes	Yes, limited	Yes
Targeted Marketing	No	No	Yes, structural benefiters and EV owners [3]	No
Continuous Participant Engagement	Yes	Yes	Yes	Yes
Outcomes				
% Customers Enrolled [4]	75%	70%	2.5%	97%
Opt-out Rate [4]	18%	Low	2.5%	3%
Customer Feedback	Neutral to Positive	Positive	Positive	Positive

[1] Excludes legacy TOU rates.
[2] Customers with solar PV must be on a TOU rate and cannot opt in to a flat rate.
[3] Structural benefiters are customers who would save money by switching to a TOU rate without any load-shifting behaviors.
[4] The percentages are approximate, reported by interviewees as of May 2024. The Ameren Missouri default process was in progress.

Case Study Details

We provide visual summaries of the rate designs pertaining to each case study in an Appendix.

Ameren Missouri

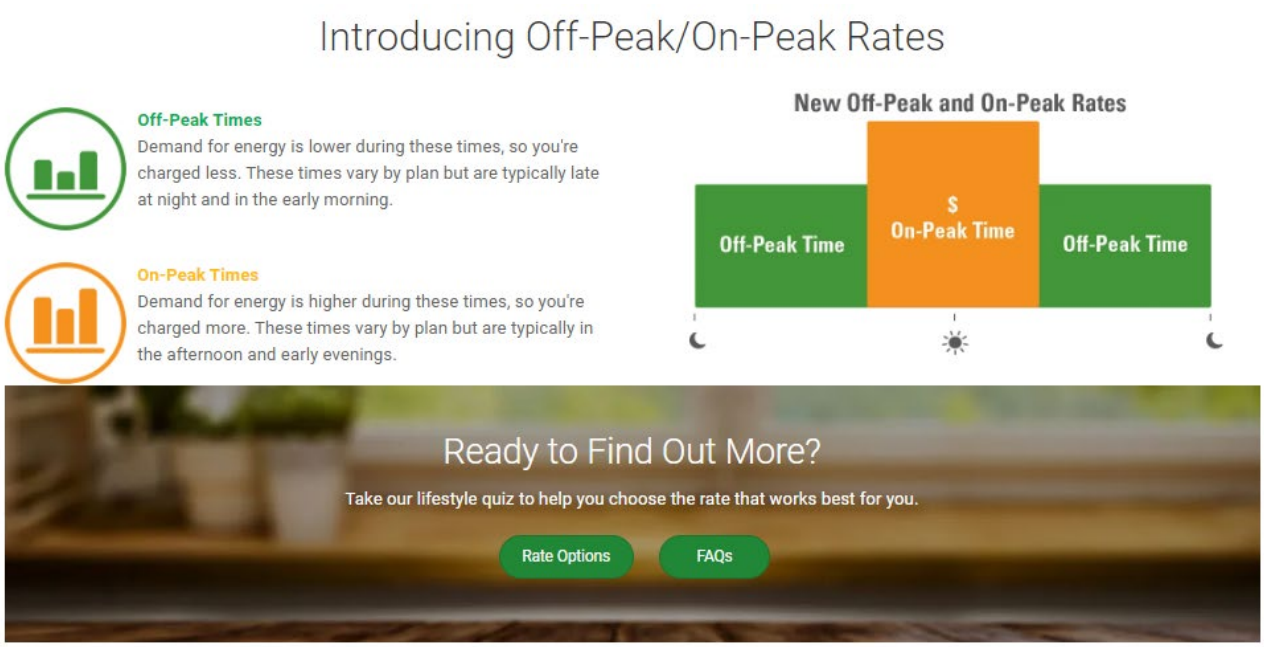
Ameren Missouri is a subsidiary of the Ameren Corporation, based in St. Louis. It is a dual-fuel utility that provides electric service to 1.2 million customers across 64 counties in the greater St. Louis area. Ameren Missouri has an electric generating capacity of 10,000 MW and is a summer peaking utility.[1]

Its commission mandated Ameren Missouri to promptly transition customers to a TOU rate following its AMI meter rollout. The transition started in 2020 with Ameren Missouri's AMI meter installations and is nearly complete. Customers were transitioned to the new default rate in batches about seven months following their meter installation. This approach gave Ameren Missouri time to prepare its IT and billing systems. The former standard rate was a flat rate with the option to opt in to a simple TOU rate. Customers are defaulted to the simplest TOU rate, Evening/Morning Savers, which has a very modest price differential. Alternatively, customers can voluntarily enroll in one of three alternative TOU rate options with stronger price differentials. Customers who opt in to two other TOU options, Overnight Savers or Smart Savers, can choose to revert to a flat rate during the winter.[2] Prior to being defaulted to the Evening/Morning Savers rate, customers are provided information about all of the TOU rate options and encouraged to opt in to the one they prefer. Ameren Missouri does not provide bill protection for any of their rates. The lack of bill protection is one reason Ameren Missouri preferred to default customers to the lowest risk TOU rate rather than one with a stronger peak/off-peak price ratio.

Prior to the default transition, Ameren Missouri conducted a "language study" that informed how they communicate with customers about the TOU rates and what they named them. For example, they learned that language like "off-peak/on-peak" resonated better with their customer base than "time-of-use" language (Figure 1). Before transitioning customers onto the default TOU rate, Ameren Missouri conducted extensive direct mail and email outreach. The first communication was a direct mail letter, and subsequent communications leveraged the customer's preferred outreach method (email or mail). Customers receiving physical communications were sent a "benefits mailer," a brochure outlining the advantages of transitioning to a TOU rate, including QR codes to encourage them to access the interactive online rate comparison tool. Customers also received a shadow bill comparing the flat and default TOU rates (but not the other TOU options), so even customers who did not access the online tool had this information. Messaging focused primarily on preparing customers for the transition and presenting it in a non-threatening way. It was less focused on savings tips or behavior change, although Ameren Missouri did share some tips through their social media channels.[3]

[1] https://www.ameren.com/-/media/missouri-site/files/aboutus/amerenmissourifactsheet.ashx
[2] All of Ameren Missouri's rate plans have cheaper winter rates (¢/kWh).
[3] This animated video is a successful, highly-viewed example of Ameren Missouri's messaging: https://vimeo.com/showcase/6818556/video/549362080

Figure 1. Example of Off-Peak/On-Peak Language, May 2024



Source: https://www.ameren.com/missouri/company/rate-options

Ameren Missouri made it easy for customers to remain on their flat rate if desired by distributing a prepaid opt-out postcard. Ameren Missouri staff reported that this was very successful and they would provide this option again. Once customers have been on the rate for a year, they receive a performance report showing how much they have saved so far, directing them to the online rate comparison tool and reminding them that they can opt out of the TOU rate anytime. Moving forward, Ameren Missouri plans to focus more on communications about how to succeed on a TOU rate and to encourage and support customers in selecting their "best" rate by opting in to one of the more advanced TOU offerings with a higher price differential.

Currently about three-quarters of Ameren Missouri's customers are on the default TOU rate and only about 60,000 customers are remaining to transition from a flat to TOU default rate. About 200,000 (~18% of those defaulted to date) have opted to remain on or return to a flat rate. About 5,000 customers (<0.5%) have opted into one of the more advanced TOU options, although Ameren Missouri has not extensively marketed these options so far. Overall, Ameren Missouri has received neutral to very positive customer feedback on the rate transition, which they attribute partly to the low price differential and resulting minimal impact on customer bills. Customer feedback on communications was very positive as measured through surveys after the rate transition and feedback from CSRs.

Ameren Missouri reported that the TOU rate transition marketing budget was $4 million, which excludes Ameren Missouri staff time and includes vendor costs for the third-party digital vendor that supported them, as well as other costs such as direct mail. This budget equates to a marketing cost of about $4.25 per enrolled customer. Ameren Missouri also built a rate comparison tool internally to have a tool ready for the rate's launch and later had it updated by a third-party vendor, which is not reflected in the rate transition marketing costs.

Arizona Public Service Company

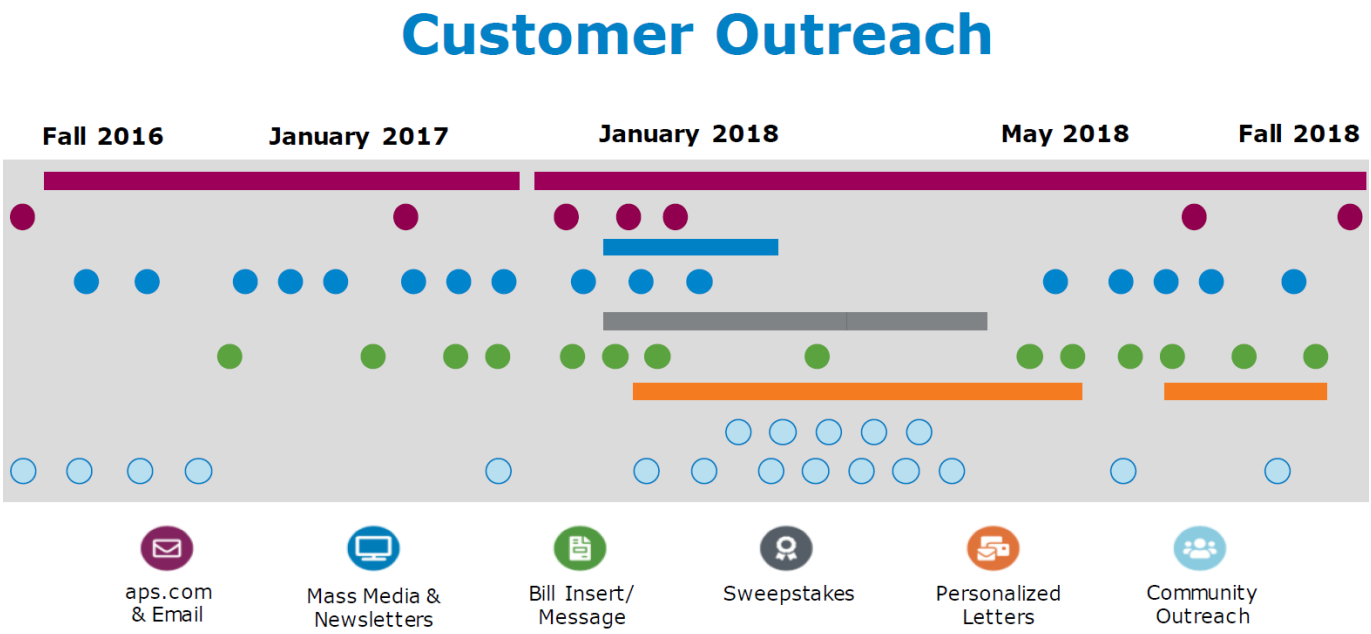
Arizona Public Service Company (APS) is Arizona's largest utility, with ~1.4 million customers across 11 of Arizona's 15 counties. APS is an investor-owned utility (IOU) that reports to an elected state utility commission. As a summer peaking utility in a particularly hot region, APS' peak load can exceed 8,000 MW on exceptionally hot summer days.

In 2018, APS was required by its regulators to rapidly transition all its residential customers to new rate plans. This was part of a comprehensive redesign of all residential rates that included streamlined flat rates, a modernized TOU rate, and updated demand-based rates. Legacy tariffs existed for all three of these rate types, with customers notified that their account would transition to the new rate that most closely resembled their prior rate by default. Thus, legacy TOU customers defaulted to the new TOU rate while legacy flat rate customers were transitioned to the new flat rate. However, when notified about the impending change, customers were alerted to other rate options they could voluntarily enroll in if they wanted a rate different than the one they would be default transitioned to.

APS began communicating the transition effort in the fall of 2016, and customers could voluntarily enroll in the rate plan of their choice between August 2017 and early 2018. Customers who never elected a new rate automatically transitioned to their new default rate between February and April 2018. No bill protection was offered, and customers could change their rate plan anytime. Default transitions were done in batches, as there was a constraint on how many meter reprograms APS could do in a given day.

APS conducted an extensive ME&O campaign to alert customers of the impending change and educate them on their new rate options. This ME&O campaign included direct mail, banner ads, bill inserts, and more. Personalized direct mail letters provided customers with the following rate options for voluntary early transition: (1) most like current rate (which they would default to if they took no action) and (2) a "best" rate (in terms of cost savings) based on an analysis of their usage history (assuming no behavioral changes). If the customer's "best" rate was also their default rate, then the personalized letter only recommended their default rate. APS' website also had a bill comparison tool that showed customer shadow bills for each rate option available. Additionally, APS conducted a sweepstakes to encourage voluntary enrollment in their TOU rate plans, where customers electing one of their TOU plans were entered to win a smart thermostat or smart plug. However, one APS staff said the sweepstakes may have had a limited impact on opt-in enrollments. Figure 2 illustrates APS' customer outreach approach and timeline.

Figure 2: APS Customer Outreach Timeline



Source: APS Presentation at CS Week 2019.

APS' outreach campaign ultimately deployed approximately 2.4 million direct mailers, 161 million mass media impressions, bill inserts in 34 billing cycles, and over 100 community events, resulting in roughly 139,000 voluntary early transitions out of the over one million customers that were ultimately transitioned to a new rate.[4] Once successfully transitioned, customers received a welcome kit containing detailed information about their rate, ways to save, and (in the case of TOU rates) a refrigerator magnet with peak times and savings tips. APS uses its Home Energy Report program to continuously engage TOU rate customers, noting that this technique has been particularly successful in educating customers, habituating behavior change, and driving bill savings and customer satisfaction. Additionally, APS has since rolled out other online tools, including a tool that allows customers to calculate their maximum demand when running different combinations of appliances and a "what if" tool that projects TOU bill amounts given various load-shifting actions.

In terms of outcomes, the APS staff interviewed indicated that it is unclear if direct mail was a cost-effective outreach method. Instead of focusing on marketing channels, APS' lessons learned were largely operational: utilities preparing for rate transitions must vet their organizational capabilities and readiness, understand the impacts across systems and the organization, collaborate on design and solutions, and develop contingency plans. However, APS indicated that their ME&O campaign successfully increased customer awareness and understanding of their rates. About 70% of APS customers are on TOU or TOU + demand, and flat-rate customers tend to be low users who benefit from the flat rate. Opt-out numbers were not readily available but were quoted as being low.

APS was unable to provide precise cost information. They recalled that the DSM group contributed $5 million to customer education budgets, including the purchase of 10,000 device prizes, and may not be indicative of the total ME&O budget. APS had nine committed full-time equivalent (FTE) staff on the core transition team, which included a project manager, call center rep, marketing rep, regulatory rep, corporate communications rep, and four generalists. In

[4] According to the APS Presentation at CS Week 2019, voluntary early transitions includes customers who enrolled early in their new default rate and customers who opted into a different rate, whether or not it was a TOU rate.

addition to the core team, several other departments were "engaged daily" for the transition effort, including billing, meter operations, AMI support, and IT. APS said the process took eight months from planning through implementation, not including the time associated with rate design. APS staff acknowledged that this aggressive timeline was not ideal but was necessary due to regulatory and stakeholder demands.

Portland General Electric

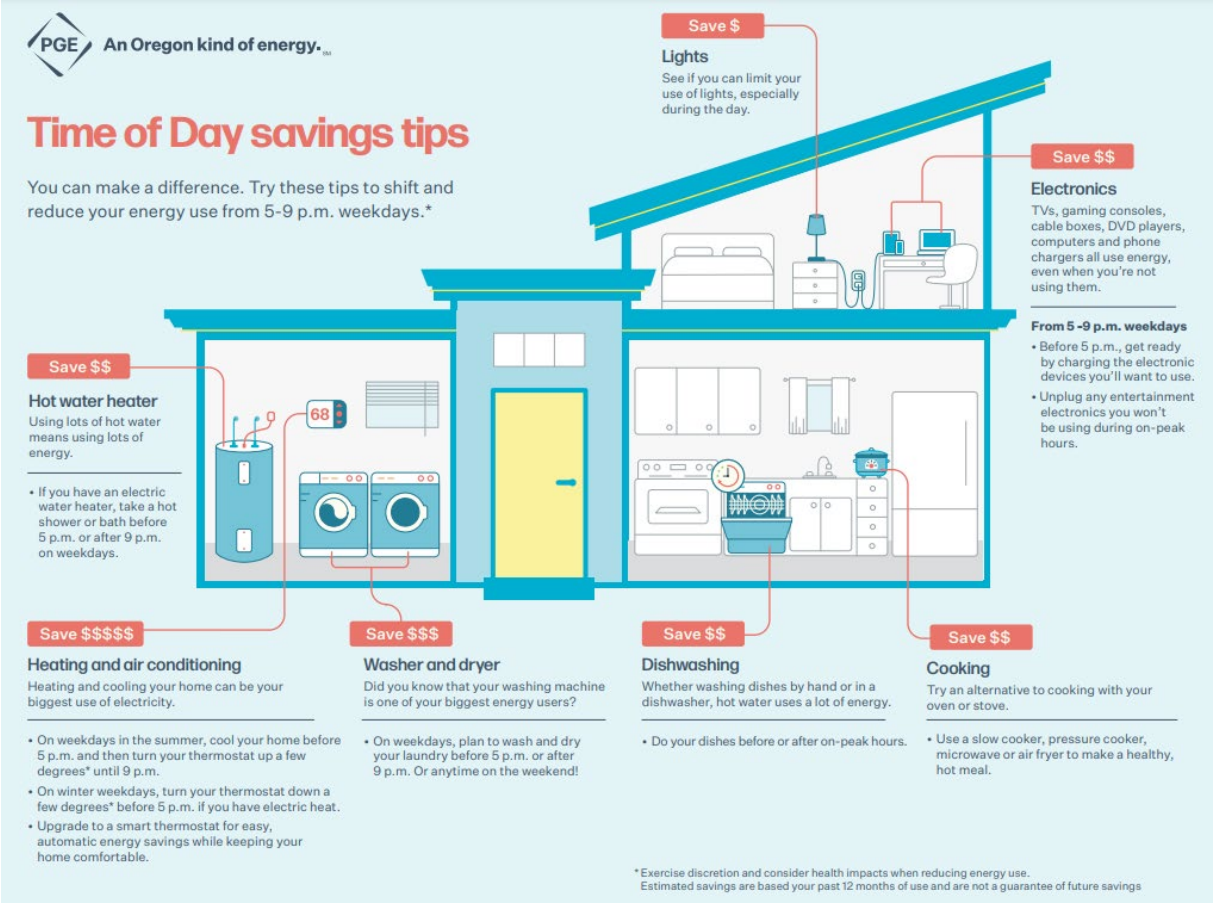
Portland General Electric (PGE) is Oregon's largest electric utility, serving ~900,000 customers across seven counties in Northwest Oregon, including Oregon's largest city of Portland. PGE is a dual-peaking utility with a maximum all-time peak load of nearly 5,000 MW in August 2023.[5]

PGE had a legacy opt-in TOU rate when it introduced its new TOU offering (marketed by PGE as "time of day" or TOD to differentiate it from the legacy "TOU" rate) in 2021. The new TOD rate (henceforth referred to simply as "the TOU rate") was designed to be more approachable and understandable for customers than the legacy rate, which is no longer actively marketed and will not accept new customers after 2024.[6] Enrollment in the TOU rate is opt-in, and customers receive 12 months of bill protection (the "12-month guarantee"), triggered by a net increase in energy bills of more than 10% compared to what they would have paid on the flat rate. Customers who meet this criteria and spend a full year on the rate are refunded for any bill increase over 10 percent.

PGE recruits customers to the rate using direct customer outreach primarily through digital channels, including emails and digital ads. To date, marketing has mostly targeted customers identified as structural benefiters. PGE prioritized direct customer communications and has generally avoided mass marketing in their campaign to date, although they provide information and education on the rate option in their customer newsletter a couple of times per year. They have also limited costly direct mail outreach to customers who are nonresponsive to digital channels. Messaging is multi-faceted and includes taking control of energy bills, achieving bill savings, customer rate choice, strengthening the grid, sustainable energy, and keeping energy prices down for everyone. Surveys show that messaging about bill savings is a primary motivator among customers who enroll on the rate. PGE provides easy-to-understand summaries of the time periods, energy-saving tips, and personalized bill savings estimates (Figure 3). To facilitate customer transition to the rate, PGE highlights their 12-month bill protection and customer ability to unenroll from the rate at any time and provides a rate comparison tool customers can use to estimate the bill impacts of switching to the TOU rate. They also try to focus their marketing seasonally to increase the likelihood of a positive initial experience on the rate. Since many PGE customers are expected to pay slightly less for energy in the summer on the TOU rate and slightly more in the winter, they avoid marketing in the winter season and focus marketing efforts on the spring and early summer. Messaging and marketing materials were designed based on focus group research that PGE collected prior to the launch of the rate.

[5] https://portlandgeneral.com/about/info/quick-facts
[6] https://portlandgeneral.com/about/info/pricing-plans/time-of-use/time-of-use-pricing-home

Figure 3. TOU Savings Tips, May 2024



Source:https://assets.ctfassets.net/416ywc1laqmd/73i9Ho84MNEssV2JktB6DE/b8cdfd579147f462da689169e51185da/time-of-day-savings-infographic.pdf

Upon enrollment in the TOU rate, customers receive a series of communications deployed through an automated digital customer journey. The welcome email reminds them of the peak time and includes a reminder of the peak time period that the customer can add to their digital calendar, as well as shifting tips. Although the rate has three pricing periods, for simplicity, PGE focuses its messaging on shifting usage away from the peak period, which is also effective since the mid-peak period pricing is still lower than the flat rate pricing. The second email in the customer journey contains more shifting tips. The final email in the series discusses the environmental impacts of shifting the time of energy use. It also primes customers to watch for their monthly report the next week. PGE provides customers on the rate "retention communications" in the form of monthly emails with personalized messaging based on their performance compared to the previous month in terms of bill savings (i.e., clear saver, small saver/could do better, did not save) containing encouragement and tips on how to improve. Customers who do not save compared to the previous month receive a reminder of the "12-month guarantee" and encouragement to try the rate for a full year.

PGE reports that about 250 to 300 customers organically enroll in the rate each month, with three to four times that in months that they conduct recruitment pushes. Enrollment has remained relatively consistent over the past couple of years. Approximately 2.5% of PGE customers are currently enrolled on the TOU rate. Opt-out rates are low compared to other PGE programs (~2.5% per month in recent months). Since customers who are new to the rate are more likely to unenroll, PGE anticipates that opt-outs will decline as the rate matures. Customers typically opt out through their

accounts online, and the most common reason for opting out is that the bill savings are insufficient to warrant the effort that the rate requires. Customer feedback surveys indicate that most customers are satisfied with the rate, and the main driver of satisfaction is a feeling of control over their bill. Most customers also demonstrate a strong understanding of the rate, which PGE attributes to its simplicity (i.e., no seasonal differences in periods or pricing ratios) and focused messaging around avoidance of the peak period. The strong understanding is likely due in part to consistent engagement with marketing and outreach. PGE consistently records up to a 73% open rate and a 7.6% click-through rate on the monthly retention emails for customers enrolled in TOU.

PGE noted several key learnings from their implementation to date. First, while multi-channel targeted marketing efforts (i.e., targeted digital ad → email outreach → direct mail) are most effective, they are also quite costly. Second, CSRs need to be educated about the rate at launch and on an ongoing basis, including appropriate messaging and an understanding of customer fit. Ideally, CSRs would have access to the rate comparison tool with underlying customer data. Finally, PGE reported that their rate comparison tool was critical to the success of the rate, and they believe either an interactive tool or a report on expected customer bill savings is necessary to recruit customers to the rate. Nonetheless, providing exact savings estimates can result in customer complaints if actual bill savings differ from projected savings.

PGE had existing AMI infrastructure and billing processes for customers on TOU rates, elected to pursue a measured opt-in campaign, and leveraged targeted marketing primarily through digital channels that PGE staff can manage with limited support from external vendors. As a result, PGE reported that its marketing costs were relatively low.[7] PGE could not provide budget figures but reported that the biggest marketing cost is staff time, with the equivalent of about one FTE currently dedicated to TOU product management and marketing. The largest cost associated with the rollout was the in-house development of the website and bill comparison tool. PGE reported that the development of the rate comparison tool took more effort than expected and that it was sometimes unavailable to customers when it underwent updates, leading to frequent pauses in marketing. PGE eventually shifted its approach and is currently contracted with a third-party vendor to rebuild its rate comparison tool. The updated resource will also support customers' ability to explore "what if" scenarios, enabling them to understand what rate is best for them, given their current energy consumption patterns, and what rate would be best if they change their usage patterns. PGE believes this tool will position them to start recruiting a broader subset of customers beyond clear structural benefiters.

Sacramento Municipal Utility District

Sacramento Municipal Utility District (SMUD) is California's second largest municipal utility, with ~653,000 customers across approximately 900 square miles, including most of Sacramento County and portions of Placer and Yolo Counties. As a summer peaking utility, SMUD's peak load can exceed 3,000 MW on particularly hot summer days.

Following a 2016 opt-in TOU offering (which netted approximately 3,000 opt-ins), SMUD conducted a default transition of all their residential customers to a new TOU rate plan in 2018 and 2019. SMUD branded its new TOU offering as "time of day" (TOD) to differentiate it from the legacy "TOU" rate. For this memo, SMUD's new TOD rate is referred to as "the TOU rate." SMUD's default transition was part of an attempt to expedite enrollment in the TOU rate (which can have dramatic load-shaping benefits, and in turn can help reduce SMUD's energy and capacity procurement costs), as the prior opt-in campaign revealed that mass enrollment takes considerable time with an opt-in approach. When notifying customers about the impending change, SMUD provided information about how to opt out of the TOU rate to a standard flat rate option.

[7] Exact figures were not tracked/available.

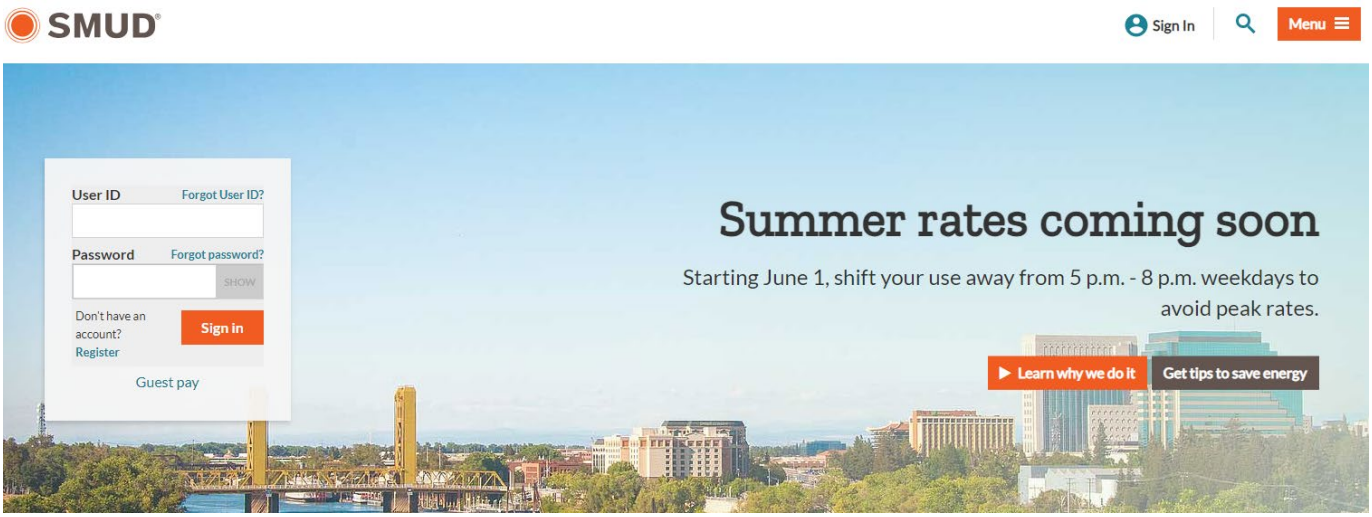
SMUD began communicating the transition in September 2018, and customers were automatically transitioned to their new default rate between December 2018 and March 2019. This timing was intentional, as SMUD wanted to transition customers before the summer months when prices are higher, thereby giving customers time to adjust to the TOU rate before summer peak pricing went into effect. No bill protection was offered, and customers could change their rate plan anytime.

SMUD conducted an extensive ME&O campaign to alert customers of the impending change and educate them on their new TOU rate. This multi-language ME&O campaign included direct mail, email, web, social media, local outreach, mass media (TV, radio) door hangers, public signage (bus, train, arena), community events, automated phone calls, bill inserts, microsites, and more. Customers also received a personalized rate comparison demonstrating how their bills might change on the new rate. The messaging framework for the new "standard" rate focused on alerting customers to the transition and how to take action to reap bill savings. Opt-out information was not at the forefront but was included in FAQs and other detailed documentation. Customers could opt out online or via telephone call.

SMUD's considerable outreach campaign was demonstrably successful, with only 3% of customers opting out of TOU. This opt-out rate has remained steady, and flat-rate accounts are mostly customers who initially opted out during the default transition. Once successfully transitioned, customers received a welcome kit containing detailed information about their rate and tips on ways to save. Additionally, SMUD has since rolled out other online tools, including one that allows customers to calculate their maximum demand when running different combinations of appliances.

SMUD conducts yearly campaigns reminding customers that "summer rates are coming" and what tactics customers can use to avoid the peak, as summer peak prices are about two times higher than non-summer peak rates. These yearly outreach campaigns have included email newsletters, bill inserts, billboards, community engagement at community events, and more. For example, Figure 4 shows the top of the SMUD landing page in the month leading up to the shift to summer pricing.

Figure 4. Screenshot of SMUD Homepage, May 2024



Interviewed SMUD staff say their ongoing surveys have shown very high levels of rate awareness and understanding, which they attribute to their aggressive marketing campaign. They also observe significant load shifting in the summer, which they link to continued customer engagement. SMUD attests that there is no "silver bullet" marketing approach. Rather, they contend that a wide-ranging multi-channel approach is the key to best informing and educating customers. However, SMUD staff indicated that the rate comparison and FAQs were likely particularly helpful and recommended

that other utilities prioritize marketing efforts on "free" digital channels (like the utility website, social media, bill inserts, and e-newsletters) as those don't have the considerable hard costs associated with mass media and printed mediums.

SMUD was unsure of specific ME&O costs but noted they were very significant as it was probably SMUD's largest ME&O campaign in the organization's history at the time. However, they believe the ME&O costs have effectively been recouped due to significant energy and capacity cost savings. SMUD staff describe the transition as a company-wide effort, noting that virtually every team was involved (e.g., marketing, rates, customer service, community outreach). They also engaged a third-party vendor for the rate comparison tool, which required a significant time investment on SMUD's part to transition all of their internal knowledge of their systems to the vendor.

SMUD stressed that planning, budgeting, and setting reasonable timelines are important. Their larger TOU transition journey took years to execute, including a rate pilot and a period where TOU was an opt-in offering, which required substantial planning. SMUD has a customer-centric mindset in everything they do and noted that this informed their ME&O approach to the rate transition. They also suggest that utilities invest in employee education, as customers ask employees many questions about the transition. Finally, SMUD stressed the importance of up-front customer research to understand the existing customer knowledge base. SMUD credits primary customer research as key to its success in learning what customers understand and what messaging frameworks best resonate with them.

Additional Findings on Costs

Even if not comprehensively documented, it is well known in the utility rates space that default rate transitions have lower costs per enrolled customer than opt-in approaches, as opt-in approaches inevitably net far fewer customers on the rate than default approaches. For example, the study team previously conducted customer research for Con Edison's Innovative Pricing Pilot (time-varying demand rates), which yielded an opt-in rate of 4% for the opt-in test cell and an opt-out rate of 6% for the default test cell.[8] The research team also observed stark enrollment disparities for PG&E's respective opt-in and default TOU pilots, which netted an opt-in rate of 7% and an opt-out rate of 24% (respectively).[9] Given that dramatically fewer customers will opt into a new rate relative to default approaches (which the research team's research has consistently found to be largely a function of low customer awareness of the new rate option, as opposed to customer hesitation or preference), opt-in approaches tend to have significantly higher costs per conversion due to needing similar or higher levels of ME&O efforts. The study team's prior research on the issue suggests that ME&O efforts are not linearly correlated with enrollment outcomes: although significant ME&O is needed for customer opt-in enrollment, doubling ME&O efforts and spending will not necessarily double enrollment. According to an *Ask E Source* research report prepared for Xcel Energy in August 2023, "the default rate pilots ranged in costs from $4 to $20 per participant, while the opt-in pilots ranged from $382 to $613 per participant." In addition to the large cost variation, this finding illustrates the potential cost gap between opt-in and default conversions. However, communications with utility marketing staff suggest that the true gap may be less extreme and better understood by accounting for fixed ME&O costs and considering how those contribute to efficiencies of scale. Perhaps because of the tricky nature of accounting for these fixed costs, most utilities we spoke with did not track ME&O or other implementation costs per enrollment.

Regarding specific budgets and costs, the research team estimated ME&O costs for San Diego Gas and Electric's (SDG&E's) default transition. According to a filing submitted to the California Public Utilities Commission, SDG&E forecasted a "cost of $13 per customer for direct marketing materials," assuming "a 'big bang' default of all eligible customers at the same time" and a "reach of 85-90% and a frequency of 10+ touches over an average of four

[8] Folks, Jordan (January 2021) *AMI Enables Rates, but How to Best Enable Customer Response? A Treatise on Residential Outcomes*. Presented at the Association for Energy Service Professional's National Conference.
[9] Ibid.

weeks."[10] In this filing, SDG&E was authorized to spend approximately $5 million on mass media, $10 million on direct marketing, $1.5 million on PR, and $1.2 million on research and evaluation. This spending may not capture the significant engagement and cost associated with additional ME&O activities led by community-based organizations. Additionally, it does not include SDG&E's contribution to the statewide (IOU agnostic) TOU ME&O campaign conducted simultaneously across California.[11] SDG&E ultimately sent ~6.4 million total communications (of 130 different versions) to ~797,000 customers and generated ~700 million impressions via social media. Additionally, SDG&E conducted ongoing rate education to reinforce TOU behavior and remind customers of TOU's environmental and grid benefits.[12] SDG&E's ongoing campaign appears to be a successful retention tactic, as 98% of successfully defaulted customers were still on the TOU rate one year after bill protection ended.[13]

[10] Resolution E-4910. San Diego Gas and Electric Company's (SDG&E) Marketing, Education and Outreach Plan in Compliance with the December 17, 2015 Assigned Commissioner and Administrative Law Judge's Ruling and Decision 15-07-001 on Residential Default Time of Use Rates.
[11] https://energyupgradeca.org/time-of-use-faqs#:~:text=Energy%20Upgrade%20California%C2%AE%20encourages,hours%20or%20on%20cold%20water
[12] Residential Electric Rate Summit. January 10, 2023. R.12-06-013. Presented to the California Public Utilities Commission.
[13] Ibid.

Appendix: Case Study Rate Designs

Ameren Missouri Rate Synopses

Figure 5 through Figure 8 provide synopses of the Ameren Missouri rates that correspond with the case study. All rate information is as of May 2024, given that the rate transition is ongoing.

Figure 5. Ameren Missouri Evening/Morning Savers Rate Synopsis

Figure 6. Ameren Missouri Overnight Savers Rate Synopsis

Figure 7. Ameren Missouri Smart Savers Rate Synopsis

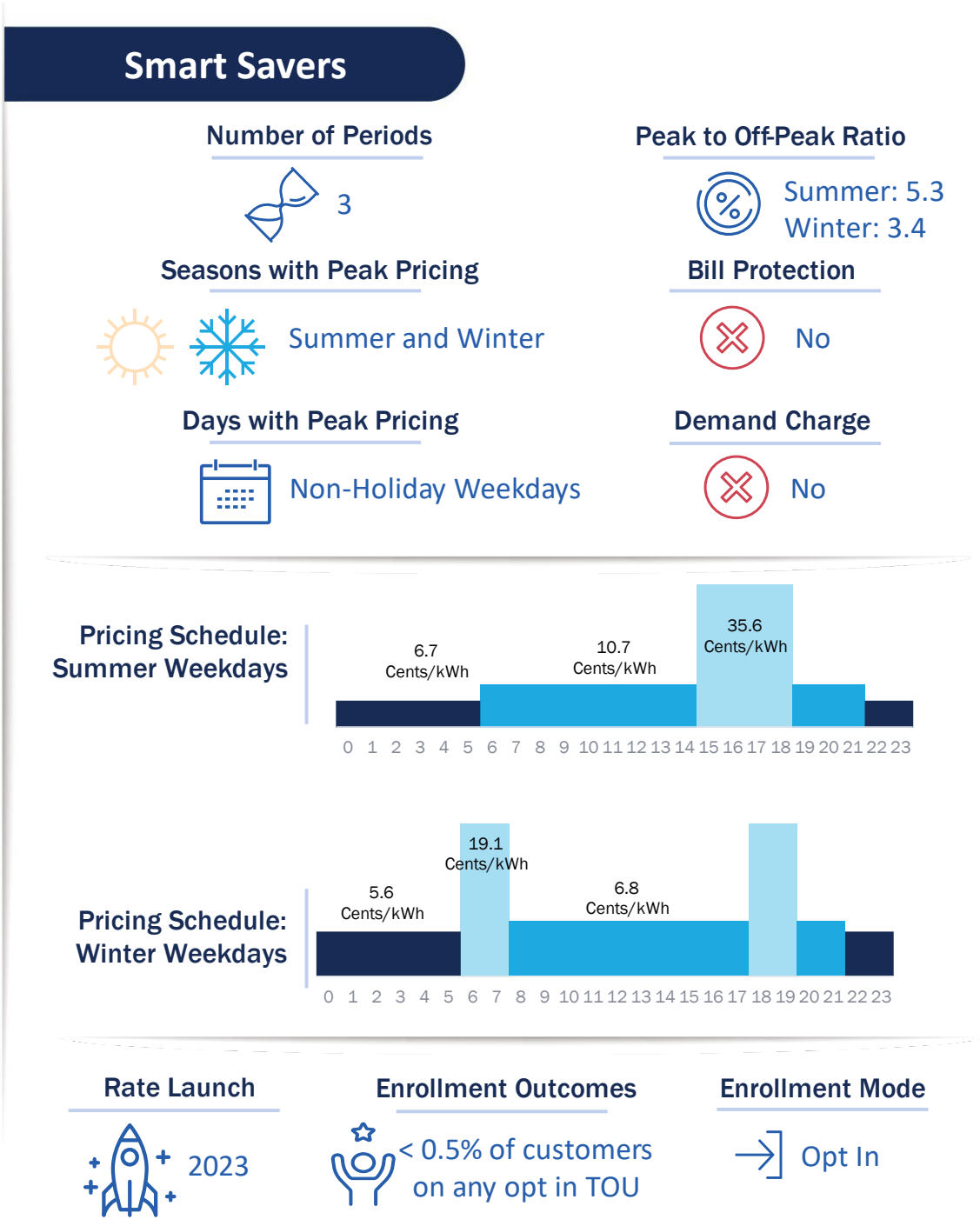
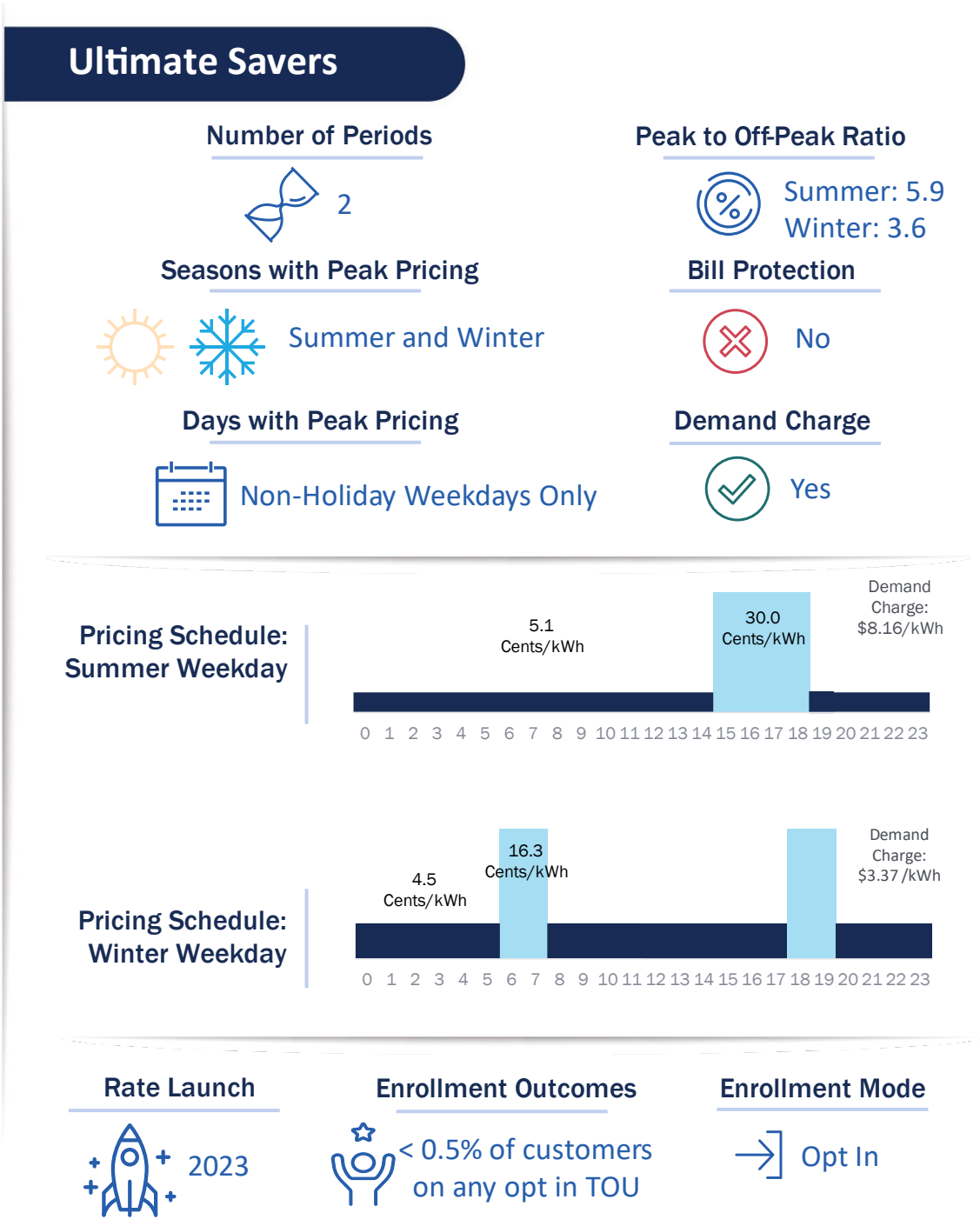


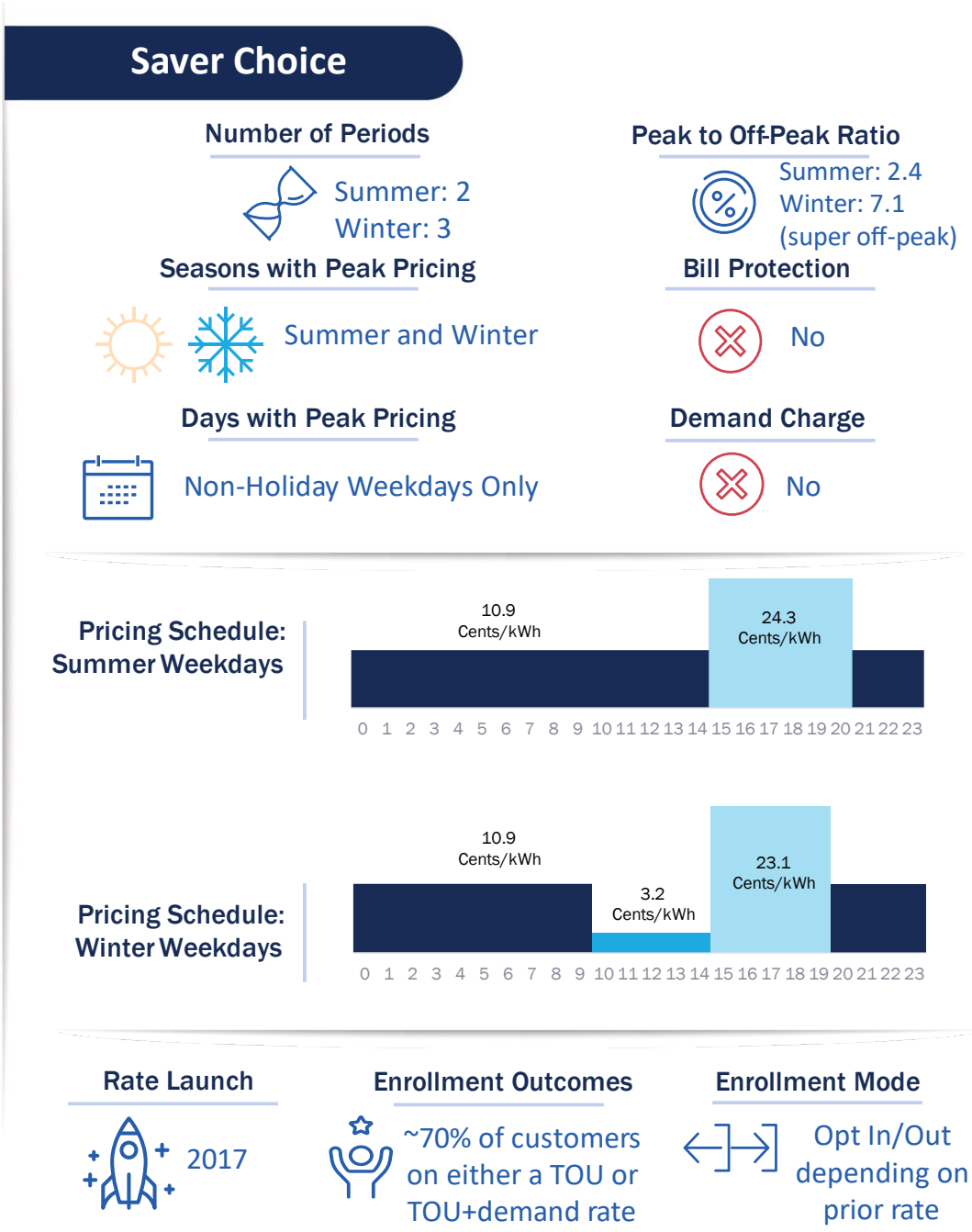
Figure 8. Ameren Missouri Ultimate Savers Rate Synopsis



APS Rate Synopses

Figure 9 through Figure 11 provide synopses of the APS rates that correspond with the APS case study. All APS rate and pricing information is as of the 2017 launch.[14]

Figure 9. APS Saver Choice Rate Synopsis



[14] Source: APS Presentation at CS Week 2019.

Figure 10. APS Saver Choice Plus Rate Synopsis

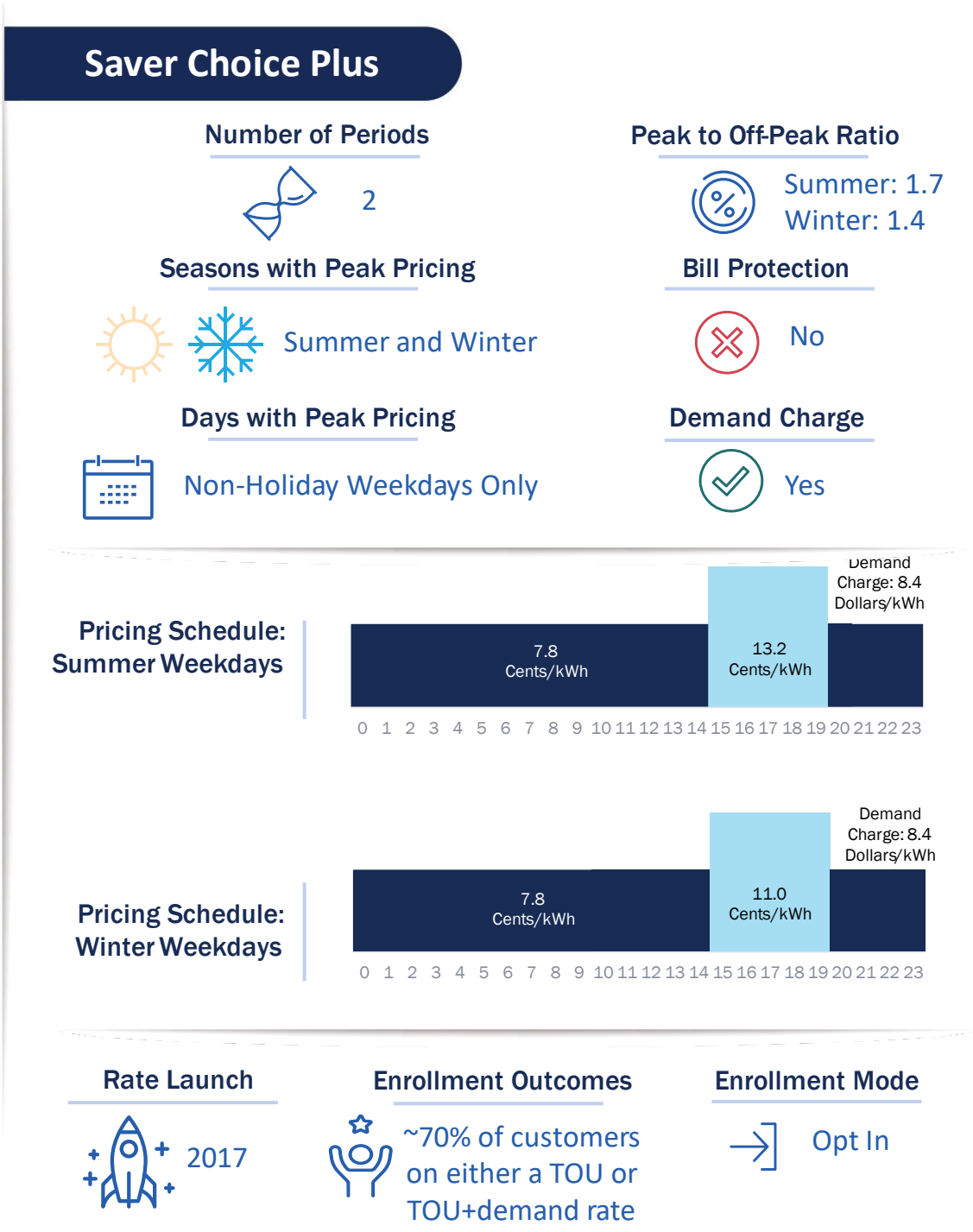
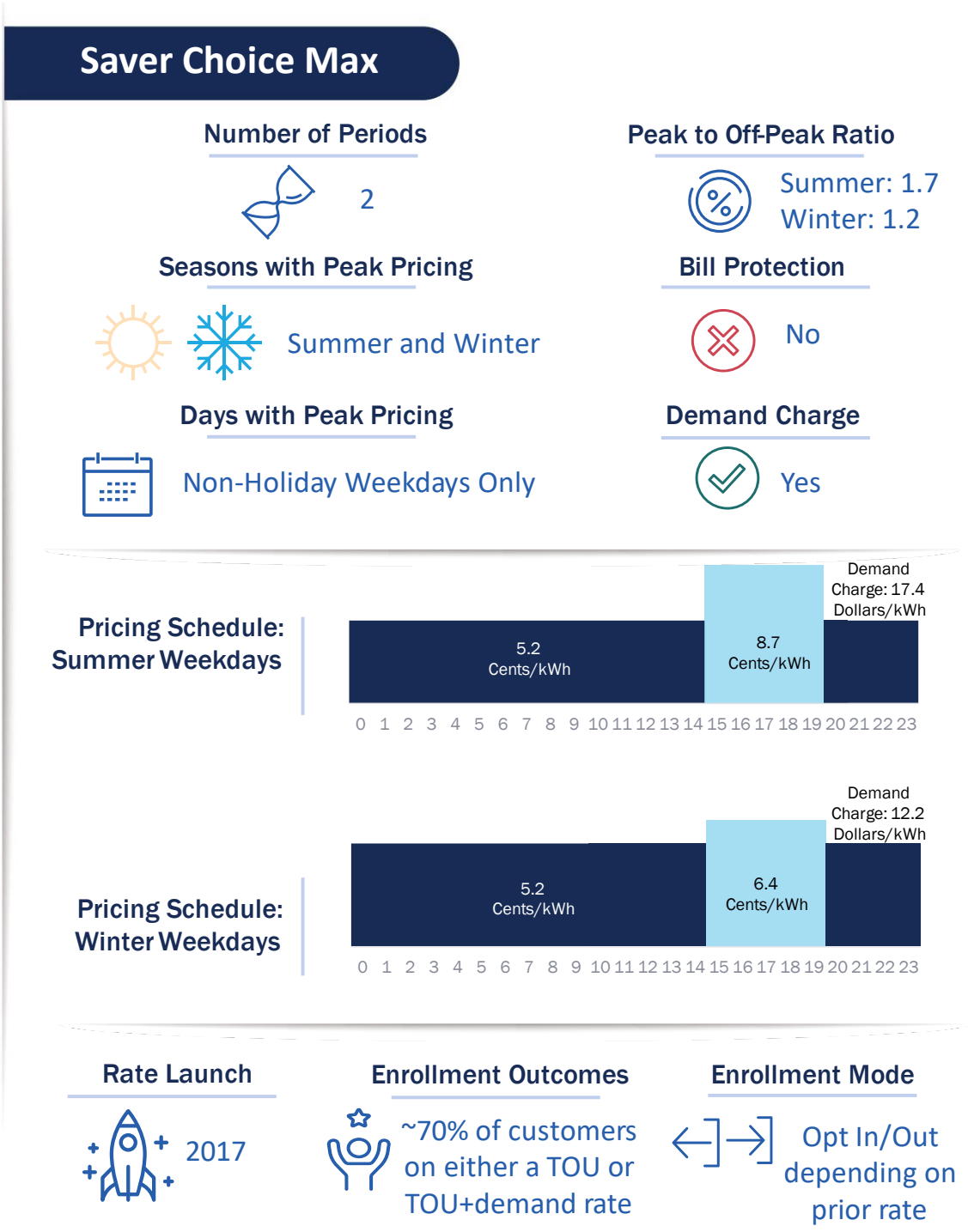


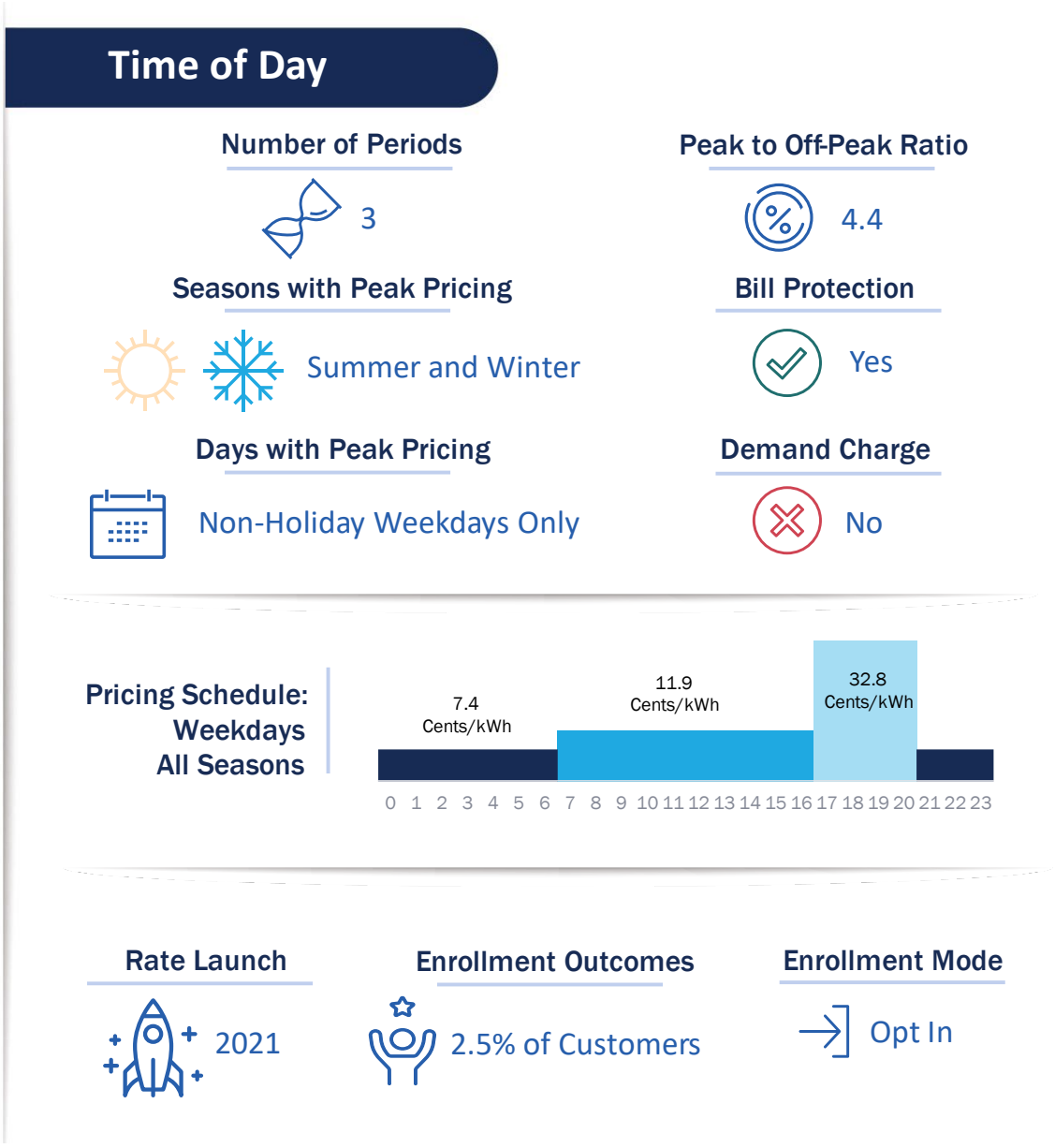
Figure 11. APS Saver Choice Max Rate Synopsis



PGE Rate Synopsis

Figure 12 provides a synopsis of the design of the PGE rate that pertains to the case study. Pricing is as of PGE's first historical tariff in which the TOD rate was documented.[15]

Figure 12. PGE TOD Rate Synopsis

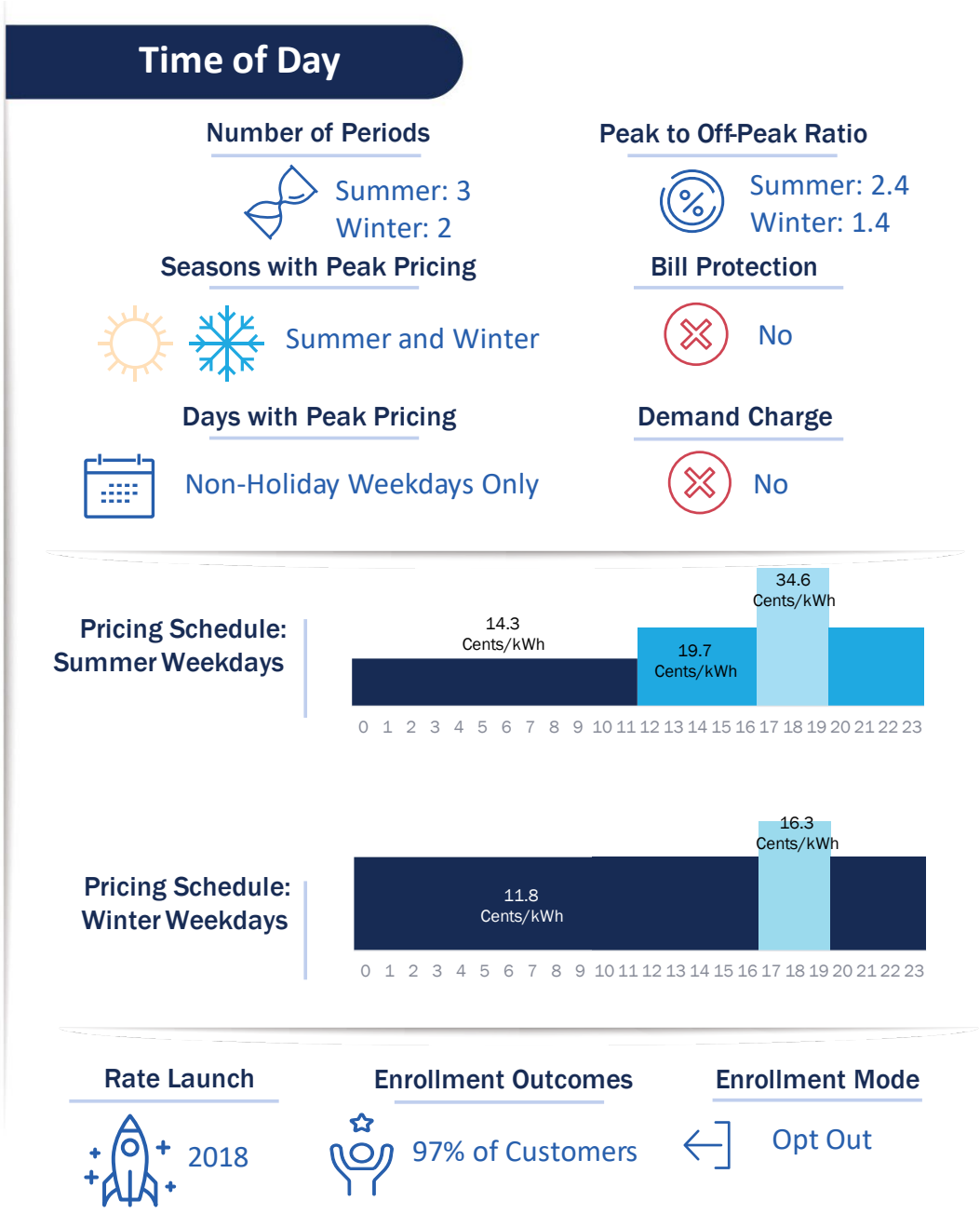


[15] https://assets.ctfassets.net/416ywc1laqmd/2Pzde9FZuZvRCyFKJkwFOc/5a1c638f7b4f287a29654640a6a2eec8/2022-05-09-standard-service-schedules.pdf

SMUD Rate Synopsis

Figure 13 provides a synopsis of the design of the SMUD rate that pertains to the case study. All rate and pricing information is current as of June 2024.

Figure 13. SMUD Time of Day Rate Synopsis



Note: SMUD refers to the winter period as "non-summer" in customer-facing communications.

Redline

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Section No. 1
~~12th~~13th Revised Sheet No. 1

(Continued on Sheet No. 1-2)

(Continued on Sheet No. TOC-2)

RESIDENTIAL SERVICE Section No. 5
RATE CODE A00, A01, A03 ~~33rd~~34th Revised Sheet No. 1

AVAILABILITY
Available to any residential customer for domestic purposes only in a single private residence and qualifying farm customers.

DETERMINATION OF CUSTOMER BILLS
Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and / or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

RATE

	Standard	Electric Space Heating	
Customer Charge per Month – Water Heating (A00)	$0.00	N/A	
– Overhead (A01)	$6.00	$6.00	R
– Underground (A03)	$6.00	$6.00	R
Energy Charge per kWh			
June - September	$0.13069	$0.13069	R
Other Months	$0.11364	$~~0.08215~~0.06537	R

In addition, customer bills under this rate are subject to the following adjustments and/or charges. D D

FUEL CLAUSE D
Bills are subject to the adjustments provided for in the Fuel Clause Rider.

RESOURCE ADJUSTMENT
Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

ENVIRONMENTAL IMPROVEMENT RIDER
Bills are subject to the adjustments provided for in the Environmental Improvement Rider.

MONTHLY MINIMUM CHARGE
Customer Charge.

SALES TRUE-UP RIDER N
Bills are subject to the adjustments provided for in the Sales True-Up Rider. N

(Continued on Sheet No. 5-1.1)

RESIDENTIAL TIME OF DAY SERVICE (CLOSED) Section No. 5
RATE CODE A02, A04 33rd34th Revised Sheet No. 2

AVAILABILITY D

Available to any residential customer for domestic purposes only in a single private residence and qualifying farm customers.

DETERMINATION OF CUSTOMER BILLS

Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and / or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

RATE

	Standard	Electric Space Heating	
Customer Charge per Month			
Overhead (A02)	$6.00	$6.00	R
Underground (A04)	$6.00	$6.00	R
On Peak Period Energy Charge per kWh			
June - September	$0.25879	$0.25879	R
Other Months	$0.21408	$0.13577	R
Off Peak Period Energy Charge per kWh			
June - September	$0.05171	$0.05171	R
Other Months	$0.05171	$0.05171	R

In addition, customer bills under this rate are subject to the following adjustments and/or charges. D

D

FUEL CLAUSE D

Bills are subject to the adjustments provided for in the Fuel Clause Rider.

RESOURCE ADJUSTMENT

Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

ENVIRONMENTAL IMPROVEMENT RIDER

Bills are subject to the adjustments provided for in the Environmental Improvement Rider.

SALES TRUE-UP RIDER N

Bills are subject to the adjustments provided for in the Sales True-Up Rider. NDN

CANCELED

(Continued on Sheet No. 5-3)

RESIDENTIAL TIME OF DAY SERVICE (Continued) (CLOSED) Section No. 5
RATE CODE A02, A04 ~~13th~~14th Revised Sheet No. 3

~~**MONTHLY MINIMUM CHARGE**~~ D
~~Customer Charge.~~

~~Surcharge~~
~~In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.~~

~~**LOW INCOME ENERGY DISCOUNT RIDER**~~
~~Bills are subject to the adjustment provided for in the Low Income Energy Discount Rider.~~

~~The following are terms and conditions for service under this tariff.~~ D
D

~~**LATE PAYMENT CHARGE**~~
~~Any unpaid balance over $10.00 is subject to a 1.5% late payment charge or $1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.~~

~~**LOW INCOME ENERGY DISCOUNT**~~
~~Energy discount is available to qualified low income customers under this schedule subject to the provisions contained in the Low Income Energy Discount Rider.~~

~~**DEFINITION OF PEAK PERIODS**~~
~~The on peak period is defined as those hours between 9:00 a.m. and 9:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The off peak period is defined as all other hours. Definition of on peak and off peak period is subject to change with change in Company's system operating characteristics.~~

~~**OPTIONAL TRIAL SERVICE**~~
~~Customers may elect time of day service for a trial period of three months. If a customer chooses to return to non-time of day service after the trial period, the customer will pay a charge of $20.00 for removal of time of day metering equipment.~~ D

CANCELED N

(Continued on Sheet No. 5-4)

RESIDENTIAL TIME OF DAY SERVICE (Continued) Section No. 5
(CLOSED) ~~6th~~7th Revised Sheet No. 4
RATE CODE A02, A04

D

~~**TERMS AND CONDITIONS OF SERVICE**~~

~~1. Customer selecting the above time of day rate schedule will remain on this rate for a period of not less than 12 months, except as provided under Optional Trial Service. While served under this schedule, the Residential Service rate is not available.~~

~~2. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.~~

~~3. Time of Day Metering Charge per Month Option (Closed): For any customer who prior to November 1, 1988, elected to pay a non-refundable payment of $310.00 in lieu of the time of day metering charge, the monthly customer charge is reduced by $2.00.~~

CANCELED

D
N

RESIDENTIAL TIME OF USE ~~PILOT PROGRAM~~ SERVICE
RATE CODE A72, A74

Section No. 5
~~3rd~~4th Revised Sheet No. 4.1

~~PILOT PROGRAM DESIGN~~

~~This is an experimental rate design for the residential Time of Use Pilot Program to be applied for two years from the effective date of this rate schedule. Participating customers will have received Residential Service without electric space heating prior to the Pilot, and may elect a return to the Residential Service rate schedule following the Pilot.~~ D D

AVAILABILITY

Available to any residential customer for domestic purposes only in a single private residence and qualifying farm customers.~~A maximum of 10,000 customers will be selected to receive service with this rate schedule. The Company will determine pilot participants that receive service through the Hiawatha West, Midtown, or Westgate substations. Pilot participants will not include customers that are on net metering service or have other interconnected distributed generation on their premise, or customers that also receive Energy Controlled (Non-Demand Metered) Service, Residential Electric Vehicle Service, Limited Off-Peak Service, or customers that are medical equipment-dependent. Pilot participants may elect to opt out of participation in this Pilot for a specific premise.~~ C C

DETERMINATION OF CUSTOMER BILLS

Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and / or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. ~~Bill Protection may also apply. Details regarding the specific charges applicable to this service and Bill Protection are listed below.~~ D D D

RATE

	Standard	Electric space heating	
Customer Charge per Month			N
Overhead (A72)	$6.00	$6.00	~~R~~N
Underground (A74)	$6.00	$6.00	~~R~~N
Energy Charge per kWh			
June – September			
On-Peak Period	$~~0.27845~~0.20443	$0.20443	RN
Mid-Peak Period	$~~0.11307~~0.13313	$0.13313	RN
Off-Peak Period	$~~0.03825~~0.07479	$0.07479	RN
Other Months			
On-Peak Period	$~~0.24869~~0.16247	$0.06537	RN
Mid-Peak Period	$~~0.09907~~0.11364	$0.06537	RN
Off-Peak Period	$~~0.03825~~0.07479	$0.06537	RN

In addition, customer bills under this rate are subject to the following adjustments and/or charges. ~~D~~ ~~D~~ ~~D~~

FUEL CLAUSE

Bills are subject to the adjustments provided for in the Fuel Clause Rider.

SALES TRUE-UP RIDER

Bills are subject to the adjustments provided for in the Sales True-Up Rider.

RESOURCE ADJUSTMENT ~~N~~ ~~N~~ L

(Continued on Sheet No. 5-4.2)

RESIDENTIAL TIME OF USE ~~PILOT PROGRAM~~ SERVICE
RATE CODE A72, A74

Section No. 5
~~3rd~~4th Revised Sheet No. 4.1

Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider. L

ENVIRONMENTAL IMPROVEMENT RIDER
Bills are subject to the adjustments provided for in the Environmental Improvement Rider. L

(Continued on Sheet No. 5-4.2)

RESIDENTIAL TIME OF USE ~~PILOT PROGRAM~~ Section No. 5
SERVICE (Continued) ~~1st~~2nd Revised Sheet No. 4.2
RATE CODE A72, A74

~~RESOURCE ADJUSTMENT~~ L
~~Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.~~

~~ENVIRONMENTAL IMPROVEMENT RIDER~~
~~Bills are subject to the adjustments provided for in the Environmental Improvement Rider.~~ L

MONTHLY MINIMUM CHARGE
Customer Charge.

SURCHARGE
In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

LOW INCOME ENERGY DISCOUNT RIDER
Bills are subject to the adjustment provided for in the Low Income Energy Discount Rider.

The following are terms and conditions for service under this tariff. ~~D~~ D

LATE PAYMENT CHARGE
Any unpaid balance over $10.00 is subject to a 1.5% late payment charge or $1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

LOW INCOME ENERGY DISCOUNT
Energy discount is available to qualified low income customers under this schedule subject to the provisions contained in the Low Income Energy Discount Rider.

~~BILL PROTECTION~~ D
~~Billing charges considered for bill protection will include customer and energy charges, fuel cost charges and if applicable, the Residential Controlled Air Conditioning and Water Heating Rider discounts. Bill protection will be considered only for customers that have been pilot participants at the same residential location for 12 months from the effective date of this rate schedule, based on the first 12 months of participation in the pilot program. Any Pilot program billing charge in excess of 10 percent of the corresponding billing charge that would have been applied had the customer not been a pilot participant will be credited to the customer's account, including any applicable taxes. The bill protection in this paragraph will terminate after the first 12 months of participation in the pilot program.~~

~~Customers that have received LIHEAP assistance within the 12 months prior to participation in the pilot program will have bill protection determined monthly for the first 12 months of pilot participation for any billing charges in excess of the corresponding billing charge that would have been applied had the customer not been a pilot participant. This will be determined on a monthly basis for the first 12 months of pilot participation. For the second 12 months of pilot participation, the bill protection will continue to be provided for these LIHEAP assistance customers for billing charges in excess of 10 percent of the corresponding billing charge on an annual basis for the second 12 months of pilot participation. Customers that start to receive LIHEAP assistance after their participation in the pilot has begun will receive monthly bill protection up to the first 12 month anniversary of the pilot, and shall receive annual bill protection for the second 12 month period of the pilot. Customers who opt out or leave the pilot area will forego the annual protection otherwise offered for this second 12 month period.~~

DEFINITION OF PEAK PERIODS D
The On-Peak period is defined as those hours between 7:00 p.m. and 10:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, N
N
N

(Continued on Sheet No. 5-4.3)

Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The Mid-Peak period is defined as all hours not defined as On-Peak or Off-Peak periods. The Off-Peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day. N

TERMS AND CONDITIONS OF SERVICE

1. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
2. Any customers who opts-out of this rate cannot reenroll in the rate for a minimum of 12 months from the end of their last billing cycle on the rate. N

(Continued on Sheet No. 5-4.3)

~~ND~~

~~DEFINITION OF PEAK PERIODS~~

~~The On-Peak period is defined as those hours between 3:00 p.m. and 8:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The Mid-Peak period is defined as all hours not defined as On-Peak or Off-Peak periods. The Off-Peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day.~~

~~RESIDENTIAL CONTROLLED AIR CONDITIONING AND WATER HEATING RIDER~~

~~Customers that received service with the Residential Controlled Air Conditioning and Water Heating Rider in combination with Residential Service prior to participation in the pilot will have a revised discount for Company controlled central air conditioning or electric water heating that is specific to the pilot program. The controlled air conditioning discount is a monthly $10 credit applied during the billing months of June through September. The controlled electric water heating discount is a monthly $2 credit during each billing month. Pilot customers will receive these revised credits in place of percent discounts and are subject to all other terms of the Residential Controlled Air Conditioning and Water Heating Rider.~~

~~TERMS AND CONDITIONS OF SERVICE~~

~~1.~~ ~~This schedule is also subject to provisions contained in Rules for Application of Residential Rates.~~

~~ND~~
N

CANCELED

RESIDENTIAL EV ACCELERATE AT HOME PAY AS YOU GO SERVICE
RATE CODE A79, A80, AND A81

Section No. 5
~~3rd~~4th Revised Sheet No. 7.1

RATE

Customer Charge per Month		
Bundled (A80)	$16.63	
Pre-Pay Option/Installation Only (A81) (CLOSED)	$5.95	
BYOC (A79)	$6.73	
Energy Charge per kWh		
June – September		
On-Peak Period	$~~0.27845~~0.20443	R
Mid-Peak Period	$~~0.11307~~0.13313	R
Off-Peak Period	$~~0.03825~~0.07479	R
Other Months		
On-Peak Period	$~~0.24869~~0.16247	R
Mid-Peak Period	$~~0.09907~~0.11364	R
Off-Peak Period	$~~0.03825~~0.07479	R

PRE-PAY/INSTALLATION ONLY OPTION
The Pre-Pay/Installation Only Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company.

The Company will continue to support existing customers on the Pre-Pay/Installation Only Option, but the Option is closed to new customers.

BYOC OPTION
Customers choosing the BYOC Service are required to have a Company-contracted electrician perform a site visit and hardwire the charging equipment if needed, and to confirm equipment eligibility and that the equipment is correctly set up for the program. The cost of the site visit is included in the monthly customer charge. Customers choosing the BYOC Service are required to utilize a vehicle charger model that is approved by the Company for use for this rate.

In addition, customer bills under this rate are subject to the following adjustments and/or charges. ~~D~~

FUEL CLAUSE ~~D~~
Bills are subject to the adjustments provided for in the Fuel Clause Rider

RESOURCE ADJUSTMENT ~~D~~
Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

MONTHLY MINIMUM CHARGE
Customer Charge.

SURCHARGE
In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

LATE PAYMENT CHARGE
Any unpaid balance over $10.00 is subject to a 1.5% late payment charge or $1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

SALES TRUE-UP RIDER ~~N~~
Bills are subject to the adjustments provided for in the Sales True-Up Rider. ~~N~~

(Continued on Sheet No. 7.2)

RESIDENTIAL EV ACCELERATE AT HOME PAY AS YOU GO SERVICE
RATE CODE A79, A80, AND A81

Section No. 5
~~1st~~2nd Revised Sheet No. 7.2

DEFINITION OF PEAK PERIODS

The on-peak period is defined as those hours between ~~3~~7:00 p.m. and ~~8~~10:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The mid-peak period is defined as all hours not defined as on-peak or off-peak periods. The off-peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics. C

COMMUNICATION COSTS ~~D~~

The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles. ~~D~~ ~~D~~

TERMS AND CONDITIONS OF SERVICE ~~ND~~

1. EV Accelerate At Home Pay As You Go Service shall be served through wiring connected to customer's single meter provided for Residential Service. Consumption under this rate schedule will be subtracted from the main meter for purposes of billing customer's non-Electric Vehicle electricity usage.
2. The customer shall supply, at no expense to the Company, premises wiring and a suitable location for connection of charging and associated equipment. ~~ND~~
3. Company may require customer to provide access to charging equipment for the recording and wireless communication of energy usage.
4. The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.
5. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
6. Customer must execute an EV Accelerate At Home Customer Service Agreement with the Company. ~~ND~~ ~~D~~

RESIDENTIAL EV ACCELERATE AT HOME VOLUNTARY SERVICE RATE CODE A76, A77

Section No. 5
~~6th~~7th Revised Sheet No. 8

AVAILABILITY

Available to Residential Service customers taking service under the Residential ~~Time of Day (Rate Codes A02 and A04) or~~ Time-of-Use ~~Pilots~~ (Rate Codes A72 and A74) to provide electric vehicle charging equipment to serve electric vehicle loads including battery charging and accessory usage. Customers' energy usage will be billed based on their applicable rate codes. Bundled service includes Company installed and provided charging equipment. Pre-Pay Option service is available to customers electing to pay Company for the installed cost of charging equipment prior to beginning service. Pre-Pay Option is closed and not available to new customers.

CONTRACT

Customers must contract for this service through an EV Accelerate At Home Customer Service Agreement with the Company. The contract period will be as long as the customer wishes to use the equipment

CHARACTER OF SERVICE

Single-phase 60-Hertz service at approximately 120 or 120/240 volts will be provided hereunder. Three-phase service or other service upgrade requests will be provided in accordance with Company service regulations.

COST OF SERVICE

Customer Charge per Month

Bundled (A76)	$11.99
Pre-Pay/Installation Only Option (A77) (Closed)	$1.31

PRE-PAY/INSTALLATION-ONLY OPTION

The Pre-Pay/Installation Only Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company.

The Company will continue to support existing customers on the Pre-Pay/Installation Only Option, but the Option is closed to new customers.

COMMUNICATION COSTS

The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles.

TERMS AND CONDITIONS OF SERVICE

1. EV Accelerate At Home Voluntary Service shall be serviced through wiring connected to customer's single meter provided for Residential Service.
2. The customer shall supply, at no expense to the Company, premises wiring and a suitable location for connection of charging and associated equipment.
3. Company may require customer to provide access to charging equipment.
4. The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.
5. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
6. Customer must execute an EV Accelerate At Home Customer Service Agreement with the Company.

RESIDENTIAL ELECTRIC VEHICLE SUBSCRIPTION PILOT SERVICE (Continued)
RATE CODE A82, A83

Section No. 5
~~5th~~6th Revised Sheet No. 8.2

RATE
Customer Charge per Month

General System Energy	
Bundled (A82)	$42.50
Pre-Pay Option (A83)	$32.65
Renewable Energy	
Bundled (A82)	$45.02
Pre-Pay Option (A83)	$35.17

~~T~~

Excess On-Peak Period Energy Charge per kWh

June - September	$~~0.25879~~0.20443	R
Other Months	$~~0.21408~~0.16247	R

Excess Mid-Peak Period Energy Charge per kWh

June - September	$0.13313	N
Other Months	$0.11364	N

N

PRE-PAY OPTION
The Pre-Pay Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

FUEL CLAUSE
The monthly customer charge includes preset fuel charges for established energy usage during off-peak and on-peak periods. Excess on-peak period energy charges are subject to the adjustments provided for in the Fuel Clause Rider.

RESOURCE ADJUSTMENT
The monthly customer charge includes a preset Resource Adjustment charge for established energy usage during off-peak and on-peak periods. Excess on-peak period energy charges are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

MONTHLY MINIMUM CHARGE
Customer Charge.

SURCHARGE
In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

LATE PAYMENT CHARGE
Any unpaid balance over $10.00 is subject to a 1.5% late payment charge or $1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

SALES TRUE-UP RIDER
Bills are subject to the adjustments provided for in the Sales True-Up Rider.

(Continued on Sheet No. 5-8.3)

DEFINITION OF PEAK PERIODS
The ~~on-peak~~On-Peak period is defined as those hours between ~~9:00 a.m.~~7:00 p.m. and ~~9:00~~10:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The Mid-Peak period is defined as all hours not defined as On-Peak or Off-Peak periods. The ~~off-peak~~Off-Peak period is defined as ~~all other hours~~those hours between midnight (12:00 a.m.) and 6:00 a.m. every day. Definition of ~~on-peak~~On-Peak, Mid-Peak, and ~~off-peak~~Off-Peak period is subject to change with change in Company's system operating characteristics.

DEFINITION OF EXPECTED AVERAGE ELECTRIC VEHICLE KWH USAGE
The expected average electric vehicle kWh usage is defined as the Company's estimated average monthly EV energy consumption across all pilot participants.

COMMUNICATION COSTS
The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles as provided in Minn. Stat. §216B.1614, subd.2, paragraph (c) 2 by deferring the costs to a tracker account, and will petition the Minnesota Public Utilities Commission to recover the qualifying costs.

TERMS AND CONDITIONS OF SERVICE
1. Residential Electric Vehicle Subscription Pilot Service shall be served through wiring connected to customer's single meter provided for Residential Service. Consumption under this rate schedule will be subtracted from the main meter for purposes of billing customer's non-Electric Vehicle electricity usage.
2. The customer shall supply, at no expense to the Company, premises wiring and a suitable location for connection of charging and associated equipment.
3. Company may require customer to provide access for Company-owned equipment for the recording and wireless communication of energy usage.
4. The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.
5. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
6. Customer must execute an Electric Vehicle Subscription Pilot Service Agreement with the Company.

1. The Residential Service~~, Residential Time of Day Service~~ and Residential Time of Use ~~Pilot Program~~Service are the only rates available to residential customers for domestic purposes in a single private residence. Energy Controlled Service (Non-Demand Metered), Limited Off Peak Service, Voluntary Electric Vehicle Charger Service, Electric Vehicle Home Service, Residential Electric Vehicle Pilot Service, Residential Electric Vehicle Subscription Pilot Service and Automatic Protective Lighting Service rate schedules are also available to qualifying residential customers. CT T ~~C~~ ~~C~~

2. Normal service under the Residential Service~~, Residential Time of Day Service~~ and Residential Time of Use ~~Pilot Program~~Service rate schedules is single phase service rendered through one meter. Three phase service or service through more than one meter will be provided upon a one-time payment of an amount to reimburse Company for the additional investment. If customer is served through more than one meter, each meter will be separately billed. C T

3. Electric space heating charges are applicable only when customer~~''~~s electric space heating equipment is used as customer~~''~~s primary heating source. Customers with heat pumps are also eligible for the space heating rate. T C C

4. Underground service charges will apply where the underground facilities are owned by Company, and Company has not been fully reimbursed for the added cost of such underground facilities.

5. Standby and Supplementary Service is available for any residential customer subject to the provisions in the General Rules and Regulations, Section 2.4. The Company~~''~~s meter will be ratcheted to measure the flow of power and energy from Company to customer only. T

6. A customer using electric service for domestic and non-domestic purposes jointly may combine such use through one meter on such rates as are available to general service customers.

7. The Residential Service and ~~Residential Time of Day Service~~ Residential Time of Use Service rate schedules are available to farm installations which were served on the separate Farm Service rate schedule prior to its cancellation on November 1, 1988. Residential Service and ~~Residential Time of Day Service~~Residential Time of Use Service to these qualifying farm customers is limited to 120/240 volts single phase service rendered through one meter. Motors and other equipment which interfere with service to neighboring customers and all transformer type welding machines larger than 25 kilovolt-amperes are not permitted as part of this service. C C C

AVAILABILITY
This Pilot is applicable for three years from the original effective date of this rate schedule. ~~N~~

Available to residential customers under the Residential (A01,A03), ~~Residential Time of Day (A02, A04),~~ D
Residential Time of Use Pilot Program (A72, A74), Residential Electric Vehicle Service (A08), Electric Vehicle Home Service (A80, A81), Voluntary Electric Vehicle Charger Service (A76, A77), Residential Electric Vehicle Subscription (A82 and A84) for customers who own or lease light duty electric vehicles (EVs) and charge them at a home address that receives electricity from Northern States Power Company.

Participating customers agree to utilize the charging schedule they select during the enrollment process to shift EV charging into hours that are better for the power grid, while still meeting driving requirements, and agree to share essential enrollment and charging data with Xcel Energy.

BILL CREDIT
The Pilot is available to residential electric customers who own or lease a light-duty electric vehicle (EV). Participating customers will receive a yearly $50 Bill Credit.

TERMS AND CONDITIONS OF SERVICE

1. Eligibility

1.1 Residential customers meeting the following criteria are eligible to participate in the Pilot:
- Own or lease an EV;
- Have an active Xcel Energy account that receives electric service in Minnesota under an eligible rate;
- Be a residential customer and charge an electric vehicle at the customer's home address in Minnesota;
- Use eligible charging equipment or drive an eligible vehicle;
- Complete a Pilot application and be selected by Xcel Energy to participate in the Pilot (Participation in the Pilot will be determined by Xcel Energy, in its sole discretion);

For a participating customer, failure to meet any of the above eligibility requirements at any time will void any obligation Xcel Energy has to provide the Bill Credit, and Xcel Energy may immediately terminate the customer's participation in the Pilot. ~~N~~

(Continued on Sheet 16.1)

MULTI-DWELLING UNIT ELECTRIC VEHICLE SERVICE PILOT
RATE CODE A91, A92, A93

Section No. 5
~~1st~~2nd Revised Sheet No. 52.4

AVAILABILITY
Available while the Pilot is in effect to Multi-Dwelling Unit site hosts for service only to resident electric vehicle loads including battery charging and accessory usage for the express purpose of providing charging service to the residents of the site.

CONTRACT
Participants must contract for the service through a Multi-Dwelling Unit Electric Vehicle Service Pilot Customer Service Agreement with the Company. For site hosts participating under both the Shared Parking and Assigned Parking options, the contract will be for 120 months. For EV driver participating under the Assigned Parking option, the contract will be month-to-month.

RENEWABLE ENERGY SUPPLY OPTION
Customers have the option to elect all or a portion of the supply of electricity under this schedule from renewable energy resources. The renewable energy supply option is available subject to the provisions contained in the Voluntary Renewable and High-Efficiency Energy Purchase (Windsource Program) Rider, or other available rate schedule for voluntary renewable energy supply that is applicable.

DETERMINATION OF CUSTOMER BILLS
Site host bills shall reflect the standard customer charge, energy charges (if applicable) based on metered kWh usage, plus an optional charger service charge (if applicable). Assigned parking participant bills shall reflect energy charges (if applicable) based on kWh usage measured by their charging equipment, plus the charger service charge. Bills may be subject to a minimum charge based on the monthly customer charge plus optional charger service charge (if applicable). Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

RATE

Standard Customer Charge Per Month		$4.95	
Optional Charger Service Charge Per Month Per Port			
Assigned Parking (A91)		$16.99	
	Group A	Group B	Group C
Shared Parking – Full Service (A93)	$30.59	$45.55	$60.51

Energy Charge per kWh

June-September

On-Peak Period	$~~0.27845~~0.20443	R
Mid-Peak Period	$~~0.11307~~0.13313	R
Off-Peak Period	$~~0.03825~~0.07479	R

(Continued on Sheet No. 5-52.5)

MULTI-DWELLING UNIT ELECTRIC VEHICLE SERVICE PILOT (Continued)
RATE CODE A91, A92, A93

Section No. 5
~~2nd~~3rd Revised Sheet No. 52.5

RATE (Continued)
Energy Charge per kWh

Other Months

On-Peak Period	$~~0.24869~~0.16247	R
Mid-Peak Period	$~~0.09907~~0.11364	R
Off-Peak Period	$~~0.03825~~0.07479	R

In addition, customer bills under this rate are subject to the following adjustments and/or charges. ~~D~~

~~D~~

~~D~~

FUEL CLAUSE
Bills are subject to the adjustments provided for in the Fuel Clause Rider.

RESOURCE ADJUSTMENT
Bills are subject to the adjustments provided for int eh Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

MONTHLY MINIMUM CHARGE
Customer Charge plus Optional Charger Service (if applicable).

SURCHARGE
In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

LATE PAYMENT CHARGE
Any unpaid balance over $10.00 is subject to a 1.5% late payment charge or $1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

SALES TRUE-UP RIDER ~~N~~
Bills are subject to the adjustments provided for in the Sales True-Up Rider. ~~N~~

DEFINITION OF PEAK PERIODS
The On-Peak period is defined as those hours between ~~3~~7:00 p.m. and ~~8~~10:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The Mid-Peak period is defined as all hours not defined as On-Peak or Off-Peak periods. The Off-Peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day. C

TERMS AND CONDITIONS OF SERVICE
1. Multi-dwelling unit electric vehicle service shall be separately served and metered and must at no time be connected to facilities serving site host's other loads. Metering may be installed as a sub-meter behind the site host's main meter, in which case consumption under this rate schedule will be subtracted from the main meter for purposes of billing site host's non-electric vehicle electricity usage**.**

(Continued on Sheet No. 5-52.6)

FUEL CLAUSE CHARGE

There shall be added to or deducted from the monthly bill a Fuel Cost Charge calculated by multiplying the applicable monthly billing kilowatt hours (kWh) by the billed Fuel Adjustment Factor (FAF) per kWh. The billed FAF is calculated by prorating each calendar month FAF by the number of customer billing days in each calendar month, and rounding to the nearest $0.00001 per kWh.

EXEMPTION

For customers participating in Company's Renewable*Connect and Renewable*Connect Government pilot programs, the Voluntary Renewable*Connect Program Rider (Renewable*Connect Flex) or the Voluntary Renewable*Connect Program Rider (Long Term), the applicable billing kWh subject to the FAF shall be reduced by the elected Voluntary Renewable Adjustment energy blocks. In the event that a customer's metered energy use is lower than the subscribed energy blocks, the applicable billing kWh for the FAF for that month is zero. T T

For customer premises recognized by the Company as not being subject to any of the costs of satisfying the solar energy standard under Minn. Stat. § 216B.1691, subd. 2f ("SES Costs"), the SES Costs reflected in the Fuel Clause Charge assessed to the accounts associated with these premises may be credited to these accounts, and the dollar amount of these credits shall be added back into the Current Period Cost of Energy applicable to the time period when the credit is issued.

FUEL ADJUSTMENT FACTOR (FAF)

A separate FAF will be determined for each service category defined by customer class and time-of-day (TOD) period within the Commercial and Industrial – Demand class. The FAF for each service category is the sum of the Current Period Cost of Energy multiplied by the applicable FAF Ratio, and the applicable Energy Cost True-up Factor. The FAF Ratio is the Class Cost Ratio multiplied by the corresponding TOD Ratio:

Service Category	Class Cost Ratio	TOD Ratio	FAF Ratio	
Residential	1.0192	1.0000	1.0192	
Residential TOU On-Peak	1.0192	1.3395	1.3653	N
Residential TOU Mid-Peak	1.0192	1.0499	1.0700	N
Residential TOU Off-Peak	1.0192	0.5260	0.5361	N
C&I Non-Demand	1.0183	1.0000	1.0183	
C&I Demand	0.9917	1.0114	1.0030	
C&I Demand TOD On-Peak	0.9917	1.2853	1.2746	
C&I Demand TOD Off-Peak	0.9917	0.8068	0.8001	
Outdoor Lighting	0.7659	1.0000	0.7659	
C&I Demand TOU Pilot Peak	0.9917	1.3341	1.3230	
C&I Demand TOU Pilot Base	0.9917	1.0754	1.0665	
C&I Demand TOU Pilot Off-Peak	0.9917	0.5283	0.5239	

(Continued on Sheet No. 5-91.1)

RATE SCHEDULES BY SERVICE CATEGORY

Residential
Residential (A00, A01, A03)
~~Residential TOD (A02, A04)~~
Residential TOU ~~Pilot~~ Program (A72, A74)
Energy Controlled (A05)
Limited Off-Peak (A06)
Residential Electric Vehicle (A08)
Residential Electric Vehicle Pilot (A80, A81)
Residential Electric Vehicle Subscription Pilot (A82, A83)

Commercial and Industrial Non-Demand
Energy Controlled (A05)
Limited Off Peak (A06)
Small General (A09, A10, A11, A13)
Small General TOD (A12, A16, A18, A22)
Small Municipal Pumping (A40)
Fire and Civil Defense Siren (A42)
Multi-Dwelling Unit Electric Vehicle Service Pilot (A91, A92, A93)
Electric Service Public Charging Station Pilot (A94)

Commercial and Industrial Demand – Non-TOD
General (A14)
Peak Controlled (A23)
Municipal Pumping (A41)

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Commercial and Industrial Demand – TOD
General TOD (A15, A17, A19)
Peak Controlled TOD (A24)
Tier 1 Energy Controlled Rider (A27)
Light Rail Line (A29)
General TOU Pilot Program (A25, A26)
Electric Vehicle Fleet Pilot (A87, A88, A89)
Electric Vehicle Public Charging Pilot (A90)

~~D~~
~~N~~
~~N~~
~~N~~

Outdoor Lighting
Automatic Protective (A07)
Street Lighting System (A30)
Street Lighting Energy (Closed) (A32)
Street Lighting Energy – Metered (A34)
Street Lighting - City of St. Paul (A37)

PROVISION OF FORECAST DATA

To assist commercial and industrial customers in budgeting and managing their energy costs, the Company will annually make available on May 1st a 24-month forecast of the fuel and purchased energy costs applicable to demand billed C&I customers under this Rider. The forecast period begins January 1st of the following year. This forecast will be provided only to customers who have signed a protective agreement with the Company.

MANUAL METER READING SERVICE RIDER
(AMI OPT-OUT OPTION)

Section No. 5
~~1st~~2nd Revised Sheet No. 148

AVAILABILITY

Available as an option to Residential Service, ~~Residential Time of Day,~~ Small General Service and Small General Time of Day Service customers who elect on-site meter reading service to opt out of energy usage measurements by standard advanced meters with two-way communication capabilities. D

RATE

Fixed Charge per Month	$15.00
Non-Standard Meter Installation Charge	$40.00
Non-Standard Meter Removal Charge	$40.00

TERMS AND CONDITIONS OF SERVICE

1. Customers who elect to receive this service will be subject to the Non-Standard Meter Installation Charge upon request for this service.
2. A one-time waiver of the Non-Standard Meter Installation Charge will apply to customers who elect this service prior to the installation of a standard advanced meter at their premise(s) as part of the Company's implementation of Advanced Metering Infrastructure.
3. Customers who cancel this service or vacate the premise where the service was requested will be subject to the Non-Standard Meter Removal Charge.
4. This rider will separately apply to each individual non-standard meter the customer requests be read manually.
5. The Company reserves the right to refuse availability of this rider if the:
   a. Manual meter reading service would create a safety hazard for the customer, the public, or Company's personnel or facilities,
   b. Customer does not allow the Company's employees or agents access to the non-standard meter(s) at the customer's premise(s), or
   c. Customer has a history of meter tampering.
6. Entities such as multi-unit dwelling associations are not authorized to elect this rider on behalf of individually metered customers.
7. Customers electing manual meter reading with this rider may receive bills based on estimated meter readings in any month where circumstances prevent a meter reading.
8. Customers electing manual meter reading with the rider will be subject to a higher Service Reconnection Charge as specified in the Section 1.2 of the GENERAL SERVICE RULES. N

~~N~~

1. Eligibility and Availability

1.1. To be eligible for the EV Accelerate At Home Program Rate Codes A79, A80, you, must:

- Agree to the terms and conditions of this Services Agreement;
- have an active Xcel Energy residential electric service account in Xcel Energy's Minnesota regulated electric service territory with no past due bills;
- rent or own the Site, provided that if you rent the Site, you must have a separately metered service, pay for any necessary Premises Wiring, and have the Site owner's written consent to participate in the EV Accelerate At Home Program;
- represent that the Site is owned or rented by the Customer, is located within Xcel Energy's Minnesota regulated electrical service territory, and corresponds with a Xcel Energy residential electrical account on which the Charger will be installed;
- have an approved Charger installed by Xcel Energy, or an authorized third-party independent contractor on Xcel Energy's behalf, or be inspected and confirmed as eligible by an Xcel Energy contracted electrician, for the exclusive use of tracking the electricity used to charge your Electric Vehicle;
- have wireless internet ("Wi-Fi") service at Site;
- not be on current Xcel Energy Residential EV Service Rate (RATE CODE A08). If you are already enrolled on Rate Code A08, you must unenroll for the duration of your participation on the EV Accelerate At Home Program;
- not participate in Xcel Energy's Time of Use Rate Design Pilot Program. If you are already enrolled in the Time of Use Rate Design Pilot Program, you must unenroll for the duration of your participation in the EV Accelerate At Home Program ; and
- not participate in Xcel Energy's Net Metering tariffs.

1.2 To be eligible for the EV Accelerate At Home Program Voluntary Electric Service (Rate Code A76), you must:

- Agree to the terms and conditions of this Service Agreement;
- have an active Xcel Energy residential electric service account in Xcel Energy's Minnesota regulated electric service territory with no past due bills;
- rent or own the Site, provided if you rent the Site, you must have a separately metered service, pay for any necessary Premises Wiring, and have the Site owner's written consent to participate in the EV Accelerate At Home Program ;
- represent that the Site is owned or rented by you, is located within Xcel Energy's Minnesota regulated electrical service territory, and corresponds with an Xcel Energy residential electrical account on which the Charger will be installed;
- have an approved Charger installed by Xcel Energy, or an authorized third-party independent contractor on Xcel Energy's behalf, or be inspected and confirmed as eligible by an Xcel Energy contracted electrician for the exclusive use of tracking the electricity used to charge your electric vehicle; and
- have Wi-Fi service at Site;
- be on a current Xcel Energy ~~Residential Time of Day rate (RATE CODE A02 and A04) or~~ Time of Use Rate Design ~~Pilot~~ Program.

(Continued on Sheet No. 7-116)

EXCESS GENERATION-AVERAGE RETAIL UTILITY ENERGY SERVICE
RATE CODE A50

Section No. 9
~~32nd~~33rd Revised Sheet No. 2

AVAILABILITY

This service corresponds to Minn. R. 7835.4012 and Minn. R. 7835.4013 (Average Retail Energy Rate) and to Paragraph 3.a of the Uniform Statewide Contract for Cogeneration and Small Power Production. Available to any qualifying facility (QF) of less than 40 kW AC capacity who receives time of use or non-time of day retail electric service from Company and offsets energy delivered by Company. The A50 Rate Code applies to the extent the energy delivered by the customer exceeds that supplied by the Company during the monthly billing period, and the rates below are for that net excess generation. C

RATE

Metering charges are as set forth in the Section 10 tariff

Payment per kWh for Energy Delivered to Company in Excess of Energy Used	Oct-May	Jun-Sep	
With Retail Non-Demand Metered Service	$0.14281	$0.15874	R
With Retail Demand Metered Service	$0.09526	$0.10233	R

TERMS AND CONDITIONS OF SERVICE

1. Energy used by customer in excess of energy delivered by the QF at the same site during the same billing period shall be billed in accordance with the appropriate ~~non-time of day~~ retail electric rate. C

2. For demand metered General Service customers, the entire kW demand supplied by the Company at the same site during the same billing period shall be billed to the customer according to the appropriate general service demand charge rate.

3. Interconnection charges will be assessed by the Company on an individual basis for all costs associated with addition to or modification of Company facilities to accommodate the QF. The net interconnection charge is the responsibility of the QF.

4. The voltage and phase of customer's generator must be consistent with existing service and approved by the Company.

5. The customer must comply with the MN Technical Requirements.

~~5.~~6. For customers on 3-period time of use retail electric service, payment for energy delivered to Company in excess of energy used during the monthly billing period will be calculated as follows: N

   a. All QF generation and customer usage will be netted in like time of use periods as follows:
      i. Any mid-peak QF production will be netted against mid-peak usage.
      ii. Any off-peak QF production will be netted against off-peak usage.
      iii. Any on-peak QF production will be netted against on-peak usage. N

b. After QF generation and customer usage are netted in like time of use periods, further netting will be applied in the following order: N

   i. Any remaining mid-peak QF generation will be netted against off-peak usage not already offset.

   ii. Any remaining on-peak QF generation will be netted against mid-peak usage not already offset.

   iii. Any remaining on-peak QF generation will be netted against off-peak usage not already offset.

c. After all netting has occurred as described above, the remaining excess QF generation during the monthly billing period will be credited at the above rate for payment per kWh for Energy Delivered to Company in Excess of Energy Used. N

SALE TO COMPANY AFTER CUSTOMER SELF-USE Section No. 9
RATE CODE A51, A52, A57 ~~30th~~31st Revised Sheet No. 3

AVAILABILITY

This service corresponds to Minn. R. 7835.4012, .4014 (Simultaneous Purchase and Sale Billing Rate) and .4015 (Time-of-Day Purchase Rates) and to Paragraphs 3.b., 3.c., 4.a and 4.b of the Uniform Statewide Contract for Cogeneration and Small Power Production. Available to any qualifying facility (QF) customer of less than 1,000 kW AC capacity. The energy payment rates below apply to the energy which the customer exports to the Company after any self-use by the customer.

RATE
Metering charges are as set forth in the Section 10 tariff

Where the customer receives non-time of day retail electric service, the following Rate Code applies.

Payment Schedule for Energy Delivered to Company (A51)	Oct-May	Jun-Sep	
Energy Payment per kWh	$0.03205	$0.03408	R
Capacity Payment for Firm Power per kWh	$0.00178	$0.01299	R

Where the customer receives time of day retail electric service, the following Rate Code applies.

Payment Schedule for Energy Delivered to Company (A52)	Oct-May	Jun-Sep	
On Peak Energy Payment per kWh	$0.03791	$0.04656	R
Off Peak Energy Payment per kWh	$0.02888	$0.02757	R
Capacity Payment for Firm Power per On Peak kWh	$0.00514	$0.03722	R

Where the customer receives time of use retail electric service, the following Rate Code applies. N

Payment Schedule for Energy Delivered to Company (A57)	Oct-May	Jun-Sep	
On Peak Energy Payment per kWh	$x.xxxxx	$x.xxxxx	
Mid Peak Energy Payment per kWh	$x.xxxxx	$x.xxxxx	
Off Peak Energy Payment per kWh	$x.xxxxx	$x.xxxxx	
Capacity Payment for Firm Power per On Peak kWh	$x.xxxxx	$x.xxxxx	N

DETERMINATION OF FIRM POWER
The customer will have supplied firm power if during the billing period an on peak capacity factor of at least 65% was achieved. The calculation of the on peak capacity factor will be as follows: the average on peak period metered capacity delivered to the Company for the on peak period of the billing period divided by the greatest 15 minute metered capacity delivered for the on peak period of the same billing period expressed in percent and rounded to the nearest whole percent. If the percent calculated is 65 or greater, capacity payment will be made. If the percent calculated is less than 65, capacity payment will not be made.

(Continued on Sheet No. 9-3.1)

MONTHLY NET METERING Section No. 9
RATE CODE A53, A54, A58 ~~29th~~30th Revised Sheet No. 4

AVAILABILITY
This service corresponds to Minn. R. 7835.4012, .4014 (Simultaneous Purchase and Sale Billing Rate) and .4015 (Time-of-Day Purchase Rates) and to Paragraphs 3.b., 3.c., 4.a. and 4.b. of the Uniform Statewide Contract for Cogeneration and Small Power Production. Available to any qualifying facility (QF) customer of less than 1,000 kW AC capacity. The energy payment rates below apply to the extent the energy delivered by the customer exceeds that supplied by the Company during the monthly billing period, and the rates below are for that net excess generation.

RATE
Metering charges are as set forth in the Section 10 tariff

Where the customer receives non-time of day retail electric service, the following Rate Code applies.

Payment Schedule for Energy Delivered to Company in Excess of Energy Used (A53)	Oct-May	Jun-Sep	
Energy Payment per kWh	$0.03205	$0.03408	
Capacity Payment for Firm Power per kWh	$0.00178	$0.01299	~~R~~ ~~R~~

Where the customer receives time of day retail electric service, the following Rate Code applies.

Payment Schedule for Energy Delivered to Company in Excess of Energy Used (A54)	Oct-May	Jun-Sep	
On Peak Energy Payment per kWh	$0.03791	$0.04656	~~R~~
Off Peak Energy Payment per kWh	$0.02888	$0.02757	~~R~~
Capacity Payment for Firm Power per On Peak kWh	$0.00514	$0.03722	~~R~~

Where the customer receives time of use retail electric service, the following Rate Code applies. N

Payment Schedule for Energy Delivered to Company in Excess Of Energy Used (A58)	Oct-May	Jun-Sep	
On Peak Energy Payment per kWh	$x.xxxxx	$x.xxxxx	
Mid Peak Energy Payment per kWh	$x.xxxxx	$x.xxxxx	
Off Peak Energy Payment per kWh	$x.xxxxx	$x.xxxxx	
Capacity Payment for Firm Power per On Peak kWh	$x.xxxxx	$x.xxxxx	N

DETERMINATION OF FIRM POWER
The customer will have supplied firm power if during the billing period an on peak capacity factor of at least 65% was achieved. The calculation of the on peak capacity factor will be as follows: the average on peak period metered capacity delivered to the Company for the on peak period of the billing period divided by the greatest 15 minute metered capacity delivered for the on peak period of the same billing period expressed in percent and rounded to the nearest whole percent. If the percent calculated is 65 or greater, capacity payment will be made. If the percent calculated is less than 65, capacity payment will not be made.

(Continued on Sheet No. 9-4.1)

ANNUAL NET METERING (KWH BANKING OPTION) Section No. 9
RATE CODE A55, A56, A59 ~~9th~~10th Revised Sheet No. 4.2

Availability

This service corresponds to Minn. R. 7835.4012, .4014 (Simultaneous Purchase and Sale Billing Rate), .4015 (Time-of-Day Purchase Rates), and .4017 (Net Metered Facility; Bill Credits), and to Paragraphs 5.a, 5.b, and 5.c of the Uniform Statewide Contract for Cogeneration and Small Power Production. Available to a qualifying facility (QF) or Net Metered Facility (NMF) customer who elects to be compensated for net input into the utility's system in the form of a kilowatt-hour credit on the customer's bill for that customer's account, subject to the following conditions:

A. The customer is not receiving a value of solar rate under Minnesota Statutes, section 216B.164, subdivision 10;
B. The customer is interconnected with the Company; and
C. The customer has at least 40 kilowatt AC capacity but less than 1,000 kilowatt AC capacity.

Metering charges are as set forth in the Section 10 tariff

The Company compensates the customer, in the form of an energy payment, for the bank balance for kWh credits annually at the rate set forth below.

	Annual	
Energy Payment per kWh for Customers on non-time of day Service Tariffs (A55)	$0.03280	~~R~~

Time of Day Service Customers (A56)	Annual	
On Peak Energy Payment per kWh	$0.04109	~~R~~
Off Peak Energy Payment per kWh	$0.02840	~~R~~

Time of Use Service Customers (A59)	Annual	N
On Peak Energy Payment per kWh	$x.xxxxx	|
Mid Peak Energy Payment per kWh	$x.xxxxx	|
Off Peak Energy Payment per kWh	$x.xxxxx	N

Capacity Payment for Firm Power where customer receives	Oct-May	Jun-Sep	
non-time of day retail electric service per kWh	$0.00178	$0.01299	~~R~~
time of day retail electric service per on-peak kWh	$0.00514	$0.03722	~~R~~
time of use retail electric service per on-peak kWh	$x.xxxxx	$x.xxxxx	N

Determination of Firm Power

The customer will have supplied firm power if during the billing period an on peak capacity factor of at least 65% was achieved. The calculation of the on peak capacity factor will be as follows: the average on peak period metered capacity delivered to the Company for the on peak period of the billing period divided by the greatest 15 minute metered capacity delivered for the on peak period of the same billing period expressed in percent and rounded to the nearest whole percent. If the percent calculated is 65 or greater, capacity payment will be made. If the percent calculated is less than 65, capacity payment will not be made.

(Continued on Sheet No. 9-4.3)

Clean

TABLE OF CONTENTS

Section No. 1
13th Revised Sheet No. 1

DC

(Continued on Sheet No. 1-2)

(Continued on Sheet No. TOC-2)

AVAILABILITY
Available to any residential customer for domestic purposes only in a single private residence and qualifying farm customers.

DETERMINATION OF CUSTOMER BILLS
Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and / or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

RATE

	Standard	Electric Space Heating
Customer Charge per Month – Water Heating (A00)	$0.00	N/A
– Overhead (A01)	$6.00	$6.00
– Underground (A03)	$6.00	$6.00
Energy Charge per kWh		
June - September	$0.13069	$0.13069
Other Months	$0.11364	$0.06537

R

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

FUEL CLAUSE
Bills are subject to the adjustments provided for in the Fuel Clause Rider.

RESOURCE ADJUSTMENT
Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

ENVIRONMENTAL IMPROVEMENT RIDER
Bills are subject to the adjustments provided for in the Environmental Improvement Rider.

MONTHLY MINIMUM CHARGE
Customer Charge.

SALES TRUE-UP RIDER
Bills are subject to the adjustments provided for in the Sales True-Up Rider.

(Continued on Sheet No. 5-1.1)

RESIDENTIAL TIME OF DAY SERVICE (CLOSED) Section No. 5
RATE CODE A02, A04 34th Revised Sheet No. 2

CANCELED

N
D
D

(Continued on Sheet No. 5-3)

CANCELED

N
D

D

(Continued on Sheet No. 5-4)

RESIDENTIAL TIME OF DAY SERVICE (Continued) Section No. 5
(CLOSED) 7th Revised Sheet No. 4
RATE CODE A02, A04

CANCELED

N
D
D

RESIDENTIAL TIME OF USE SERVICE Section No. 5
RATE CODE A72, A74 4th Revised Sheet No. 4.1

AVAILABILITY
Available to any residential customer for domestic purposes only in a single private residence and qualifying farm customers. DC

DETERMINATION OF CUSTOMER BILLS DC
Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and / or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. D

RATE D

	Standard	Electric space heating	
Customer Charge per Month			N
Overhead (A72)	$6.00	$6.00	N
Underground (A74)	$6.00	$6.00	N
Energy Charge per kWh			
June – September			
On-Peak Period	$0.20443	$0.20443	RN
Mid-Peak Period	$0.13313	$0.13313	RN
Off-Peak Period	$0.07479	$0.07479	RN
Other Months			
On-Peak Period	$0.16247	$0.06537	RN
Mid-Peak Period	$0.11364	$0.06537	RN
Off-Peak Period	$0.07479	$0.06537	RN

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

FUEL CLAUSE
Bills are subject to the adjustments provided for in the Fuel Clause Rider.

SALES TRUE-UP RIDER
Bills are subject to the adjustments provided for in the Sales True-Up Rider.

RESOURCE ADJUSTMENT
Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider. L

ENVIRONMENTAL IMPROVEMENT RIDER
Bills are subject to the adjustments provided for in the Environmental Improvement Rider. L

(Continued on Sheet No. 5-4.2)

MONTHLY MINIMUM CHARGE
Customer Charge.

SURCHARGE
In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

LOW INCOME ENERGY DISCOUNT RIDER
Bills are subject to the adjustment provided for in the Low Income Energy Discount Rider.

The following are terms and conditions for service under this tariff.

LATE PAYMENT CHARGE
Any unpaid balance over $10.00 is subject to a 1.5% late payment charge or $1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

LOW INCOME ENERGY DISCOUNT
Energy discount is available to qualified low income customers under this schedule subject to the provisions contained in the Low Income Energy Discount Rider.

DEFINITION OF PEAK PERIODS
The On-Peak period is defined as those hours between 7:00 p.m. and 10:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The Mid-Peak period is defined as all hours not defined as On-Peak or Off-Peak periods. The Off-Peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day.

TERMS AND CONDITIONS OF SERVICE
1. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
2. Any customers who opts-out of this rate cannot reenroll in the rate for a minimum of 12 months from the end of their last billing cycle on the rate.

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(Continued on Sheet No. 5-4.3)

CANCELED

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RESIDENTIAL EV ACCELERATE AT HOME PAY AS YOU GO SERVICE
RATE CODE A79, A80, AND A81

RATE

Customer Charge per Month		
Bundled (A80)	$16.63	
Pre-Pay Option/Installation Only (A81) (CLOSED)	$5.95	
BYOC (A79)	$6.73	
Energy Charge per kWh		
June – September		
On-Peak Period	$0.20443	R
Mid-Peak Period	$0.13313	R
Off-Peak Period	$0.07479	R
Other Months		
On-Peak Period	$0.16247	R
Mid-Peak Period	$0.11364	R
Off-Peak Period	$0.07479	R

PRE-PAY/INSTALLATION ONLY OPTION
The Pre-Pay/Installation Only Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company.

The Company will continue to support existing customers on the Pre-Pay/Installation Only Option, but the Option is closed to new customers.

BYOC OPTION
Customers choosing the BYOC Service are required to have a Company-contracted electrician perform a site visit and hardwire the charging equipment if needed, and to confirm equipment eligibility and that the equipment is correctly set up for the program. The cost of the site visit is included in the monthly customer charge. Customers choosing the BYOC Service are required to utilize a vehicle charger model that is approved by the Company for use for this rate.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

FUEL CLAUSE
Bills are subject to the adjustments provided for in the Fuel Clause Rider

RESOURCE ADJUSTMENT
Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

MONTHLY MINIMUM CHARGE
Customer Charge.

SURCHARGE
In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

LATE PAYMENT CHARGE
Any unpaid balance over $10.00 is subject to a 1.5% late payment charge or $1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

SALES TRUE-UP RIDER
Bills are subject to the adjustments provided for in the Sales True-Up Rider.

(Continued on Sheet No. 7.2)

RESIDENTIAL EV ACCELERATE AT HOME PAY AS YOU GO SERVICE
RATE CODE A79, A80, AND A81

Section No. 5
2nd Revised Sheet No. 7.2

DEFINITION OF PEAK PERIODS

The on-peak period is defined as those hours between 7:00 p.m. and 10:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The mid-peak period is defined as all hours not defined as on-peak or off-peak periods. The off-peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics. C

COMMUNICATION COSTS

The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles.

TERMS AND CONDITIONS OF SERVICE

1. EV Accelerate At Home Pay As You Go Service shall be served through wiring connected to customer's single meter provided for Residential Service. Consumption under this rate schedule will be subtracted from the main meter for purposes of billing customer's non-Electric Vehicle electricity usage.
2. The customer shall supply, at no expense to the Company, premises wiring and a suitable location for connection of charging and associated equipment.
3. Company may require customer to provide access to charging equipment for the recording and wireless communication of energy usage.
4. The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.
5. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
6. Customer must execute an EV Accelerate At Home Customer Service Agreement with the Company.

RESIDENTIAL EV ACCELERATE AT HOME VOLUNTARY SERVICE
RATE CODE A76, A77

Section No. 5
7th Revised Sheet No. 8

AVAILABILITY

Available to Residential Service customers taking service under the Residential Time-of-Use (Rate Codes A72 and A74) to provide electric vehicle charging equipment to serve electric vehicle loads including battery charging and accessory usage. Customers' energy usage will be billed based on their applicable rate codes. Bundled service includes Company installed and provided charging equipment. Pre-Pay Option service is available to customers electing to pay Company for the installed cost of charging equipment prior to beginning service. Pre-Pay Option is closed and not available to new customers. DT

CONTRACT

Customers must contract for this service through an EV Accelerate At Home Customer Service Agreement with the Company. The contract period will be as long as the customer wishes to use the equipment

CHARACTER OF SERVICE

Single-phase 60-Hertz service at approximately 120 or 120/240 volts will be provided hereunder. Three-phase service or other service upgrade requests will be provided in accordance with Company service regulations.

COST OF SERVICE

Customer Charge per Month

Bundled (A76)	$11.99
Pre-Pay/Installation Only Option (A77) (Closed)	$1.31

PRE-PAY/INSTALLATION-ONLY OPTION

The Pre-Pay/Installation Only Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company.

The Company will continue to support existing customers on the Pre-Pay/Installation Only Option, but the Option is closed to new customers.

COMMUNICATION COSTS

The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles.

TERMS AND CONDITIONS OF SERVICE

1. EV Accelerate At Home Voluntary Service shall be serviced through wiring connected to customer's single meter provided for Residential Service.
2. The customer shall supply, at no expense to the Company, premises wiring and a suitable location for connection of charging and associated equipment.
3. Company may require customer to provide access to charging equipment.
4. The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.
5. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
6. Customer must execute an EV Accelerate At Home Customer Service Agreement with the Company. T

RESIDENTIAL ELECTRIC VEHICLE SUBSCRIPTION Section No. 5
PILOT SERVICE (Continued) 6th Revised Sheet No. 8.2
RATE CODE A82, A83

RATE
Customer Charge per Month

General System Energy	
Bundled (A82)	$42.50
Pre-Pay Option (A83)	$32.65
Renewable Energy	
Bundled (A82)	$45.02
Pre-Pay Option (A83)	$35.17

Excess On-Peak Period Energy Charge per kWh		
June - September	$0.20443	R
Other Months	$0.16247	R
Excess Mid-Peak Period Energy Charge per kWh		N
June - September	$0.13313	N
Other Months	$0.11364	N

PRE-PAY OPTION
The Pre-Pay Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

FUEL CLAUSE
The monthly customer charge includes preset fuel charges for established energy usage during off-peak and on-peak periods. Excess on-peak period energy charges are subject to the adjustments provided for in the Fuel Clause Rider.

RESOURCE ADJUSTMENT
The monthly customer charge includes a preset Resource Adjustment charge for established energy usage during off-peak and on-peak periods. Excess on-peak period energy charges are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

MONTHLY MINIMUM CHARGE
Customer Charge.

SURCHARGE
In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

LATE PAYMENT CHARGE
Any unpaid balance over $10.00 is subject to a 1.5% late payment charge or $1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

SALES TRUE-UP RIDER
Bills are subject to the adjustments provided for in the Sales True-Up Rider.

(Continued on Sheet No. 5-8.3)

DEFINITION OF PEAK PERIODS

The On-Peak period is defined as those hours between 7:00 p.m. and 10:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The Mid-Peak period is defined as all hours not defined as On-Peak or Off-Peak periods. The Off-Peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day. Definition of On-Peak, Mid-Peak, and Off-Peak period is subject to change with change in Company's system operating characteristics. C C

DEFINITION OF EXPECTED AVERAGE ELECTRIC VEHICLE KWH USAGE

The expected average electric vehicle kWh usage is defined as the Company's estimated average monthly EV energy consumption across all pilot participants.

COMMUNICATION COSTS

The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles as provided in Minn. Stat. §216B.1614, subd.2, paragraph (c) 2 by deferring the costs to a tracker account, and will petition the Minnesota Public Utilities Commission to recover the qualifying costs.

TERMS AND CONDITIONS OF SERVICE

1. Residential Electric Vehicle Subscription Pilot Service shall be served through wiring connected to customer's single meter provided for Residential Service. Consumption under this rate schedule will be subtracted from the main meter for purposes of billing customer's non-Electric Vehicle electricity usage.
2. The customer shall supply, at no expense to the Company, premises wiring and a suitable location for connection of charging and associated equipment.
3. Company may require customer to provide access for Company-owned equipment for the recording and wireless communication of energy usage.
4. The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.
5. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
6. Customer must execute an Electric Vehicle Subscription Pilot Service Agreement with the Company.

RULES FOR APPLICATION OF RESIDENTIAL RATES

1. The Residential Service and Residential Time of Use Service are the only rates available to residential customers for domestic purposes in a single private residence. Energy Controlled Service (Non-Demand Metered), Limited Off Peak Service, Voluntary Electric Vehicle Charger Service, Electric Vehicle Home Service, Residential Electric Vehicle Pilot Service, Residential Electric Vehicle Subscription Pilot Service and Automatic Protective Lighting Service rate schedules are also available to qualifying residential customers. CT

2. Normal service under the Residential Service and Residential Time of Use Service rate schedules is single phase service rendered through one meter. Three phase service or service through more than one meter will be provided upon a one-time payment of an amount to reimburse Company for the additional investment. If customer is served through more than one meter, each meter will be separately billed. CT

3. Electric space heating charges are applicable only when customer's electric space heating equipment is used as customer's primary heating source. Customers with heat pumps are also eligible for the space heating rate. T C C

4. Underground service charges will apply where the underground facilities are owned by Company, and Company has not been fully reimbursed for the added cost of such underground facilities.

5. Standby and Supplementary Service is available for any residential customer subject to the provisions in the General Rules and Regulations, Section 2.4. The Company's meter will be ratcheted to measure the flow of power and energy from Company to customer only. T

6. A customer using electric service for domestic and non-domestic purposes jointly may combine such use through one meter on such rates as are available to general service customers.

7. The Residential Service and Residential Time of Use Service rate schedules are available to farm installations which were served on the separate Farm Service rate schedule prior to its cancellation on November 1, 1988. Residential Service and Residential Time of Use Service to these qualifying farm customers is limited to 120/240 volts single phase service rendered through one meter. Motors and other equipment which interfere with service to neighboring customers and all transformer type welding machines larger than 25 kilovolt-amperes are not permitted as part of this service. C C

AVAILABILITY
This Pilot is applicable for three years from the original effective date of this rate schedule.

Available to residential customers under the Residential (A01,A03), Residential Time of Use Pilot Program (A72, A74), Residential Electric Vehicle Service (A08), Electric Vehicle Home Service (A80, A81), Voluntary Electric Vehicle Charger Service (A76, A77), Residential Electric Vehicle Subscription (A82 and A84) for customers who own or lease light duty electric vehicles (EVs) and charge them at a home address that receives electricity from Northern States Power Company. D

Participating customers agree to utilize the charging schedule they select during the enrollment process to shift EV charging into hours that are better for the power grid, while still meeting driving requirements, and agree to share essential enrollment and charging data with Xcel Energy.

BILL CREDIT
The Pilot is available to residential electric customers who own or lease a light-duty electric vehicle (EV). Participating customers will receive a yearly $50 Bill Credit.

TERMS AND CONDITIONS OF SERVICE

1. Eligibility

1.1 Residential customers meeting the following criteria are eligible to participate in the Pilot:
- Own or lease an EV;
- Have an active Xcel Energy account that receives electric service in Minnesota under an eligible rate;
- Be a residential customer and charge an electric vehicle at the customer's home address in Minnesota;
- Use eligible charging equipment or drive an eligible vehicle;
- Complete a Pilot application and be selected by Xcel Energy to participate in the Pilot (Participation in the Pilot will be determined by Xcel Energy, in its sole discretion);

For a participating customer, failure to meet any of the above eligibility requirements at any time will void any obligation Xcel Energy has to provide the Bill Credit, and Xcel Energy may immediately terminate the customer's participation in the Pilot.

(Continued on Sheet 16.1)

MULTI-DWELLING UNIT ELECTRIC VEHICLE SERVICE PILOT
RATE CODE A91, A92, A93

AVAILABILITY
Available while the Pilot is in effect to Multi-Dwelling Unit site hosts for service only to resident electric vehicle loads including battery charging and accessory usage for the express purpose of providing charging service to the residents of the site.

CONTRACT
Participants must contract for the service through a Multi-Dwelling Unit Electric Vehicle Service Pilot Customer Service Agreement with the Company. For site hosts participating under both the Shared Parking and Assigned Parking options, the contract will be for 120 months. For EV driver participating under the Assigned Parking option, the contract will be month-to-month.

RENEWABLE ENERGY SUPPLY OPTION
Customers have the option to elect all or a portion of the supply of electricity under this schedule from renewable energy resources. The renewable energy supply option is available subject to the provisions contained in the Voluntary Renewable and High-Efficiency Energy Purchase (Windsource Program) Rider, or other available rate schedule for voluntary renewable energy supply that is applicable.

DETERMINATION OF CUSTOMER BILLS
Site host bills shall reflect the standard customer charge, energy charges (if applicable) based on metered kWh usage, plus an optional charger service charge (if applicable). Assigned parking participant bills shall reflect energy charges (if applicable) based on kWh usage measured by their charging equipment, plus the charger service charge. Bills may be subject to a minimum charge based on the monthly customer charge plus optional charger service charge (if applicable). Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

RATE

Standard Customer Charge Per Month		$4.95	
Optional Charger Service Charge Per Month Per Port			
Assigned Parking (A91)		$16.99	
	Group A	Group B	Group C
Shared Parking – Full Service (A93)	$30.59	$45.55	$60.51

Energy Charge per kWh

June-September

On-Peak Period	$0.20443	R
Mid-Peak Period	$0.13313	R
Off-Peak Period	$0.07479	R

(Continued on Sheet No. 5-52.5)

MULTI-DWELLING UNIT ELECTRIC VEHICLE SERVICE PILOT (Continued)
RATE CODE A91, A92, A93

RATE (Continued)
Energy Charge per kWh

Other Months

On-Peak Period	$0.16247	R
Mid-Peak Period	$0.11364	R
Off-Peak Period	$0.07479	R

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

FUEL CLAUSE
Bills are subject to the adjustments provided for in the Fuel Clause Rider.

RESOURCE ADJUSTMENT
Bills are subject to the adjustments provided for int eh Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

MONTHLY MINIMUM CHARGE
Customer Charge plus Optional Charger Service (if applicable).

SURCHARGE
In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

LATE PAYMENT CHARGE
Any unpaid balance over $10.00 is subject to a 1.5% late payment charge or $1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

SALES TRUE-UP RIDER
Bills are subject to the adjustments provided for in the Sales True-Up Rider.

DEFINITION OF PEAK PERIODS
The On-Peak period is defined as those hours between 7:00 p.m. and 10:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The Mid-Peak period is defined as all hours not defined as On-Peak or Off-Peak periods. The Off-Peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day. C

TERMS AND CONDITIONS OF SERVICE
1. Multi-dwelling unit electric vehicle service shall be separately served and metered and must at no time be connected to facilities serving site host's other loads. Metering may be installed as a sub-meter behind the site host's main meter, in which case consumption under this rate schedule will be subtracted from the main meter for purposes of billing site host's non-electric vehicle electricity usage**.**

(Continued on Sheet No. 5-52.6)

FUEL CLAUSE CHARGE

There shall be added to or deducted from the monthly bill a Fuel Cost Charge calculated by multiplying the applicable monthly billing kilowatt hours (kWh) by the billed Fuel Adjustment Factor (FAF) per kWh. The billed FAF is calculated by prorating each calendar month FAF by the number of customer billing days in each calendar month, and rounding to the nearest $0.00001 per kWh.

EXEMPTION

For customers participating in Company's Renewable*Connect and Renewable*Connect Government pilot programs, the Voluntary Renewable*Connect Program Rider (Renewable*Connect Flex) or the Voluntary Renewable*Connect Program Rider (Long Term), the applicable billing kWh subject to the FAF shall be reduced by the elected Voluntary Renewable Adjustment energy blocks. In the event that a customer's metered energy use is lower than the subscribed energy blocks, the applicable billing kWh for the FAF for that month is zero.

For customer premises recognized by the Company as not being subject to any of the costs of satisfying the solar energy standard under Minn. Stat. § 216B.1691, subd. 2f ("SES Costs"), the SES Costs reflected in the Fuel Clause Charge assessed to the accounts associated with these premises may be credited to these accounts, and the dollar amount of these credits shall be added back into the Current Period Cost of Energy applicable to the time period when the credit is issued.

FUEL ADJUSTMENT FACTOR (FAF)

A separate FAF will be determined for each service category defined by customer class and time-of-day (TOD) period within the Commercial and Industrial – Demand class. The FAF for each service category is the sum of the Current Period Cost of Energy multiplied by the applicable FAF Ratio, and the applicable Energy Cost True-up Factor. The FAF Ratio is the Class Cost Ratio multiplied by the corresponding TOD Ratio:

Service Category	Class Cost Ratio	TOD Ratio	FAF Ratio	
Residential	1.0192	1.0000	1.0192	
Residential TOU On-Peak	1.0192	1.3395	1.3653	N
Residential TOU Mid-Peak	1.0192	1.0499	1.0700	N
Residential TOU Off-Peak	1.0192	0.5260	0.5361	N
C&I Non-Demand	1.0183	1.0000	1.0183	
C&I Demand	0.9917	1.0114	1.0030	
C&I Demand TOD On-Peak	0.9917	1.2853	1.2746	
C&I Demand TOD Off-Peak	0.9917	0.8068	0.8001	
Outdoor Lighting	0.7659	1.0000	0.7659	
C&I Demand TOU Pilot Peak	0.9917	1.3341	1.3230	
C&I Demand TOU Pilot Base	0.9917	1.0754	1.0665	
C&I Demand TOU Pilot Off-Peak	0.9917	0.5283	0.5239	

(Continued on Sheet No. 5-91.1)

RATE SCHEDULES BY SERVICE CATEGORY

Residential
Residential (A00, A01, A03)
Residential TOU Program (A72, A74)
Energy Controlled (A05)
Limited Off-Peak (A06)
Residential Electric Vehicle (A08)
Residential Electric Vehicle Pilot (A80, A81)
Residential Electric Vehicle Subscription Pilot (A82, A83)

Commercial and Industrial Non-Demand
Energy Controlled (A05)
Limited Off Peak (A06)
Small General (A09, A10, A11, A13)
Small General TOD (A12, A16, A18, A22)
Small Municipal Pumping (A40)
Fire and Civil Defense Siren (A42)
Multi-Dwelling Unit Electric Vehicle Service Pilot (A91, A92, A93)
Electric Service Public Charging Station Pilot (A94)

Commercial and Industrial Demand – Non-TOD
General (A14)
Peak Controlled (A23)
Municipal Pumping (A41)

DT

Commercial and Industrial Demand – TOD
General TOD (A15, A17, A19)
Peak Controlled TOD (A24)
Tier 1 Energy Controlled Rider (A27)
Light Rail Line (A29)
General TOU Pilot Program (A25, A26)
Electric Vehicle Fleet Pilot (A87, A88, A89)
Electric Vehicle Public Charging Pilot (A90)

Outdoor Lighting
Automatic Protective (A07)
Street Lighting System (A30)
Street Lighting Energy (Closed) (A32)
Street Lighting Energy – Metered (A34)
Street Lighting - City of St. Paul (A37)

PROVISION OF FORECAST DATA

To assist commercial and industrial customers in budgeting and managing their energy costs, the Company will annually make available on May 1st a 24-month forecast of the fuel and purchased energy costs applicable to demand billed C&I customers under this Rider. The forecast period begins January 1st of the following year. This forecast will be provided only to customers who have signed a protective agreement with the Company.

MANUAL METER READING SERVICE RIDER
(AMI OPT-OUT OPTION)

Section No. 5
2nd Revised Sheet No. 148

AVAILABILITY

Available as an option to Residential Service, Small General Service and Small General Time of Day Service customers who elect on-site meter reading service to opt out of energy usage measurements by standard advanced meters with two-way communication capabilities. D

RATE

Fixed Charge per Month	$15.00
Non-Standard Meter Installation Charge	$40.00
Non-Standard Meter Removal Charge	$40.00

TERMS AND CONDITIONS OF SERVICE

1. Customers who elect to receive this service will be subject to the Non-Standard Meter Installation Charge upon request for this service.
2. A one-time waiver of the Non-Standard Meter Installation Charge will apply to customers who elect this service prior to the installation of a standard advanced meter at their premise(s) as part of the Company's implementation of Advanced Metering Infrastructure.
3. Customers who cancel this service or vacate the premise where the service was requested will be subject to the Non-Standard Meter Removal Charge.
4. This rider will separately apply to each individual non-standard meter the customer requests be read manually.
5. The Company reserves the right to refuse availability of this rider if the:
   a. Manual meter reading service would create a safety hazard for the customer, the public, or Company's personnel or facilities,
   b. Customer does not allow the Company's employees or agents access to the non-standard meter(s) at the customer's premise(s), or
   c. Customer has a history of meter tampering.
6. Entities such as multi-unit dwelling associations are not authorized to elect this rider on behalf of individually metered customers.
7. Customers electing manual meter reading with this rider may receive bills based on estimated meter readings in any month where circumstances prevent a meter reading.
8. Customers electing manual meter reading with the rider will be subject to a higher Service Reconnection Charge as specified in the Section 1.2 of the GENERAL SERVICE RULES.

1. Eligibility and Availability

1.1. To be eligible for the EV Accelerate At Home Program Rate Codes A79, A80, you, must:

- Agree to the terms and conditions of this Services Agreement;
- have an active Xcel Energy residential electric service account in Xcel Energy's Minnesota regulated electric service territory with no past due bills;
- rent or own the Site, provided that if you rent the Site, you must have a separately metered service, pay for any necessary Premises Wiring, and have the Site owner's written consent to participate in the EV Accelerate At Home Program;
- represent that the Site is owned or rented by the Customer, is located within Xcel Energy's Minnesota regulated electrical service territory, and corresponds with a Xcel Energy residential electrical account on which the Charger will be installed;
- have an approved Charger installed by Xcel Energy, or an authorized third-party independent contractor on Xcel Energy's behalf, or be inspected and confirmed as eligible by an Xcel Energy contracted electrician, for the exclusive use of tracking the electricity used to charge your Electric Vehicle;
- have wireless internet ("Wi-Fi") service at Site;
- not be on current Xcel Energy Residential EV Service Rate (RATE CODE A08). If you are already enrolled on Rate Code A08, you must unenroll for the duration of your participation on the EV Accelerate At Home Program;
- not participate in Xcel Energy's Time of Use Rate Design Pilot Program. If you are already enrolled in the Time of Use Rate Design Pilot Program, you must unenroll for the duration of your participation in the EV Accelerate At Home Program ; and
- not participate in Xcel Energy's Net Metering tariffs.

1.2 To be eligible for the EV Accelerate At Home Program Voluntary Electric Service (Rate Code A76), you must:

- Agree to the terms and conditions of this Service Agreement;
- have an active Xcel Energy residential electric service account in Xcel Energy's Minnesota regulated electric service territory with no past due bills;
- rent or own the Site, provided if you rent the Site, you must have a separately metered service, pay for any necessary Premises Wiring, and have the Site owner's written consent to participate in the EV Accelerate At Home Program ;
- represent that the Site is owned or rented by you, is located within Xcel Energy's Minnesota regulated electrical service territory, and corresponds with an Xcel Energy residential electrical account on which the Charger will be installed;
- have an approved Charger installed by Xcel Energy, or an authorized third-party independent contractor on Xcel Energy's behalf, or be inspected and confirmed as eligible by an Xcel Energy contracted electrician for the exclusive use of tracking the electricity used to charge your electric vehicle; and
- have Wi-Fi service at Site;
- be on a current Xcel Energy Time of Use Rate Design Program. DT

(Continued on Sheet No. 7-116)

EXCESS GENERATION-AVERAGE RETAIL UTILITY ENERGY SERVICE
RATE CODE A50

Section No. 9
33rd Revised Sheet No. 2

AVAILABILITY

This service corresponds to Minn. R. 7835.4012 and Minn. R. 7835.4013 (Average Retail Energy Rate) and to Paragraph 3.a of the Uniform Statewide Contract for Cogeneration and Small Power Production. Available to any qualifying facility (QF) of less than 40 kW AC capacity who receives time of use or non-time of day retail electric service from Company and offsets energy delivered by Company. The A50 Rate Code applies to the extent the energy delivered by the customer exceeds that supplied by the Company during the monthly billing period, and the rates below are for that net excess generation. C

RATE

Metering charges are as set forth in the Section 10 tariff

Payment per kWh for Energy Delivered to Company in Excess of Energy Used	Oct-May	Jun-Sep
With Retail Non-Demand Metered Service	$0.14281	$0.15874
With Retail Demand Metered Service	$0.09526	$0.10233

TERMS AND CONDITIONS OF SERVICE

1. Energy used by customer in excess of energy delivered by the QF at the same site during the same billing period shall be billed in accordance with the appropriate retail electric rate. C

2. For demand metered General Service customers, the entire kW demand supplied by the Company at the same site during the same billing period shall be billed to the customer according to the appropriate general service demand charge rate.

3. Interconnection charges will be assessed by the Company on an individual basis for all costs associated with addition to or modification of Company facilities to accommodate the QF. The net interconnection charge is the responsibility of the QF.

4. The voltage and phase of customer's generator must be consistent with existing service and approved by the Company.

5. The customer must comply with the MN Technical Requirements.

6. For customers on 3-period time of use retail electric service, payment for energy delivered to Company in excess of energy used during the monthly billing period will be calculated as follows: N

    a. All QF generation and customer usage will be netted in like time of use periods as follows:
        i. Any mid-peak QF production will be netted against mid-peak usage.
        ii. Any off-peak QF production will be netted against off-peak usage.
        iii. Any on-peak QF production will be netted against on-peak usage. N

EXCESS GENERATION-AVERAGE RETAIL UTILITY ENERGY SERVICE (CONTINUED)
RATE CODE A50

b. After QF generation and customer usage are netted in like time of use periods, further netting will be applied in the following order:
   i. Any remaining mid-peak QF generation will be netted against off-peak usage not already offset.
   ii. Any remaining on-peak QF generation will be netted against mid-peak usage not already offset.
   iii. Any remaining on-peak QF generation will be netted against off-peak usage not already offset.

c. After all netting has occurred as described above, the remaining excess QF generation during the monthly billing period will be credited at the above rate for payment per kWh for Energy Delivered to Company in Excess of Energy Used.

N
N

AVAILABILITY

This service corresponds to Minn. R. 7835.4012, .4014 (Simultaneous Purchase and Sale Billing Rate) and .4015 (Time-of-Day Purchase Rates) and to Paragraphs 3.b., 3.c., 4.a and 4.b of the Uniform Statewide Contract for Cogeneration and Small Power Production. Available to any qualifying facility (QF) customer of less than 1,000 kW AC capacity. The energy payment rates below apply to the energy which the customer exports to the Company after any self-use by the customer.

RATE

Metering charges are as set forth in the Section 10 tariff

Where the customer receives non-time of day retail electric service, the following Rate Code applies.

Payment Schedule for Energy Delivered to Company (A51)	Oct-May	Jun-Sep
Energy Payment per kWh	$0.03205	$0.03408
Capacity Payment for Firm Power per kWh	$0.00178	$0.01299

Where the customer receives time of day retail electric service, the following Rate Code applies.

Payment Schedule for Energy Delivered to Company (A52)	Oct-May	Jun-Sep
On Peak Energy Payment per kWh	$0.03791	$0.04656
Off Peak Energy Payment per kWh	$0.02888	$0.02757
Capacity Payment for Firm Power per On Peak kWh	$0.00514	$0.03722

Where the customer receives time of use retail electric service, the following Rate Code applies. N

Payment Schedule for Energy Delivered to Company (A57)	Oct-May	Jun-Sep
On Peak Energy Payment per kWh	$x.xxxxx	$x.xxxxx
Mid Peak Energy Payment per kWh	$x.xxxxx	$x.xxxxx
Off Peak Energy Payment per kWh	$x.xxxxx	$x.xxxxx
Capacity Payment for Firm Power per On Peak kWh	$x.xxxxx	$x.xxxxx

N

DETERMINATION OF FIRM POWER

The customer will have supplied firm power if during the billing period an on peak capacity factor of at least 65% was achieved. The calculation of the on peak capacity factor will be as follows: the average on peak period metered capacity delivered to the Company for the on peak period of the billing period divided by the greatest 15 minute metered capacity delivered for the on peak period of the same billing period expressed in percent and rounded to the nearest whole percent. If the percent calculated is 65 or greater, capacity payment will be made. If the percent calculated is less than 65, capacity payment will not be made.

(Continued on Sheet No. 9-3.1)

MONTHLY NET METERING Section No. 9
RATE CODE A53, A54, A58 30th Revised Sheet No. 4

AVAILABILITY
This service corresponds to Minn. R. 7835.4012, .4014 (Simultaneous Purchase and Sale Billing Rate) and .4015 (Time-of-Day Purchase Rates) and to Paragraphs 3.b., 3.c., 4.a. and 4.b. of the Uniform Statewide Contract for Cogeneration and Small Power Production. Available to any qualifying facility (QF) customer of less than 1,000 kW AC capacity. The energy payment rates below apply to the extent the energy delivered by the customer exceeds that supplied by the Company during the monthly billing period, and the rates below are for that net excess generation.

RATE
Metering charges are as set forth in the Section 10 tariff

Where the customer receives non-time of day retail electric service, the following Rate Code applies.

Payment Schedule for Energy Delivered to Company in Excess of Energy Used (A53)	Oct-May	Jun-Sep
Energy Payment per kWh	$0.03205	$0.03408
Capacity Payment for Firm Power per kWh	$0.00178	$0.01299

Where the customer receives time of day retail electric service, the following Rate Code applies.

Payment Schedule for Energy Delivered to Company in Excess of Energy Used (A54)	Oct-May	Jun-Sep
On Peak Energy Payment per kWh	$0.03791	$0.04656
Off Peak Energy Payment per kWh	$0.02888	$0.02757
Capacity Payment for Firm Power per On Peak kWh	$0.00514	$0.03722

Where the customer receives time of use retail electric service, the following Rate Code applies. N

Payment Schedule for Energy Delivered to Company in Excess Of Energy Used (A58)	Oct-May	Jun-Sep
On Peak Energy Payment per kWh	$x.xxxxx	$x.xxxxx
Mid Peak Energy Payment per kWh	$x.xxxxx	$x.xxxxx
Off Peak Energy Payment per kWh	$x.xxxxx	$x.xxxxx
Capacity Payment for Firm Power per On Peak kWh	$x.xxxxx	$x.xxxxx

N

DETERMINATION OF FIRM POWER
The customer will have supplied firm power if during the billing period an on peak capacity factor of at least 65% was achieved. The calculation of the on peak capacity factor will be as follows: the average on peak period metered capacity delivered to the Company for the on peak period of the billing period divided by the greatest 15 minute metered capacity delivered for the on peak period of the same billing period expressed in percent and rounded to the nearest whole percent. If the percent calculated is 65 or greater, capacity payment will be made. If the percent calculated is less than 65, capacity payment will not be made.

(Continued on Sheet No. 9-4.1)

ANNUAL NET METERING (KWH BANKING OPTION) Section No. 9
RATE CODE A55, A56, A59 10th Revised Sheet No. 4.2

Availability

This service corresponds to Minn. R. 7835.4012, .4014 (Simultaneous Purchase and Sale Billing Rate), .4015 (Time-of-Day Purchase Rates), and .4017 (Net Metered Facility; Bill Credits), and to Paragraphs 5.a, 5.b, and 5.c of the Uniform Statewide Contract for Cogeneration and Small Power Production. Available to a qualifying facility (QF) or Net Metered Facility (NMF) customer who elects to be compensated for net input into the utility's system in the form of a kilowatt-hour credit on the customer's bill for that customer's account, subject to the following conditions:

A. The customer is not receiving a value of solar rate under Minnesota Statutes, section 216B.164, subdivision 10;
B. The customer is interconnected with the Company; and
C. The customer has at least 40 kilowatt AC capacity but less than 1,000 kilowatt AC capacity.

Metering charges are as set forth in the Section 10 tariff

The Company compensates the customer, in the form of an energy payment, for the bank balance for kWh credits annually at the rate set forth below.

	Annual
Energy Payment per kWh for Customers on non-time of day Service Tariffs (A55)	$0.03280

Time of Day Service Customers (A56)	Annual
On Peak Energy Payment per kWh	$0.04109
Off Peak Energy Payment per kWh	$0.02840

Time of Use Service Customers (A59)	Annual	
On Peak Energy Payment per kWh	$x.xxxxx	N
Mid Peak Energy Payment per kWh	$x.xxxxx	|
Off Peak Energy Payment per kWh	$x.xxxxx	N

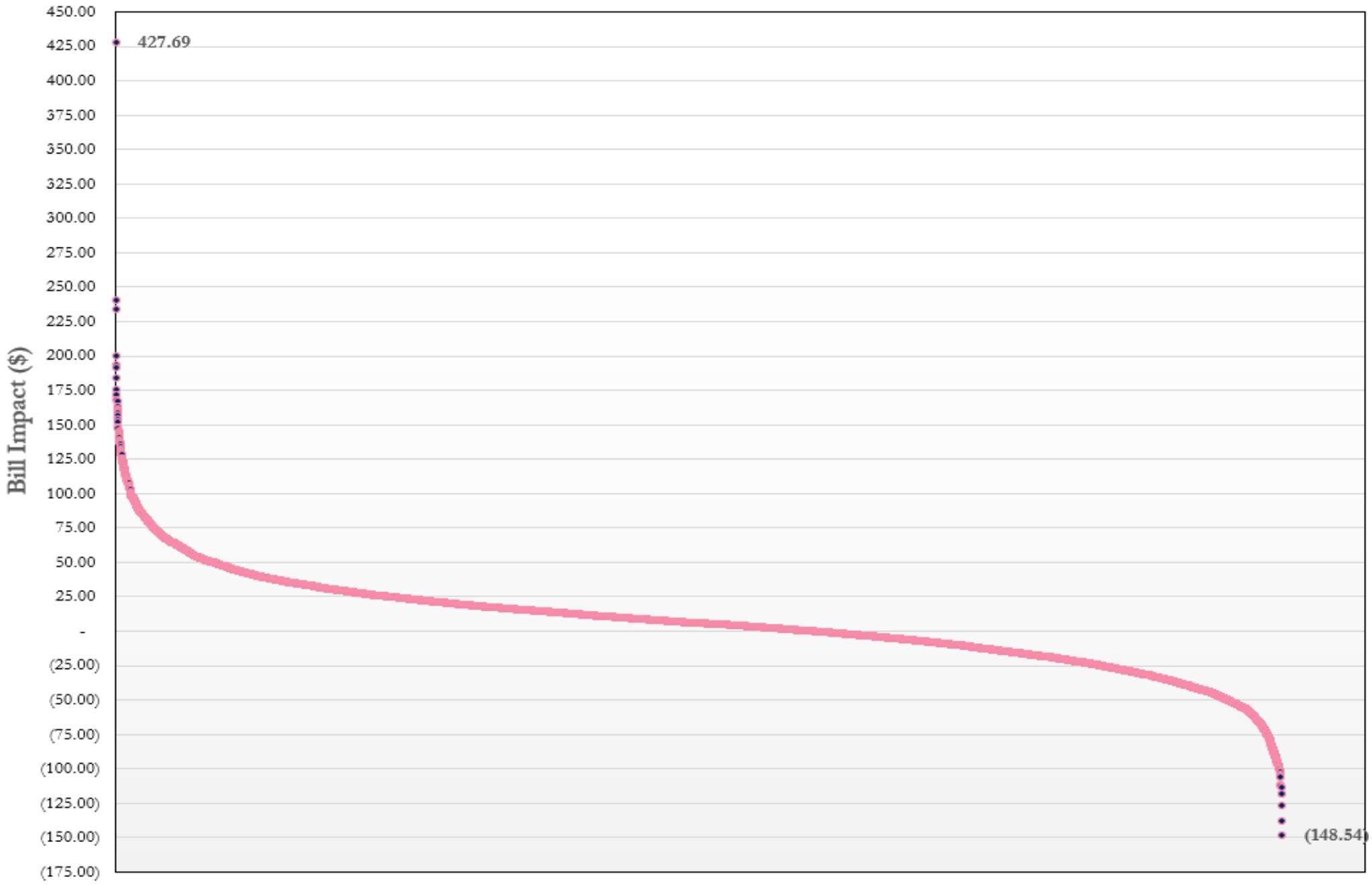
Capacity Payment for Firm Power where customer receives	Oct-May	Jun-Sep	
non-time of day retail electric service per kWh	$0.00178	$0.01299	
time of day retail electric service per on-peak kWh	$0.00514	$0.03722	
time of use retail electric service per on-peak kWh	$x.xxxxx	$x.xxxxx	N

Determination of Firm Power

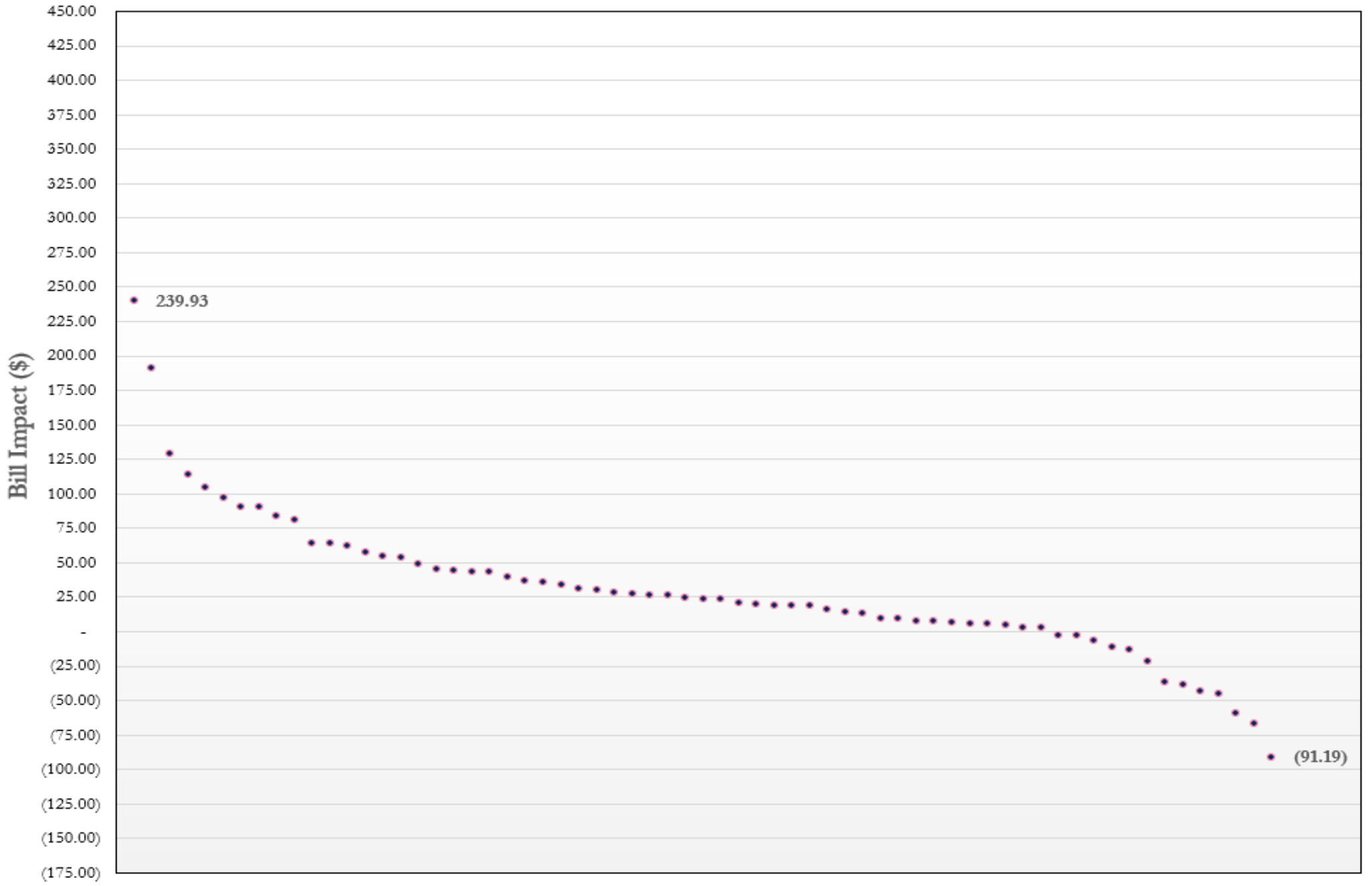
The customer will have supplied firm power if during the billing period an on peak capacity factor of at least 65% was achieved. The calculation of the on peak capacity factor will be as follows: the average on peak period metered capacity delivered to the Company for the on peak period of the billing period divided by the greatest 15 minute metered capacity delivered for the on peak period of the same billing period expressed in percent and rounded to the nearest whole percent. If the percent calculated is 65 or greater, capacity payment will be made. If the percent calculated is less than 65, capacity payment will not be made.

(Continued on Sheet No. 9-4.3)

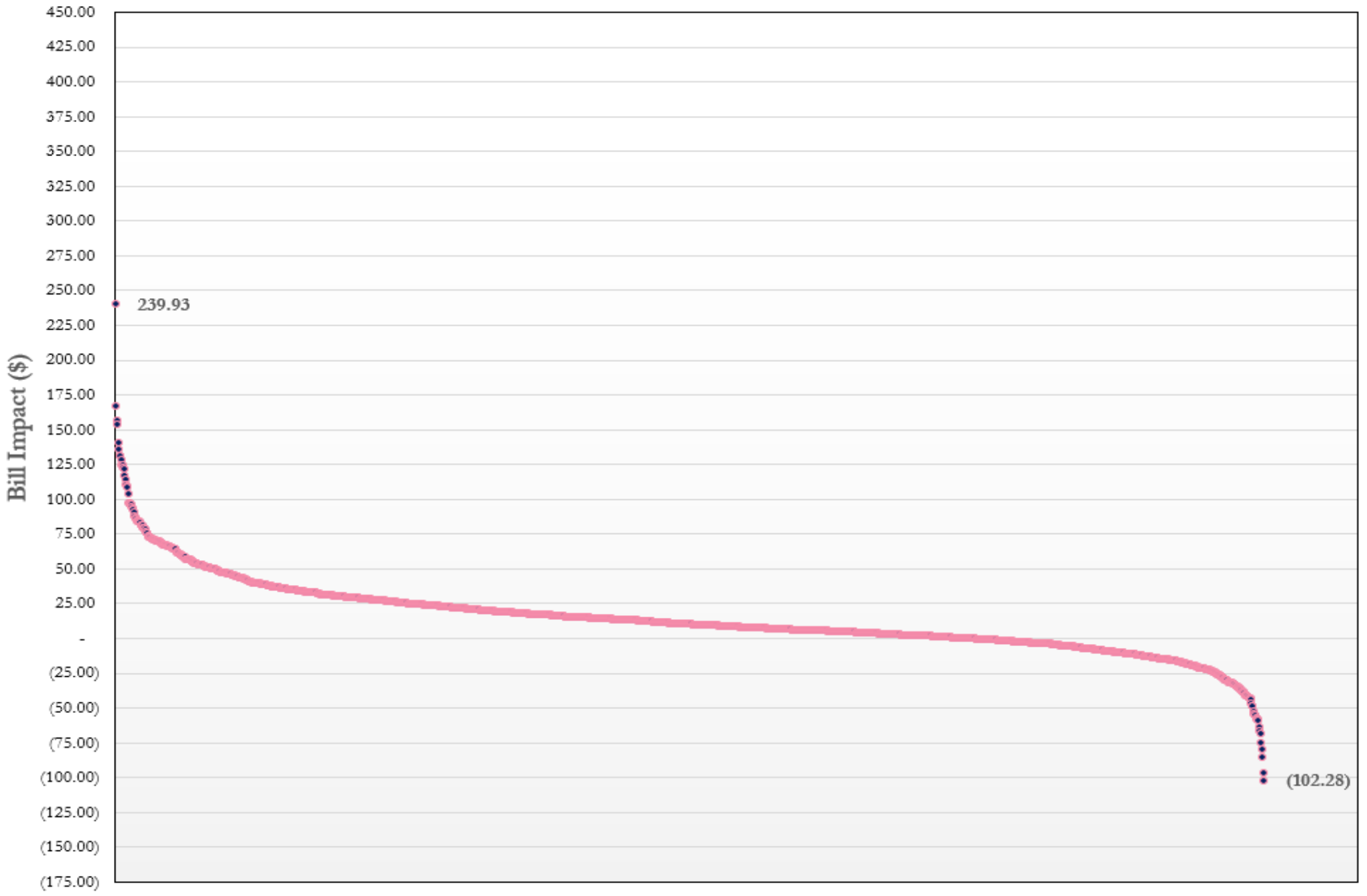
Annual Bill Impacts
All Customers



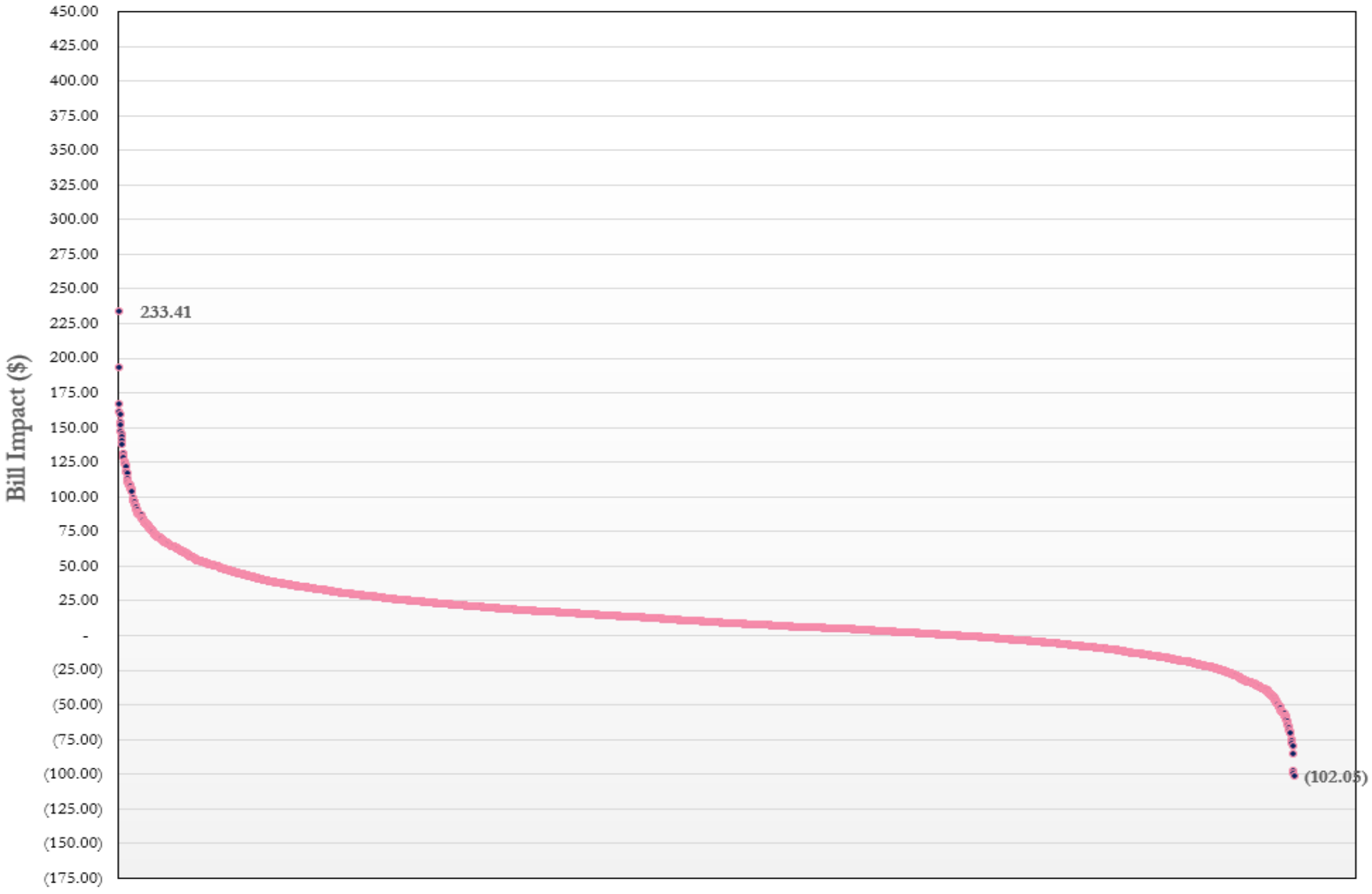
Annual Bill Impacts
Segment: Electric Vehicles



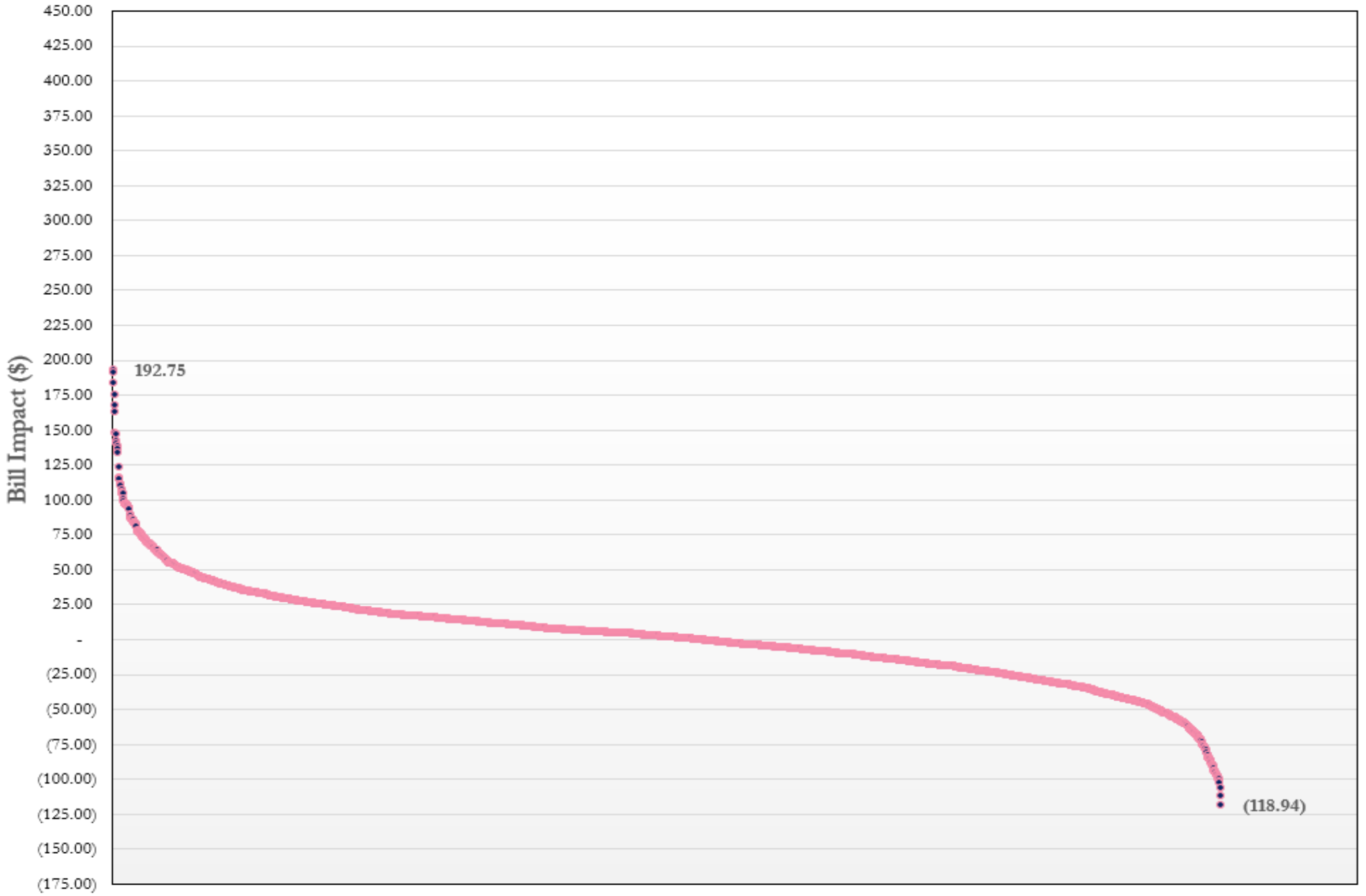
Annual Bill Impacts
Segment: Low-Income



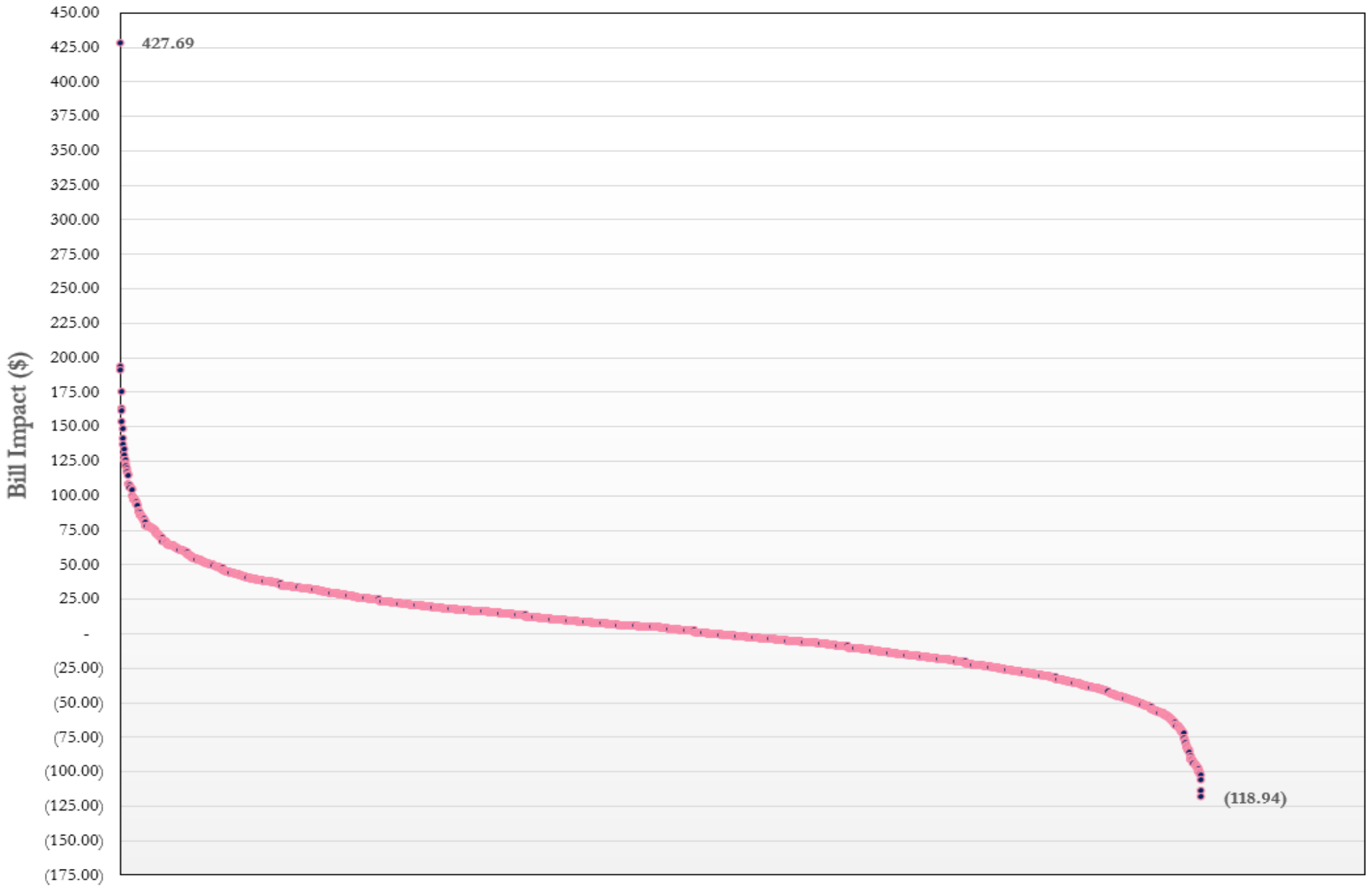
Annual Bill Impacts
Segment: Renters



Annual Bill Impacts
Segment: Seniors

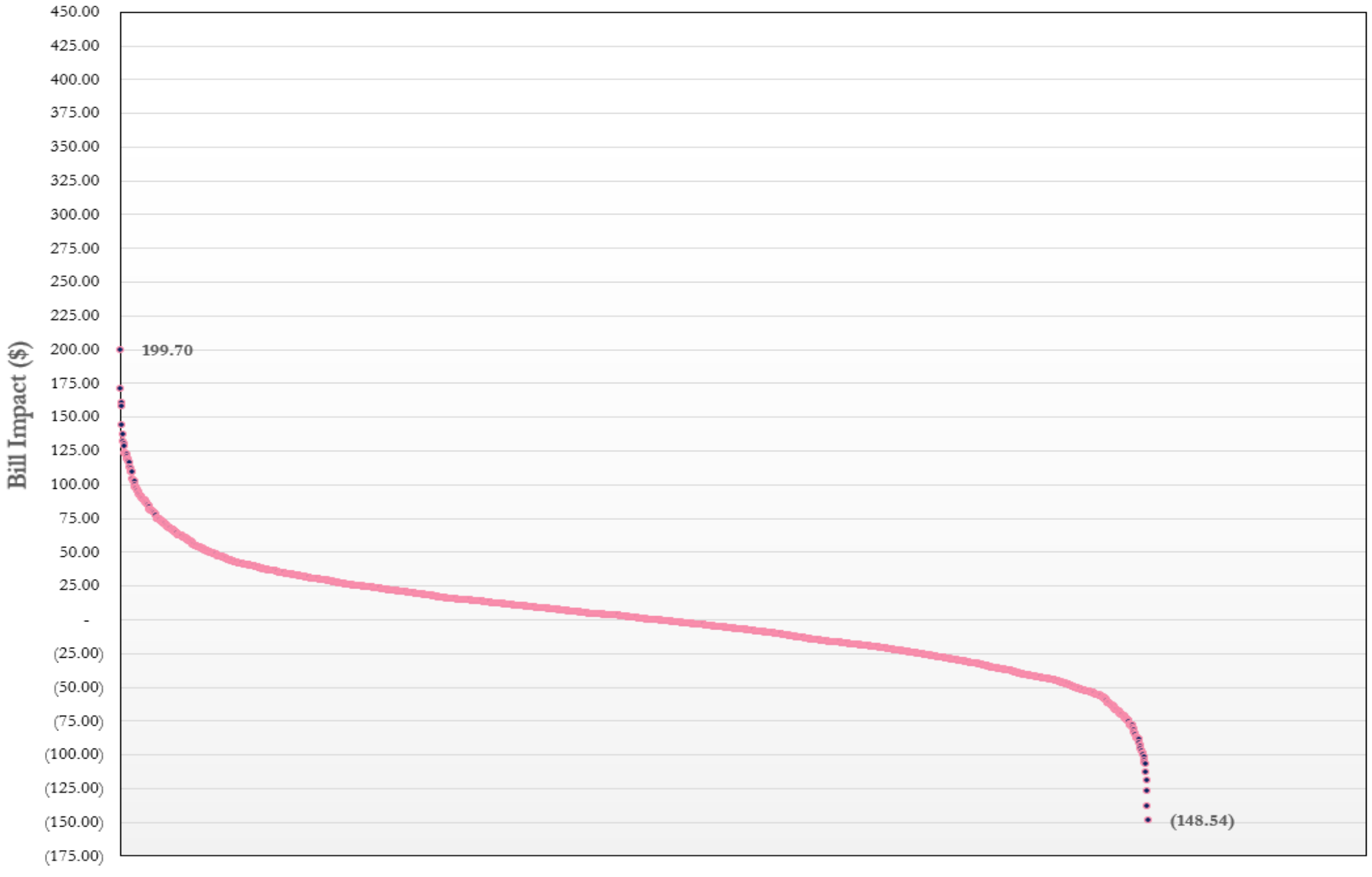


Annual Bill Impacts
Segment: Smart Thermostats

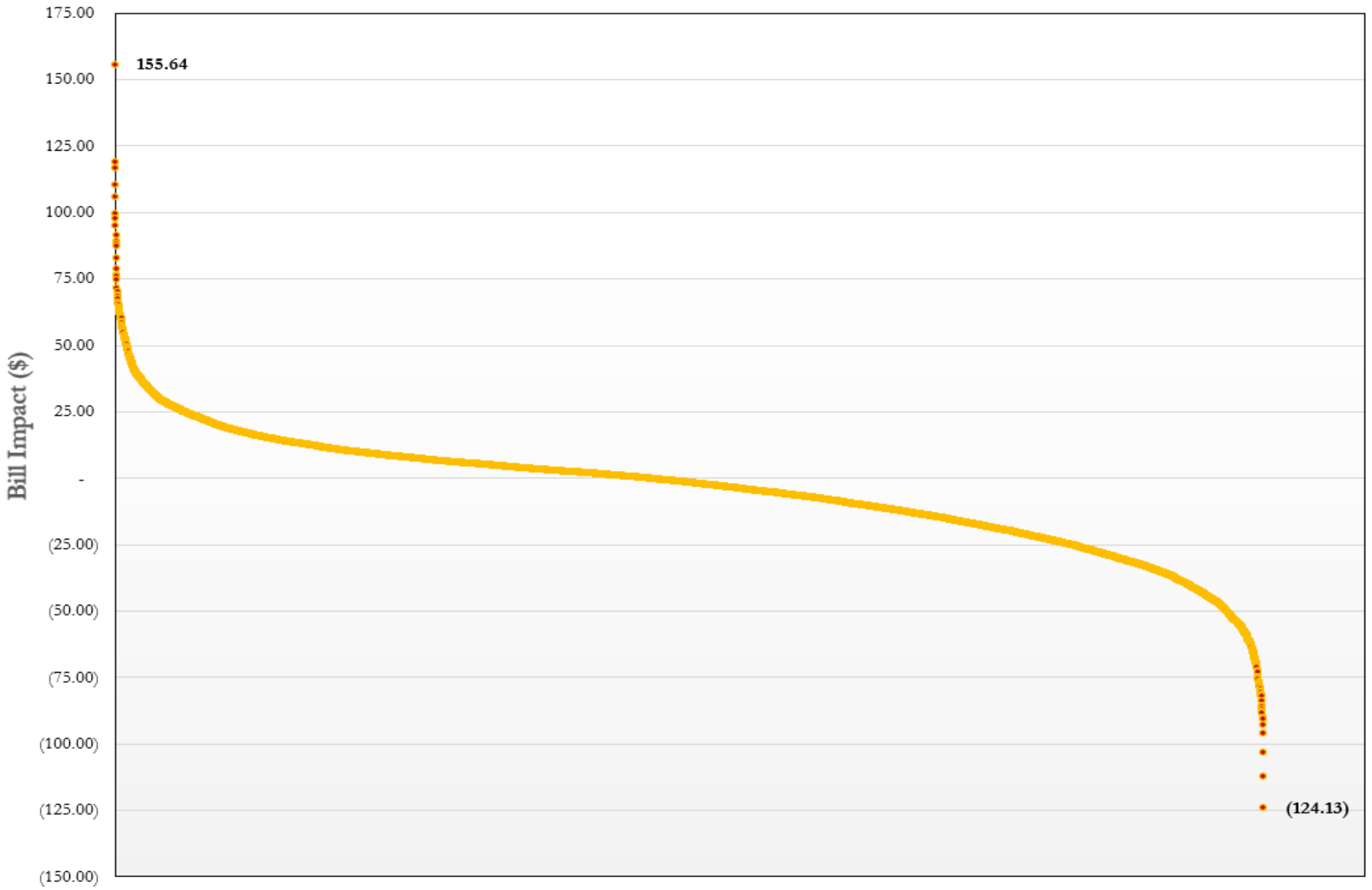


Annual Bill Impacts

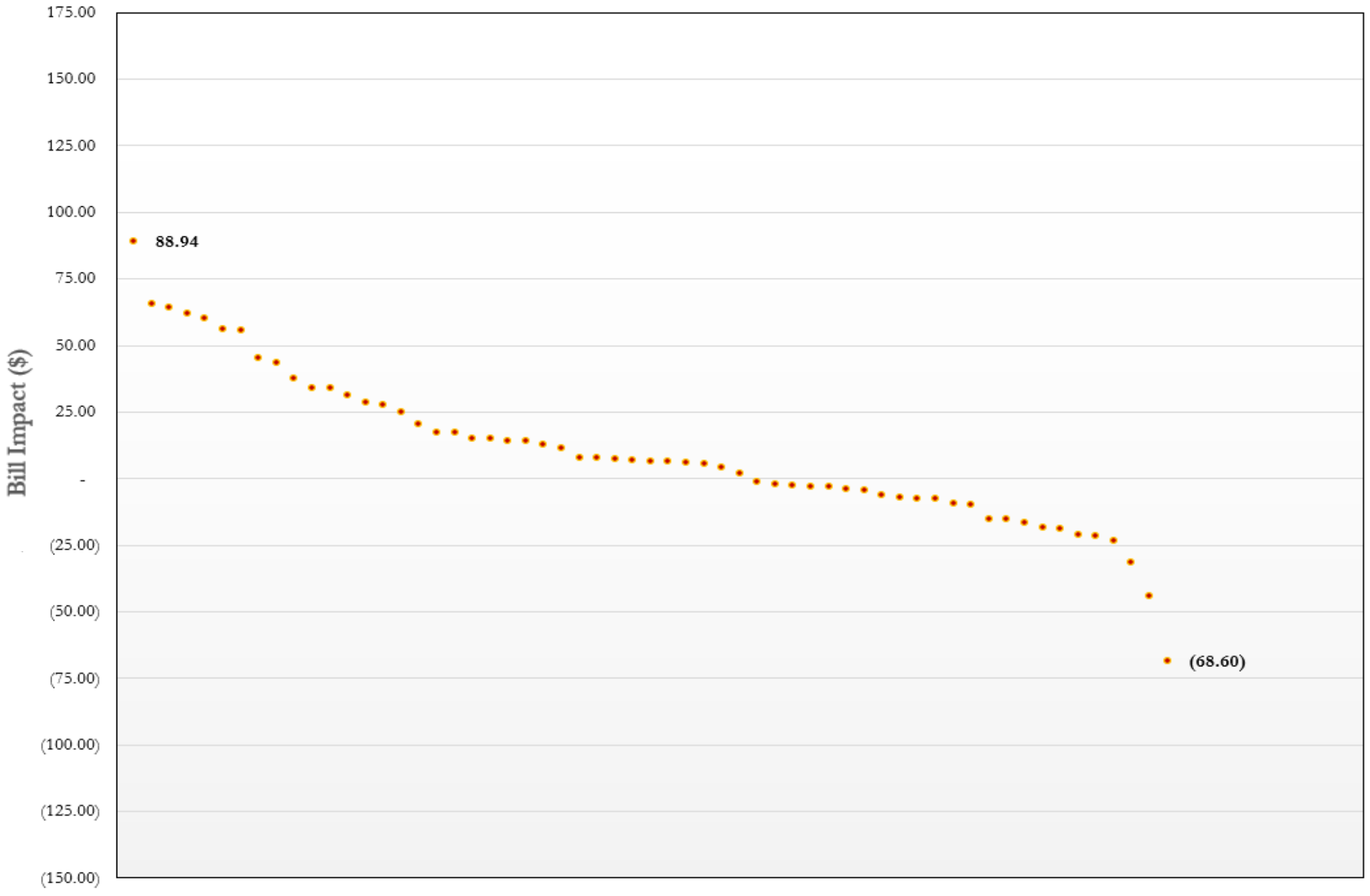
Segment: General Population (Customers not in any other segments)



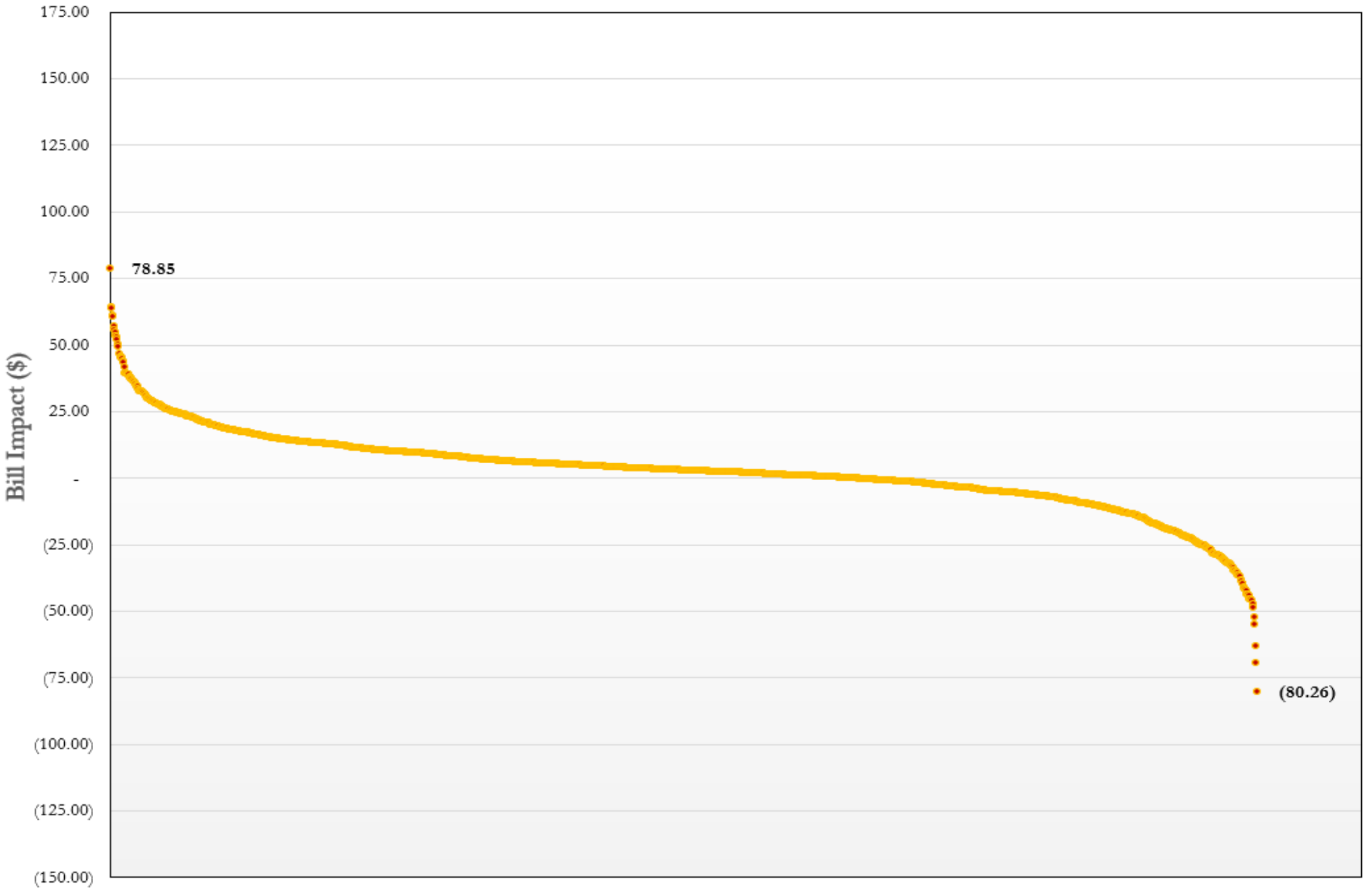
Annual Bill Impacts
All Customers



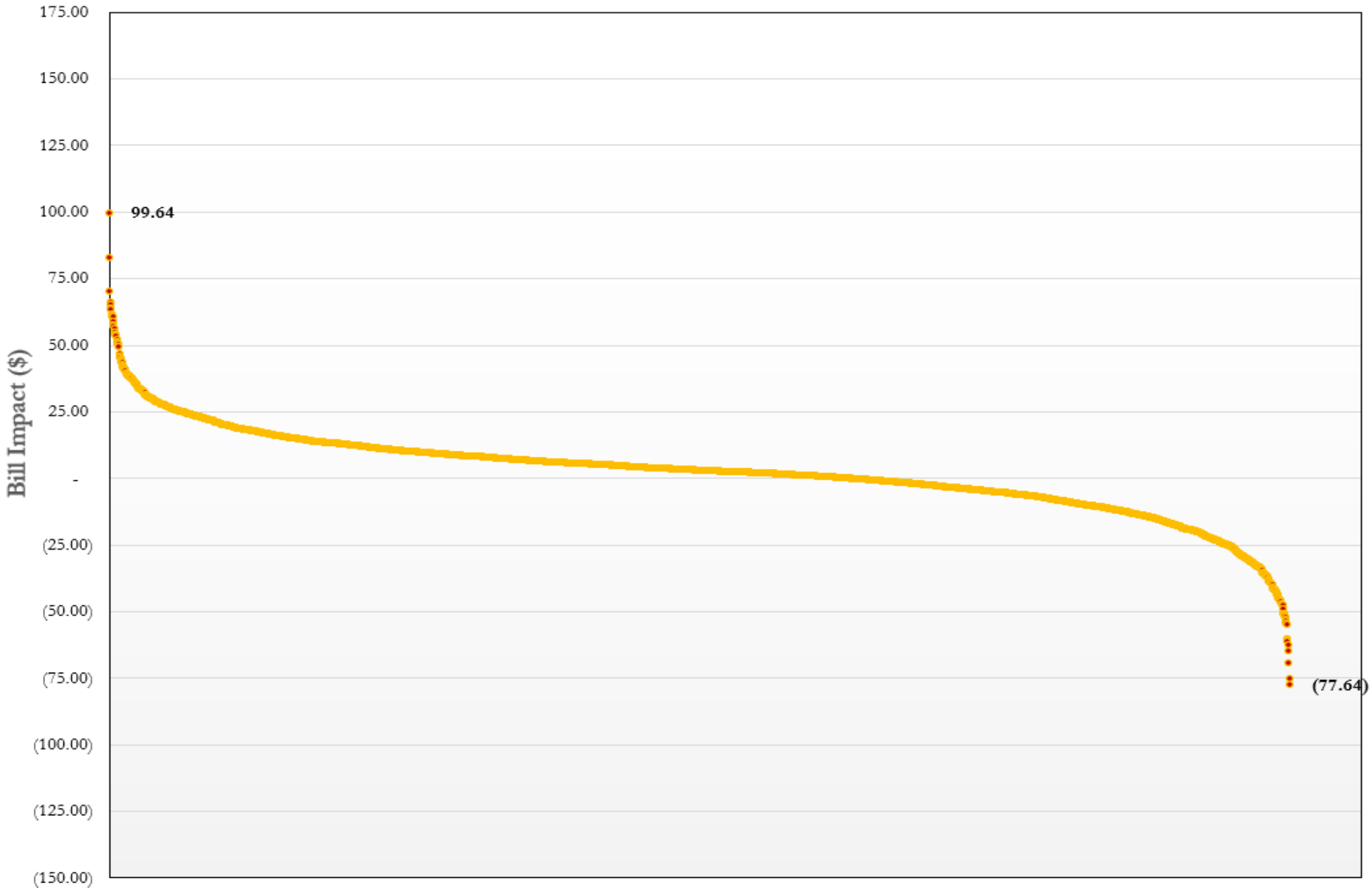
Annual Bill Impacts
Segment: Electric Vehicles



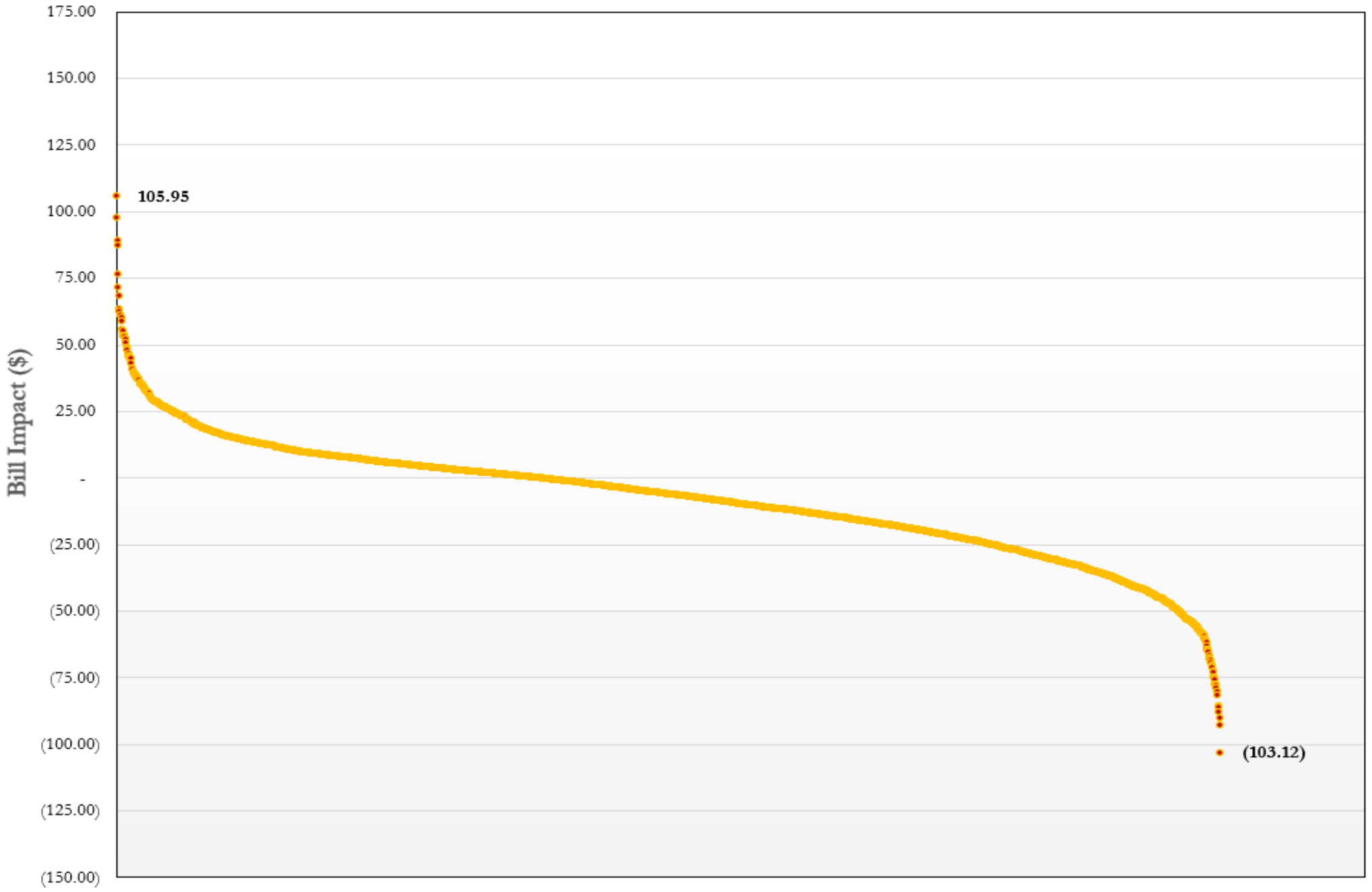
Annual Bill Impacts
Segment: Low-Income



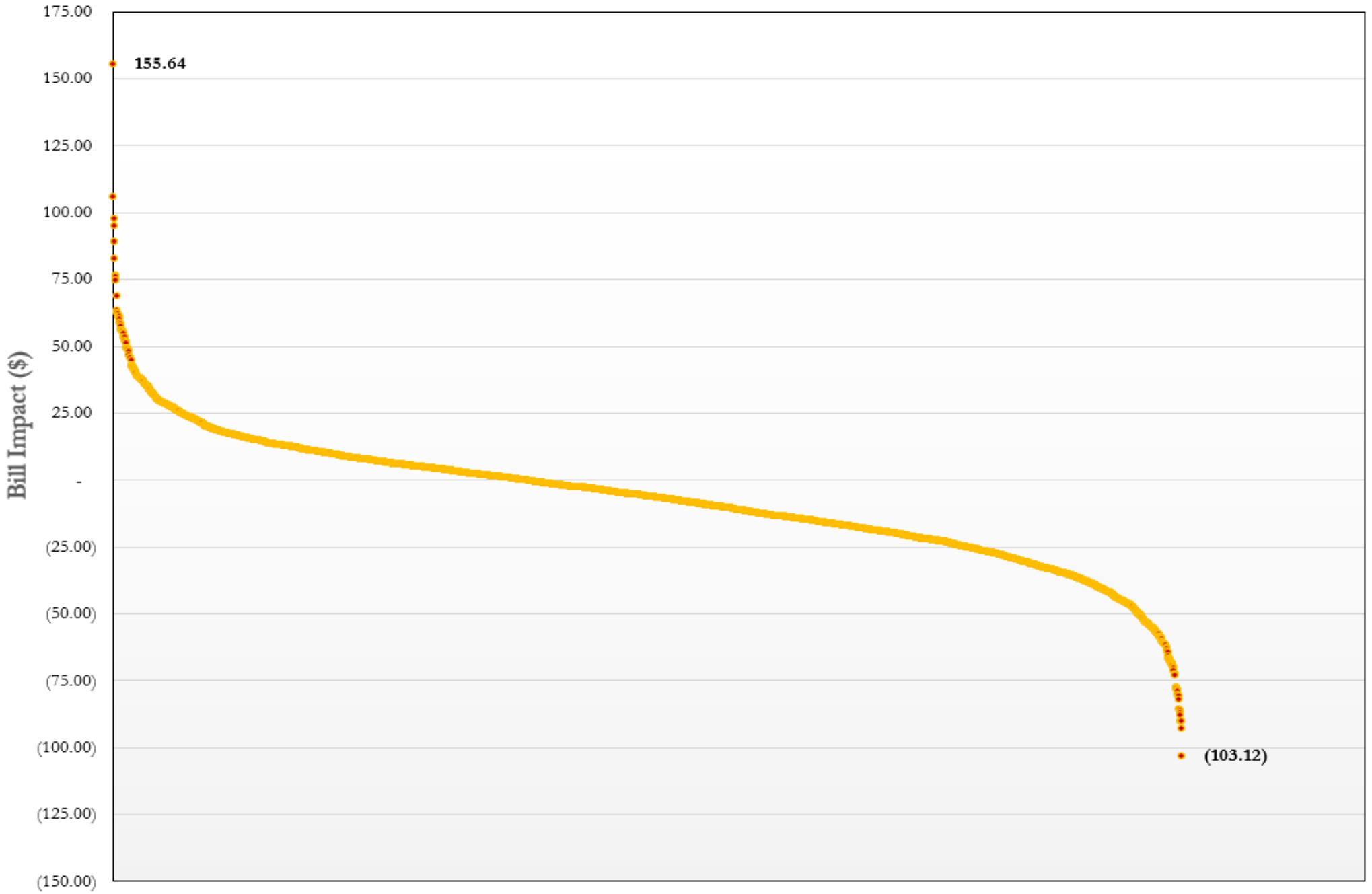
Annual Bill Impacts
Segment: Renters



Annual Bill Impacts
Segment: Seniors

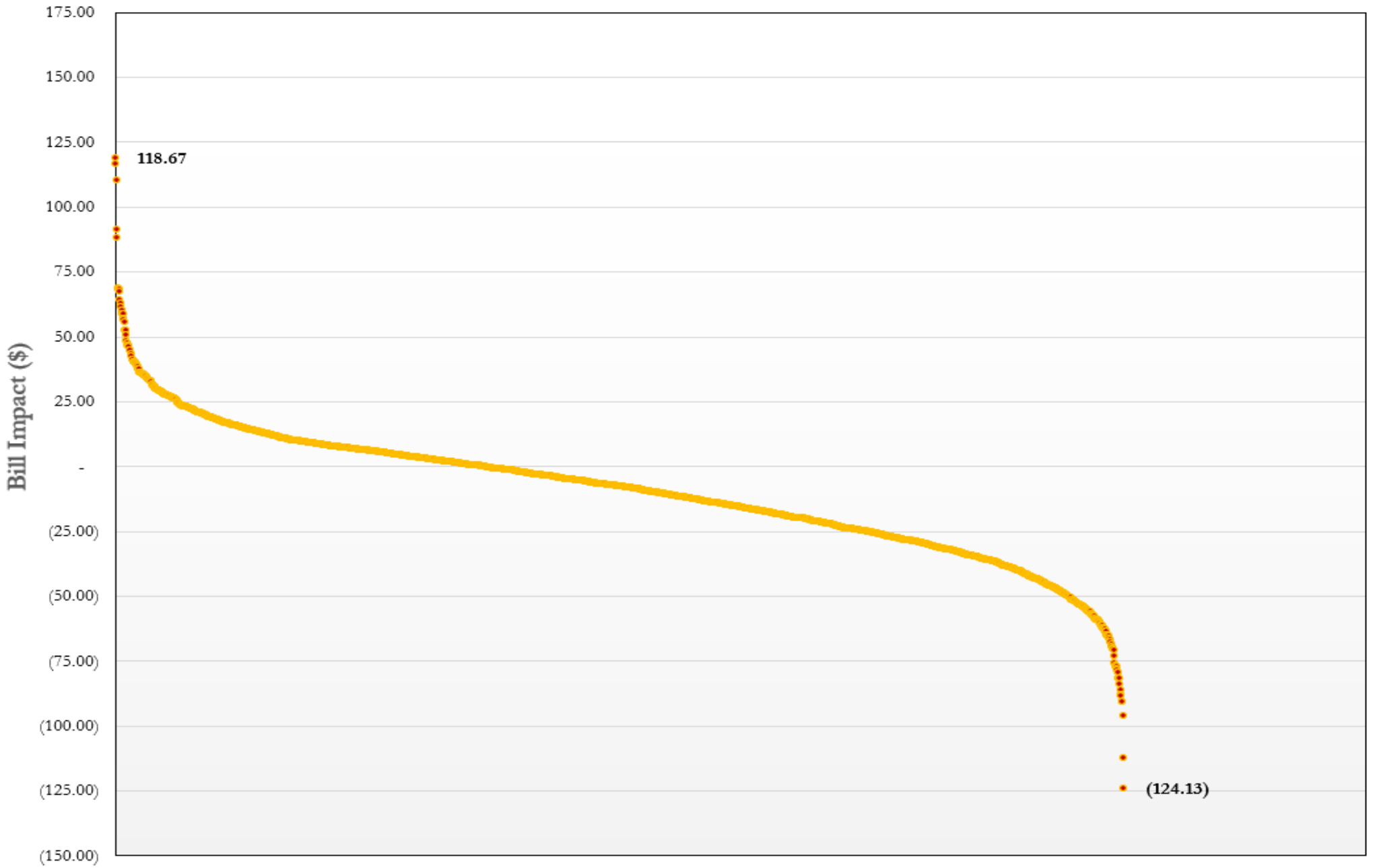


Annual Bill Impacts
Segment: Smart Thermostats

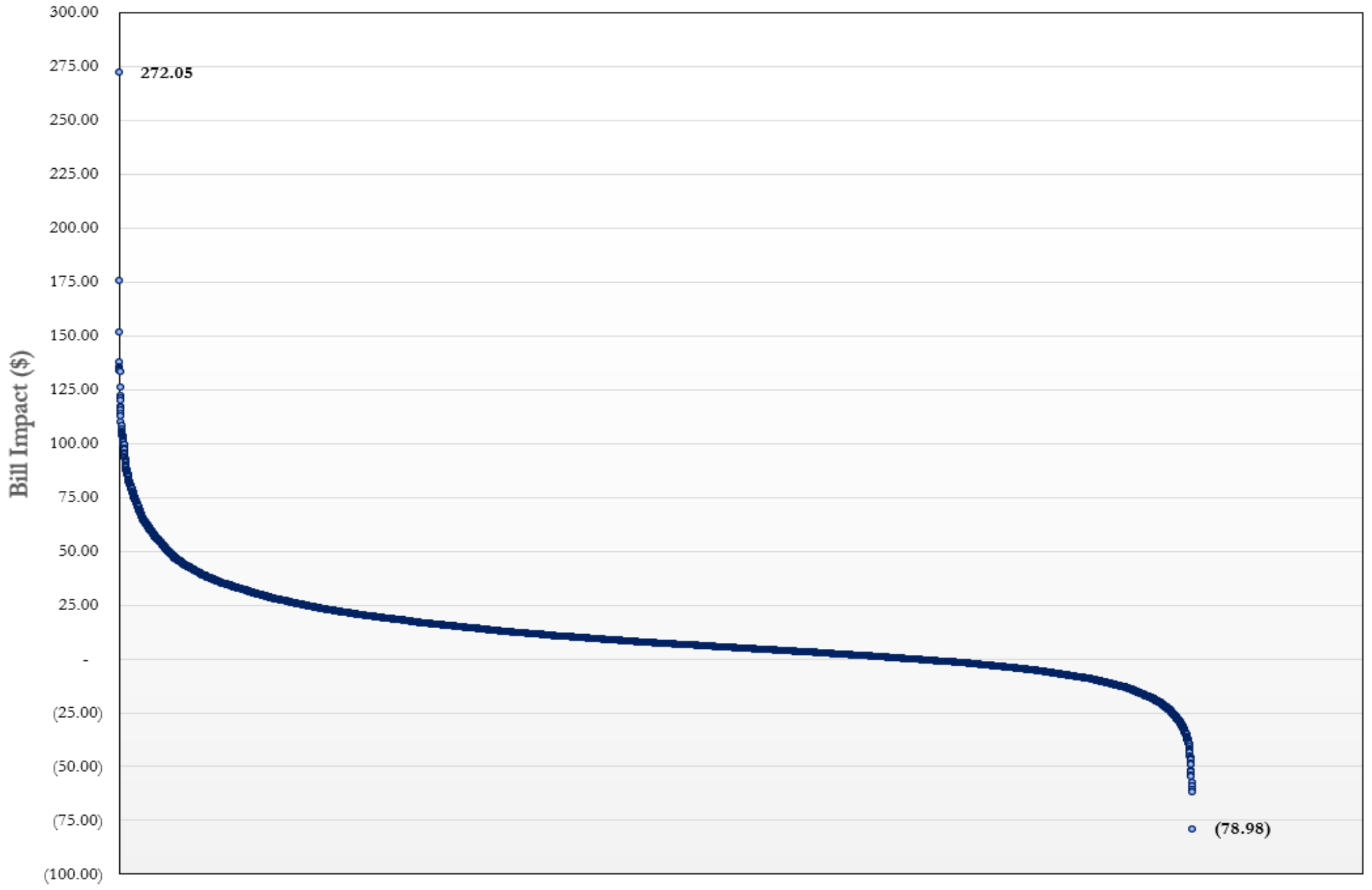


Annual Bill Impacts

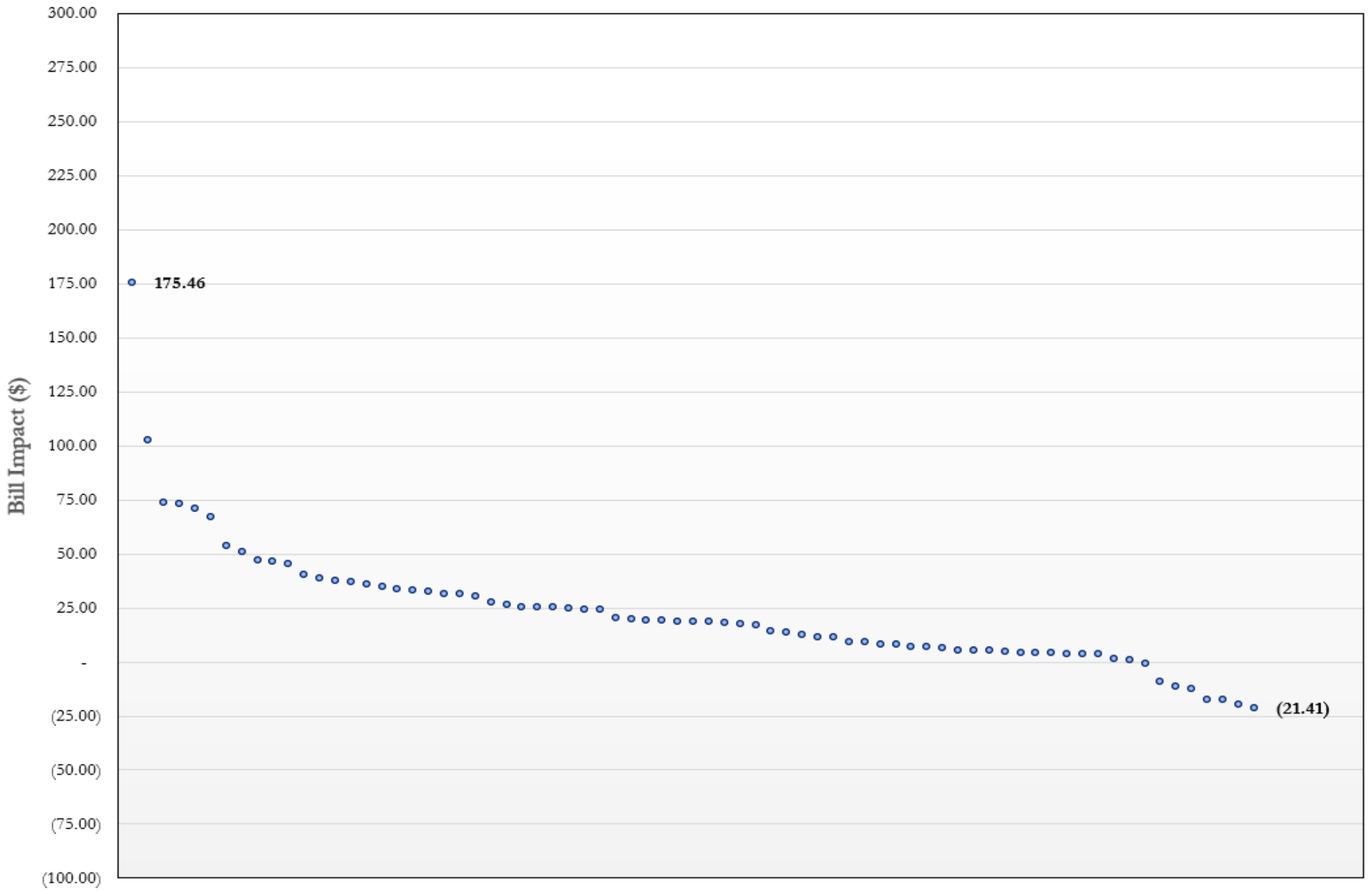
Segment: General Population (Customers not in any other segments)



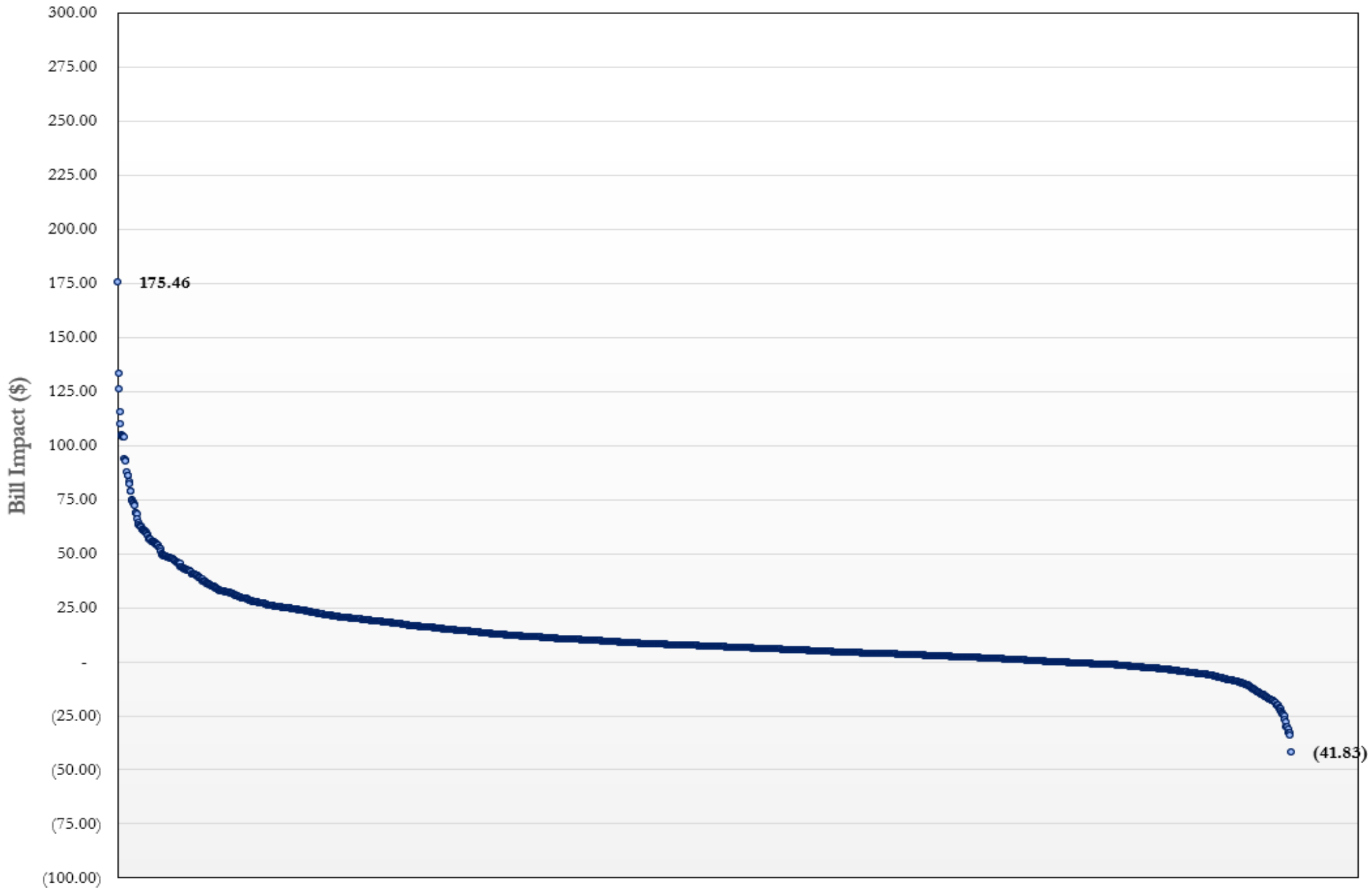
Annual Bill Impacts
All Customers



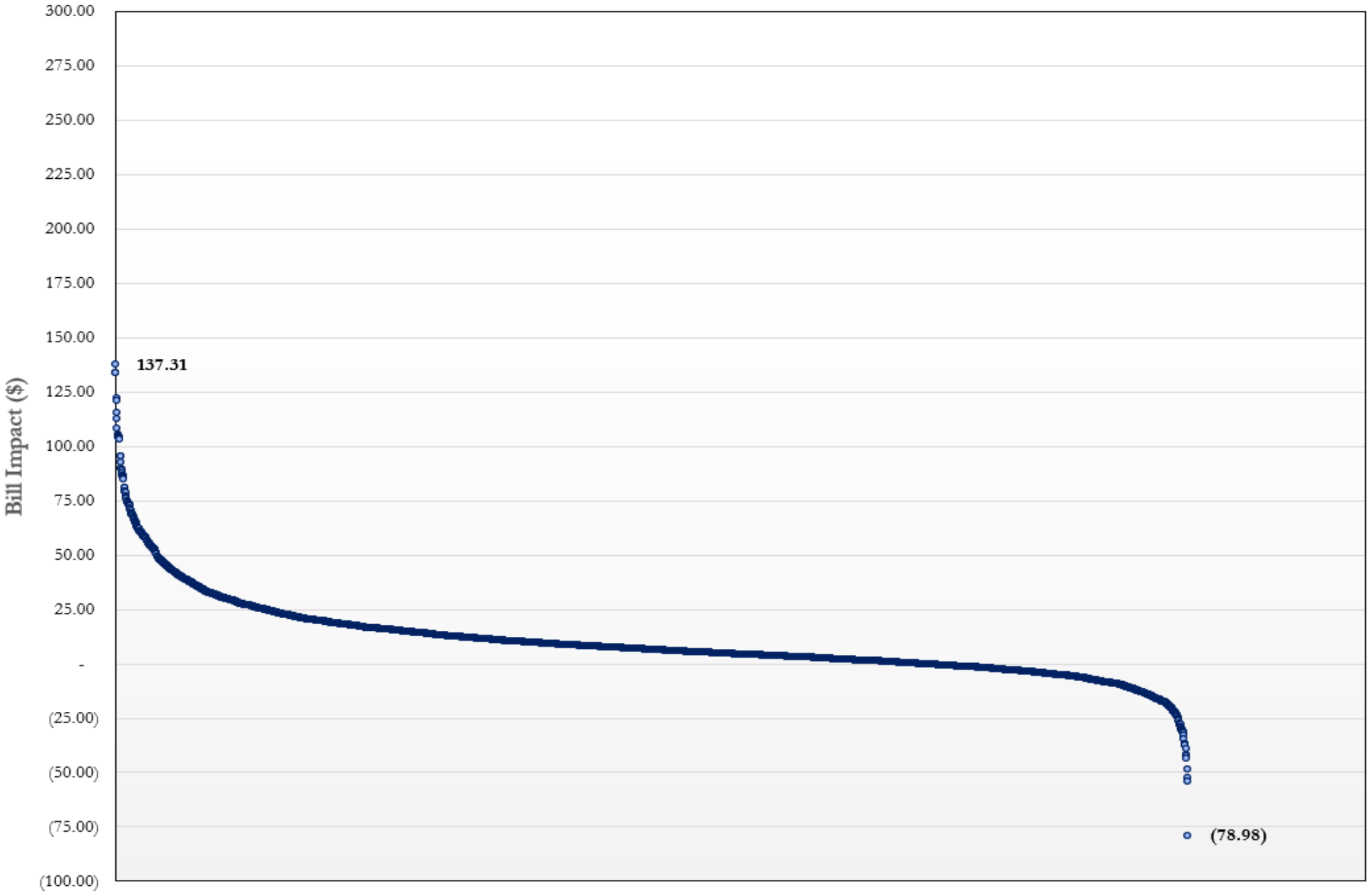
Annual Bill Impacts
Segment: Electric Vehicles



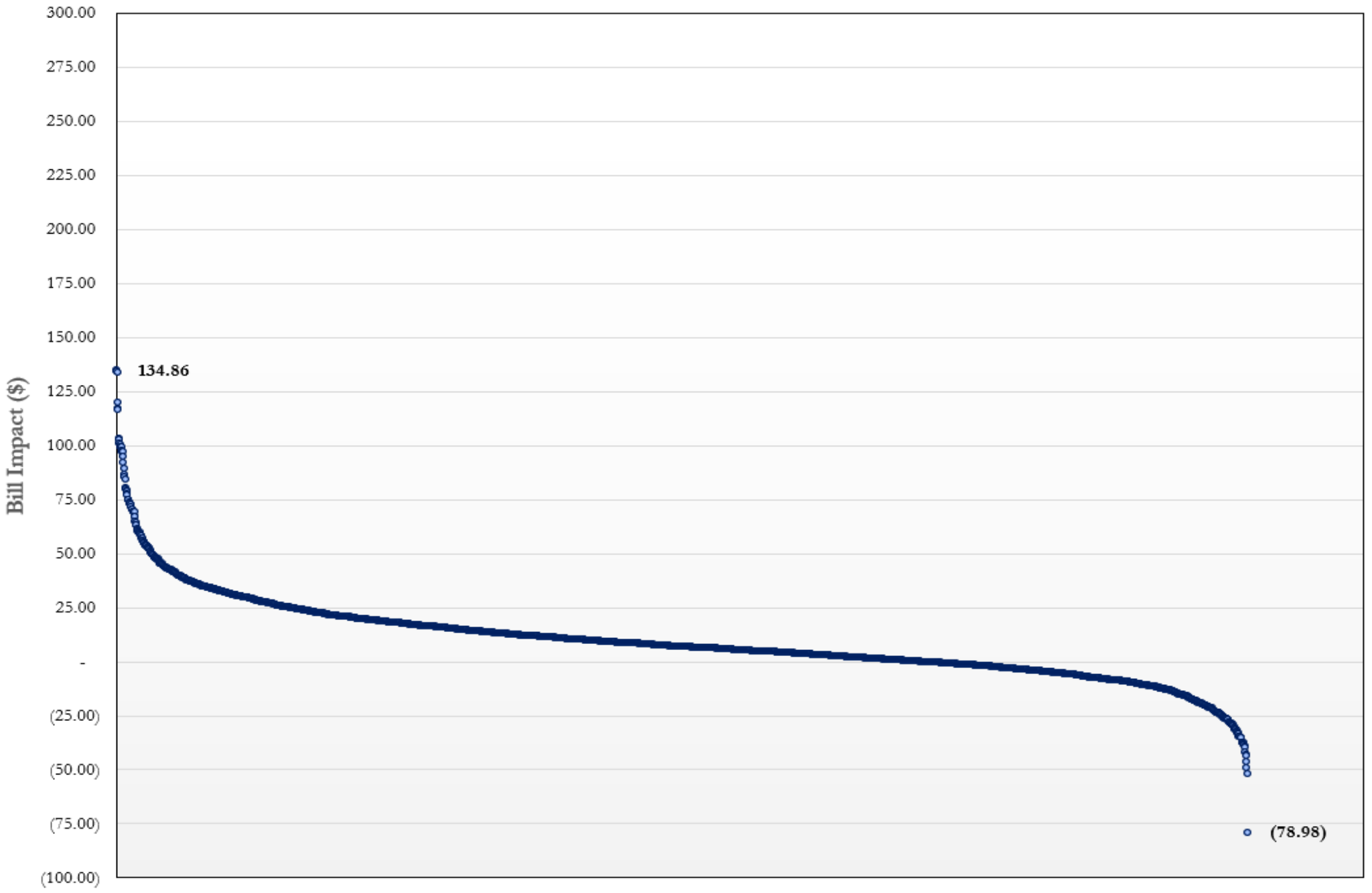
Annual Bill Impacts
Segment: Low-Income



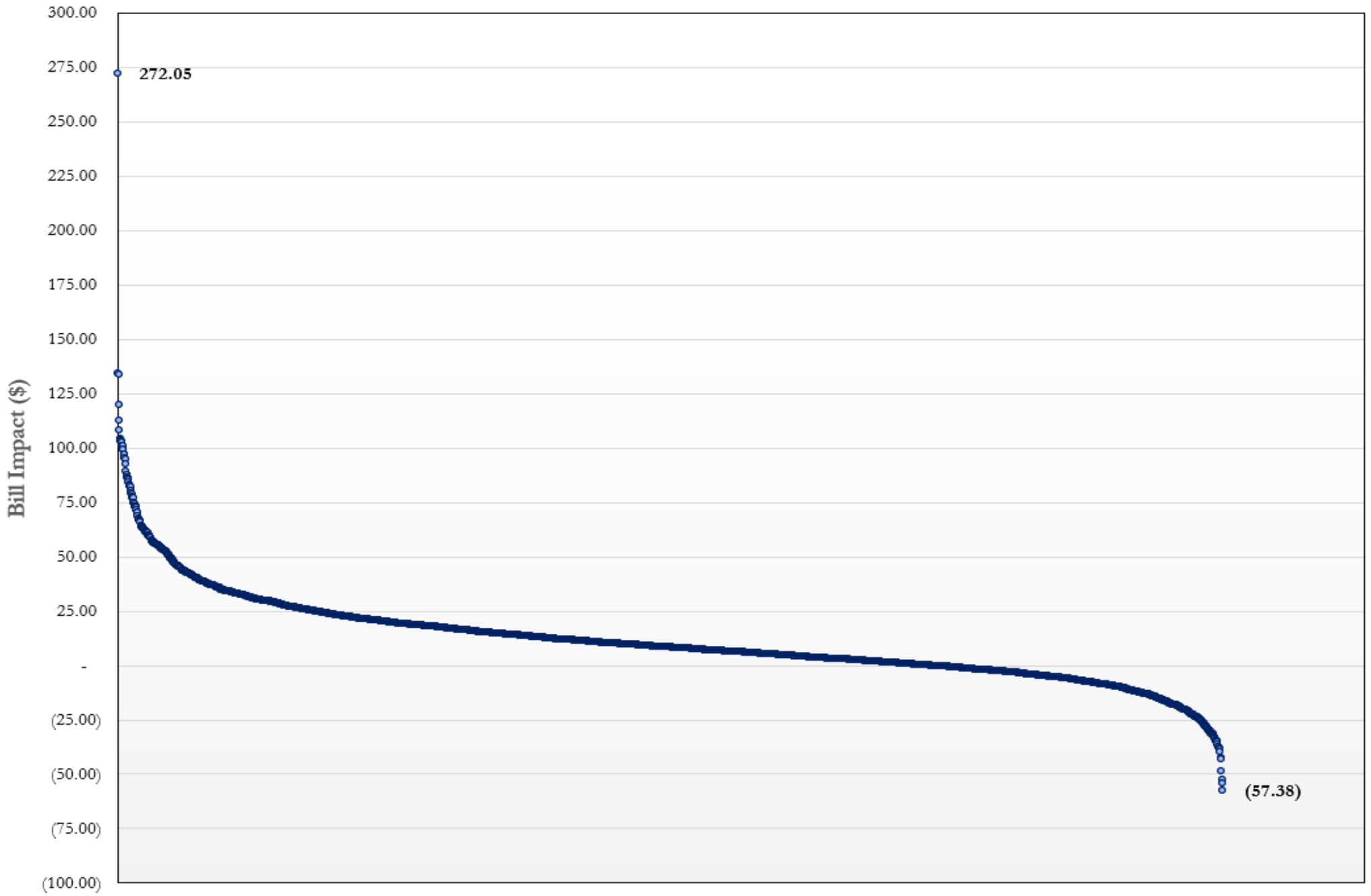
Annual Bill Impacts
Segment: Renters



Annual Bill Impacts
Segment: Seniors

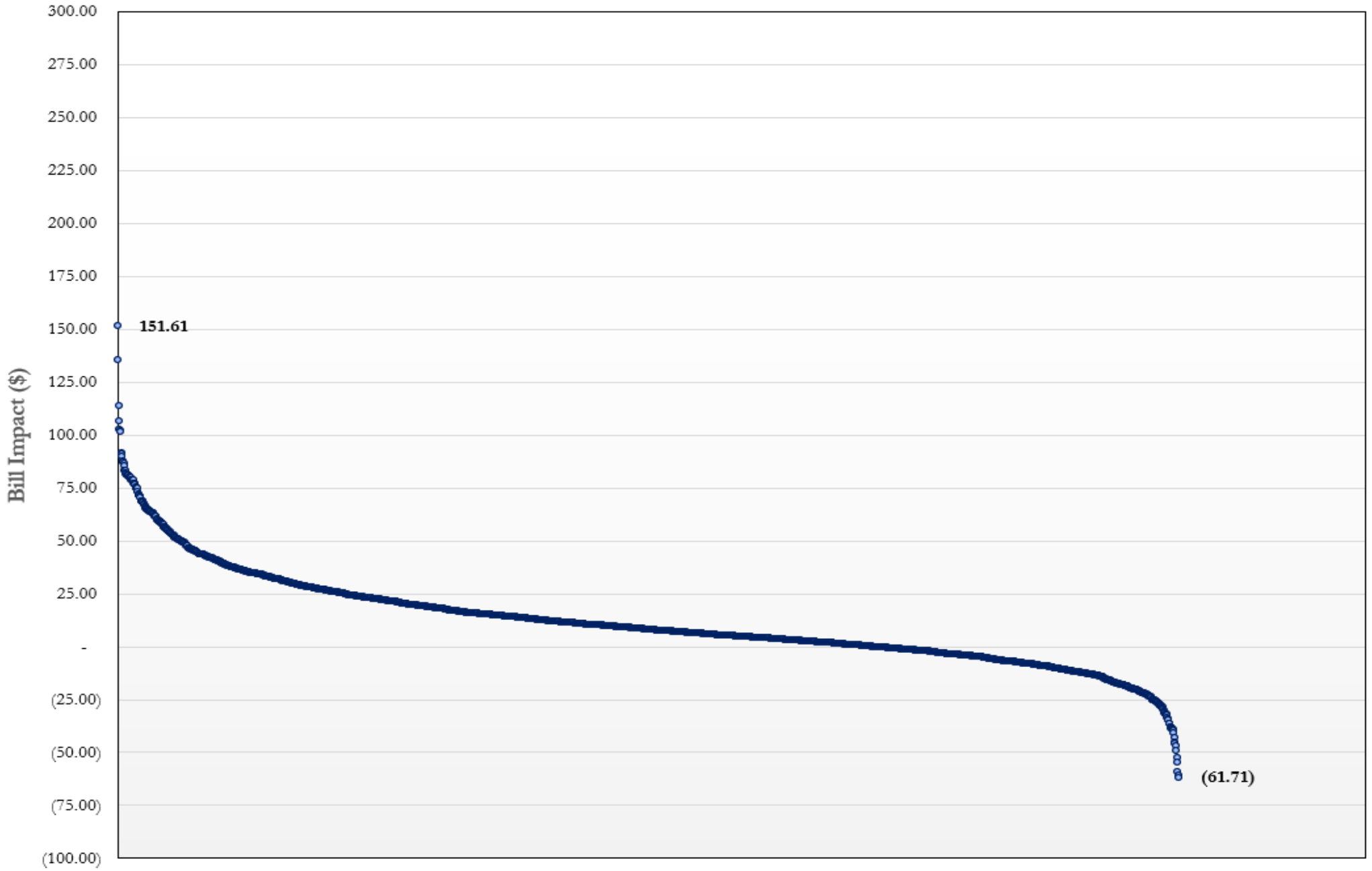


Annual Bill Impacts
Segment: Smart Thermostats



Annual Bill Impacts

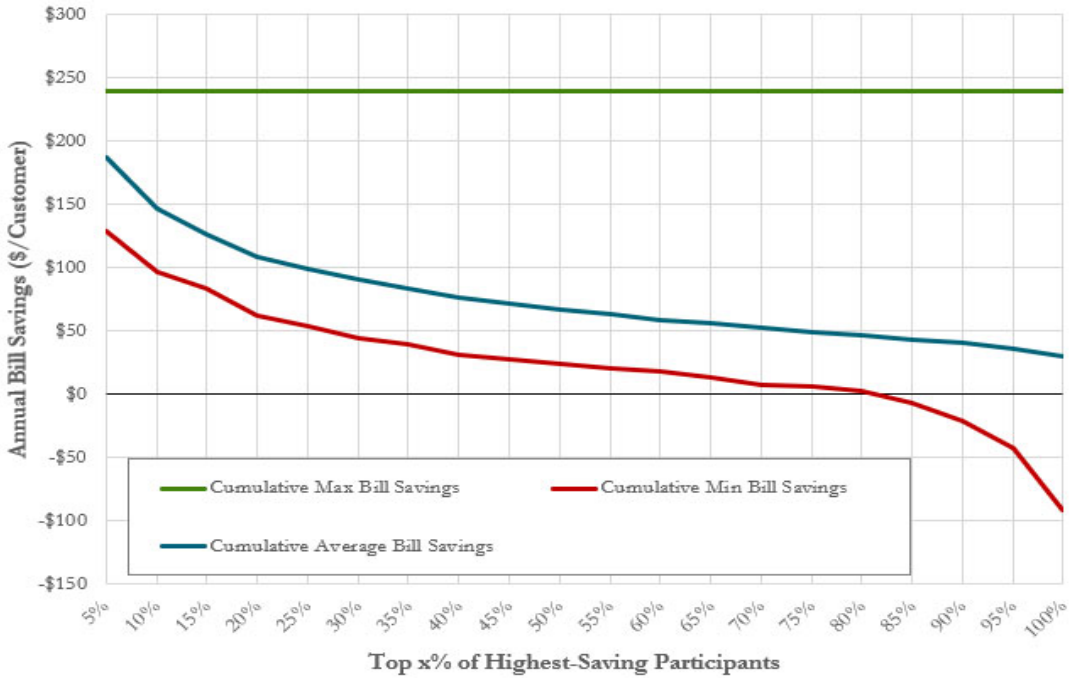
Segment: General Population (Customers not in any other segments)



Annual Bill Analysis

Segement: Electric Vehicles

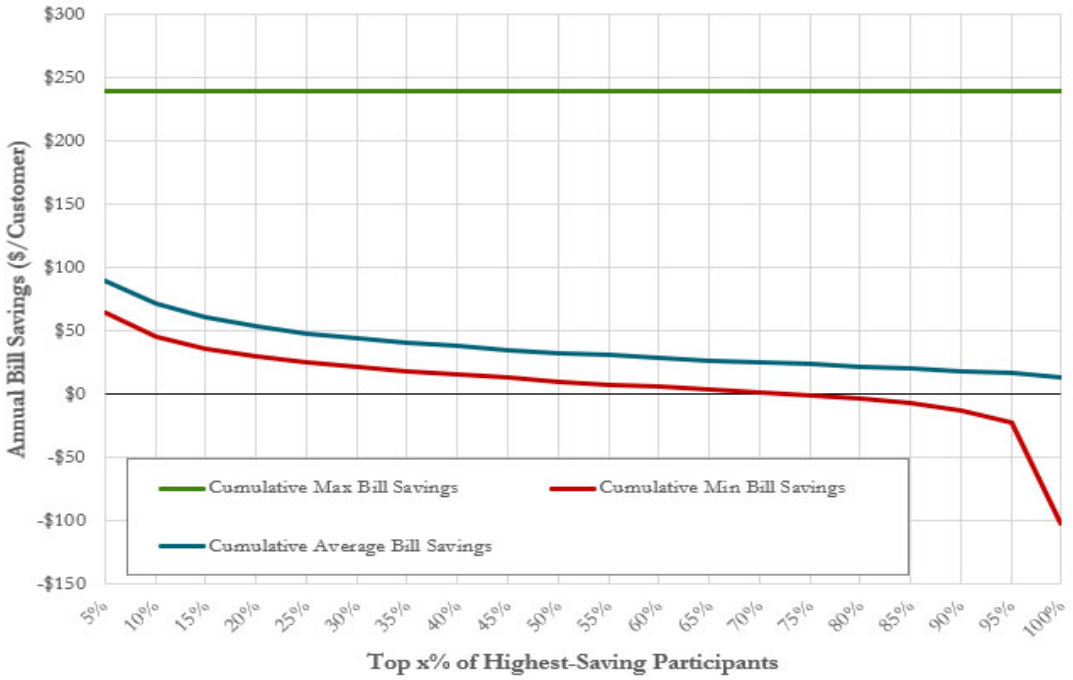
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	239.93	129.29	186.93	15.75%
10%	239.93	96.94	146.11	12.29%
15%	239.93	84.02	126.84	11.67%
20%	239.93	62.36	108.73	10.92%
25%	239.93	53.77	98.70	10.07%
30%	239.93	44.00	90.37	9.19%
35%	239.93	39.55	83.78	8.43%
40%	239.93	30.64	76.16	7.98%
45%	239.93	27.62	71.26	7.50%
50%	239.93	24.49	66.99	7.09%
55%	239.93	20.36	63.19	6.66%
60%	239.93	18.49	58.67	6.31%
65%	239.93	13.11	55.52	5.95%
70%	239.93	7.83	52.43	5.64%
75%	239.93	5.88	49.55	5.48%
80%	239.93	2.55	46.06	5.09%
85%	239.93	(6.78)	43.33	4.91%
90%	239.93	(21.68)	40.31	4.63%
95%	239.93	(43.13)	36.38	4.16%
100%	239.93	(91.19)	30.09	3.40%



Annual Bill Analysis

Segment: Low-Income

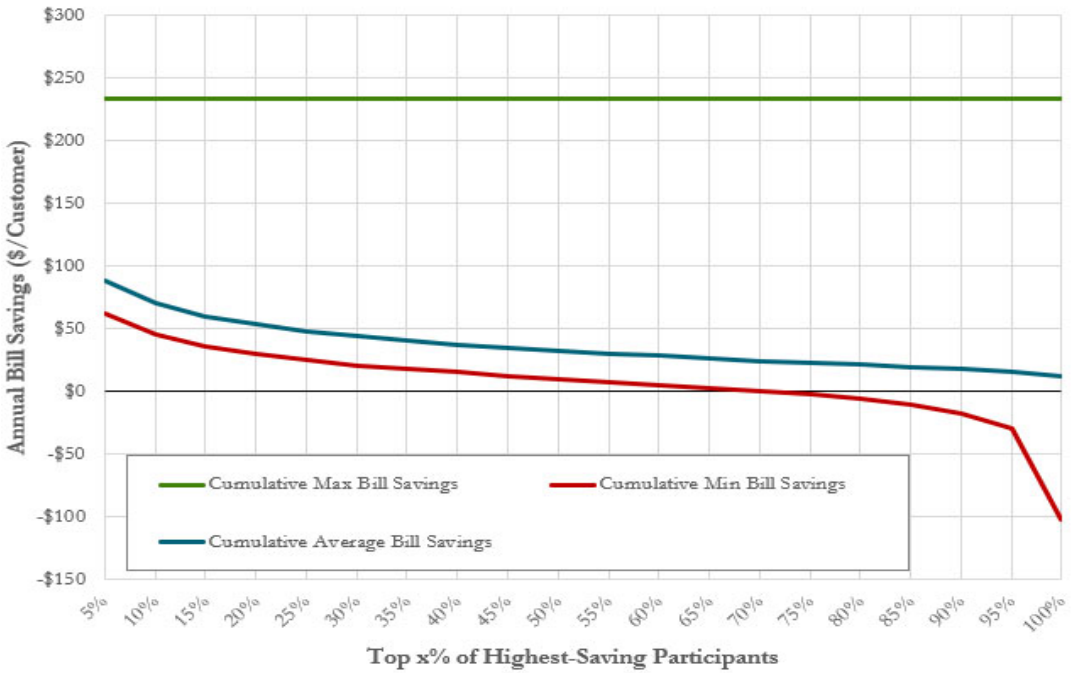
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	239.93	64.72	89.12	8.01%
10%	239.93	45.96	71.20	7.02%
15%	239.93	35.30	60.71	6.62%
20%	239.93	29.56	53.52	6.27%
25%	239.93	25.60	48.34	5.99%
30%	239.93	21.49	44.21	5.76%
35%	239.93	18.13	40.71	5.51%
40%	239.93	15.16	37.67	5.35%
45%	239.93	12.92	35.05	5.16%
50%	239.93	10.02	32.69	4.97%
55%	239.93	7.75	30.53	4.82%
60%	239.93	5.69	28.53	4.63%
65%	239.93	4.08	26.72	4.47%
70%	239.93	1.83	25.01	4.26%
75%	239.93	(0.51)	23.39	4.08%
80%	239.93	(3.48)	21.79	3.85%
85%	239.93	(7.62)	20.19	3.59%
90%	239.93	(13.46)	18.49	3.31%
95%	239.93	(22.48)	16.61	2.97%
100%	239.93	(102.28)	13.79	2.43%



Annual Bill Analysis

Segment: Renters

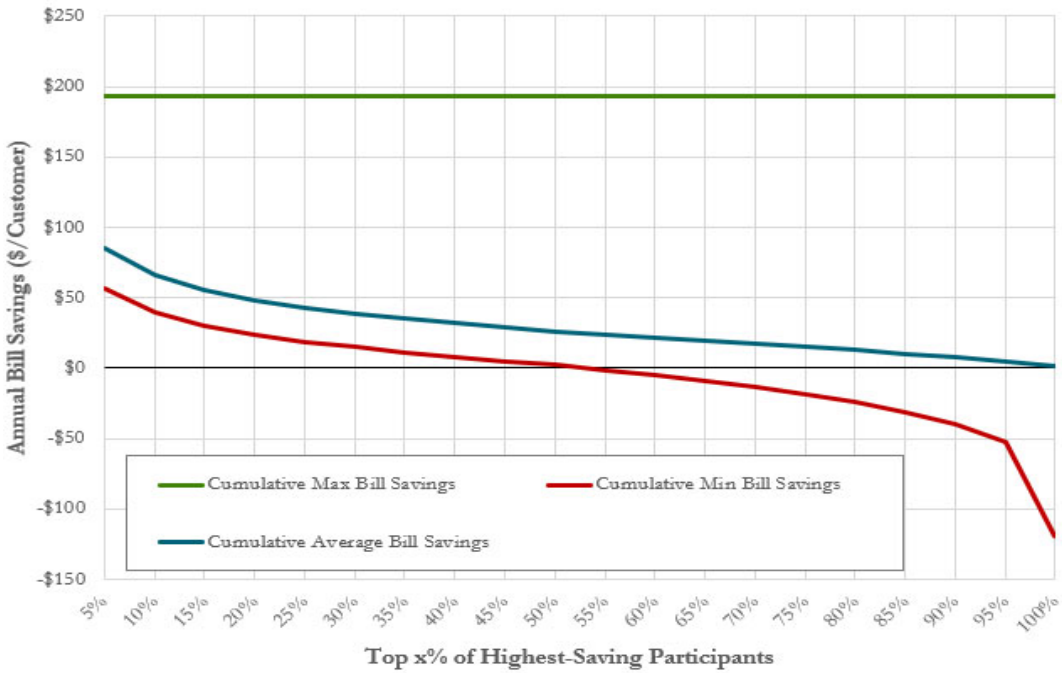
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	233.41	62.58	88.27	8.03%
10%	233.41	45.12	70.39	7.03%
15%	233.41	35.61	60.19	6.64%
20%	233.41	29.50	53.26	6.32%
25%	233.41	24.66	48.02	5.96%
30%	233.41	20.84	43.77	5.69%
35%	233.41	17.65	40.27	5.44%
40%	233.41	15.02	37.29	5.24%
45%	233.41	12.51	34.65	5.03%
50%	233.41	9.58	32.29	4.85%
55%	233.41	7.36	30.13	4.67%
60%	233.41	5.16	28.12	4.48%
65%	233.41	2.92	26.28	4.29%
70%	233.41	0.28	24.52	4.09%
75%	233.41	(2.54)	22.81	3.87%
80%	233.41	(6.24)	21.12	3.60%
85%	233.41	(10.83)	19.38	3.33%
90%	233.41	(18.08)	17.50	3.01%
95%	233.41	(29.13)	15.39	2.64%
100%	233.41	(102.05)	12.38	2.09%



Annual Bill Analysis

Segment: Seniors

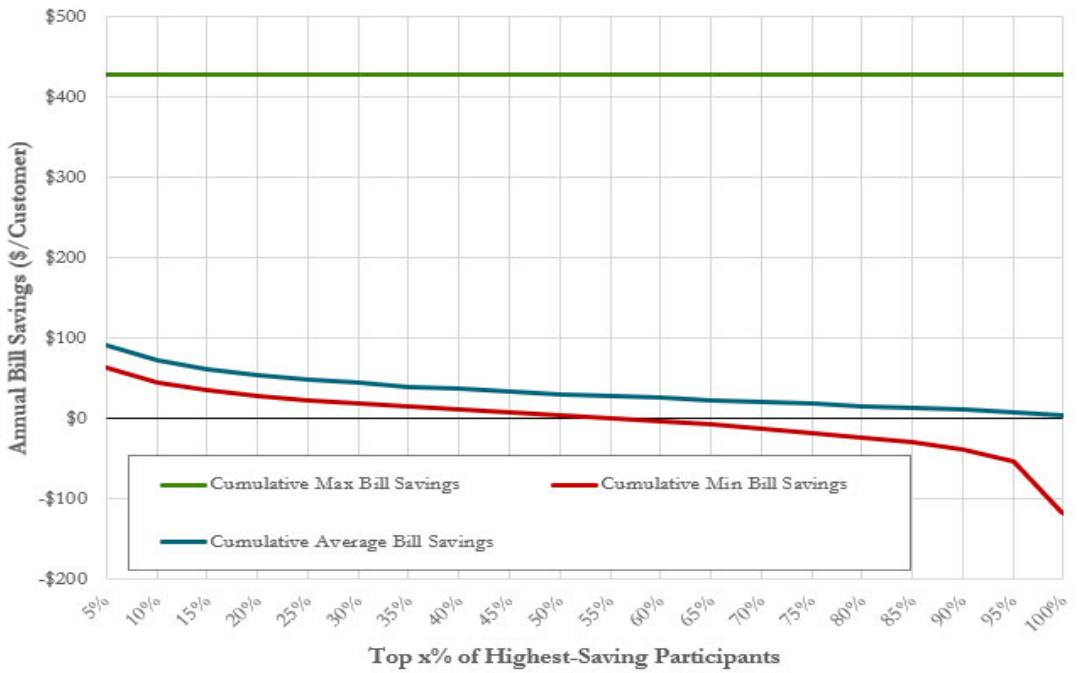
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	192.75	56.05	85.46	7.25%
10%	192.75	39.24	66.03	6.42%
15%	192.75	30.13	55.51	5.82%
20%	192.75	24.00	48.31	5.34%
25%	192.75	18.33	42.84	4.90%
30%	192.75	14.79	38.49	4.59%
35%	192.75	11.20	34.84	4.28%
40%	192.75	7.51	31.67	4.00%
45%	192.75	5.02	28.82	3.73%
50%	192.75	1.99	26.29	3.45%
55%	192.75	(1.79)	23.93	3.20%
60%	192.75	(5.30)	21.62	2.93%
65%	192.75	(9.30)	19.40	2.63%
70%	192.75	(13.85)	17.18	2.34%
75%	192.75	(18.59)	14.94	2.04%
80%	192.75	(24.25)	12.68	1.73%
85%	192.75	(31.01)	10.30	1.39%
90%	192.75	(39.62)	7.81	1.05%
95%	192.75	(52.94)	5.01	0.67%
100%	192.75	(118.94)	1.21	0.16%



Annual Bill Analysis

Segment: Smart Thermostats

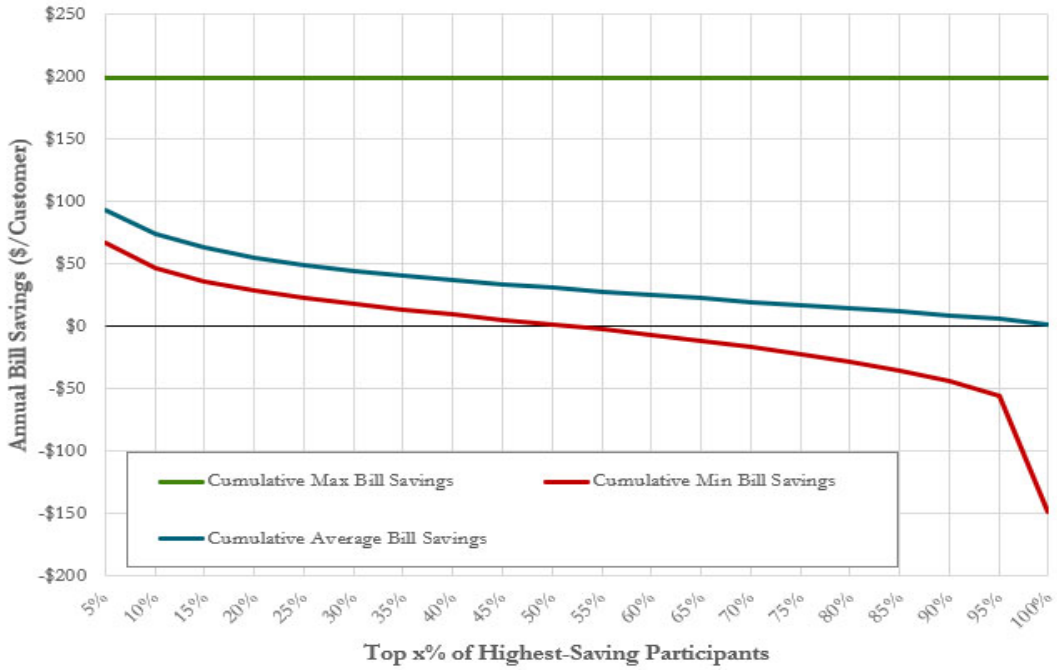
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	427.69	63.53	91.40	7.58%
10%	427.69	45.06	72.33	6.47%
15%	427.69	35.30	61.39	5.85%
20%	427.69	28.84	54.13	5.47%
25%	427.69	23.11	48.40	5.12%
30%	427.69	18.20	43.77	4.75%
35%	427.69	14.67	39.88	4.46%
40%	427.69	10.75	36.47	4.17%
45%	427.69	7.03	33.40	3.90%
50%	427.69	4.06	30.59	3.63%
55%	427.69	0.08	27.98	3.39%
60%	427.69	(3.83)	25.49	3.12%
65%	427.69	(7.57)	23.07	2.84%
70%	427.69	(12.58)	20.71	2.57%
75%	427.69	(17.81)	18.31	2.29%
80%	427.69	(23.17)	15.89	1.99%
85%	427.69	(30.33)	13.38	1.67%
90%	427.69	(39.50)	10.71	1.34%
95%	427.69	(53.04)	7.75	0.96%
100%	427.69	(118.94)	3.79	0.46%



Annual Bill Analysis

Segment: General Population (Customers not in any other segments)

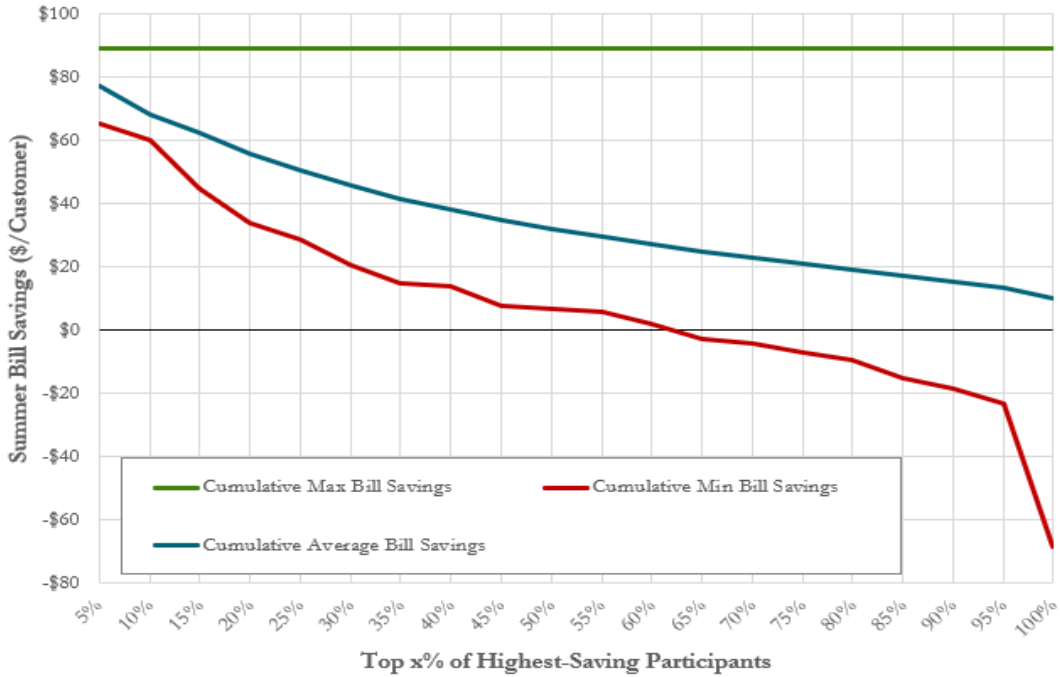
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	199.70	67.21	93.35	7.07%
10%	199.70	46.30	74.35	5.84%
15%	199.70	36.12	63.06	5.35%
20%	199.70	29.34	55.39	4.94%
25%	199.70	23.20	49.51	4.62%
30%	199.70	18.15	44.70	4.30%
35%	199.70	13.68	40.51	4.02%
40%	199.70	9.42	36.88	3.79%
45%	199.70	5.38	33.61	3.55%
50%	199.70	1.65	30.60	3.31%
55%	199.70	(2.56)	27.77	3.05%
60%	199.70	(6.67)	25.08	2.79%
65%	199.70	(11.60)	22.46	2.51%
70%	199.70	(16.94)	19.79	2.23%
75%	199.70	(21.89)	17.19	1.95%
80%	199.70	(28.05)	14.56	1.65%
85%	199.70	(35.67)	11.84	1.33%
90%	199.70	(43.47)	8.99	1.01%
95%	199.70	(55.62)	5.94	0.66%
100%	199.70	(148.54)	1.84	0.20%



Annual Bill Analysis

Segement: Electric Vehicles

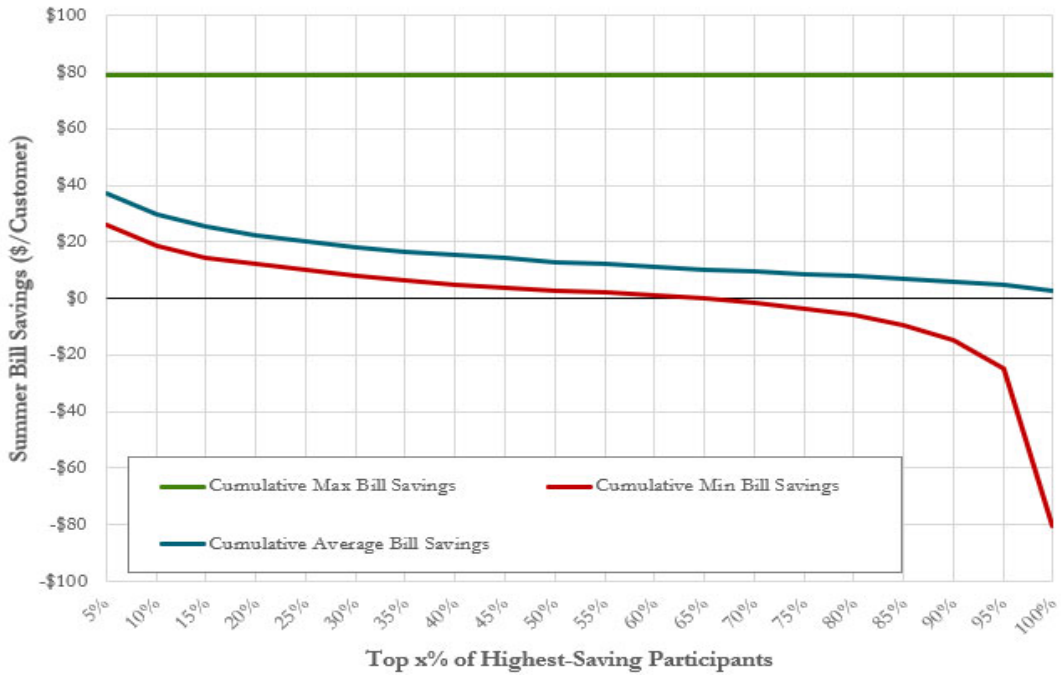
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	88.94	65.52	77.23	16.32%
10%	88.94	60.03	68.23	14.46%
15%	88.94	45.08	62.27	12.92%
20%	88.94	33.96	55.74	13.10%
25%	88.94	28.77	50.53	12.41%
30%	88.94	20.65	45.91	12.12%
35%	88.94	15.04	41.50	11.65%
40%	88.94	14.00	37.95	10.91%
45%	88.94	7.75	34.79	10.27%
50%	88.94	6.76	31.95	9.94%
55%	88.94	5.80	29.53	8.96%
60%	88.94	1.93	27.34	8.63%
65%	88.94	(2.62)	25.03	7.65%
70%	88.94	(4.11)	22.94	6.94%
75%	88.94	(6.94)	20.98	6.29%
80%	88.94	(9.30)	19.13	5.77%
85%	88.94	(15.17)	17.18	5.00%
90%	88.94	(18.64)	15.19	4.28%
95%	88.94	(23.27)	13.21	3.71%
100%	88.94	(68.60)	10.09	2.79%



Annual Bill Analysis

Segment: Low-Income

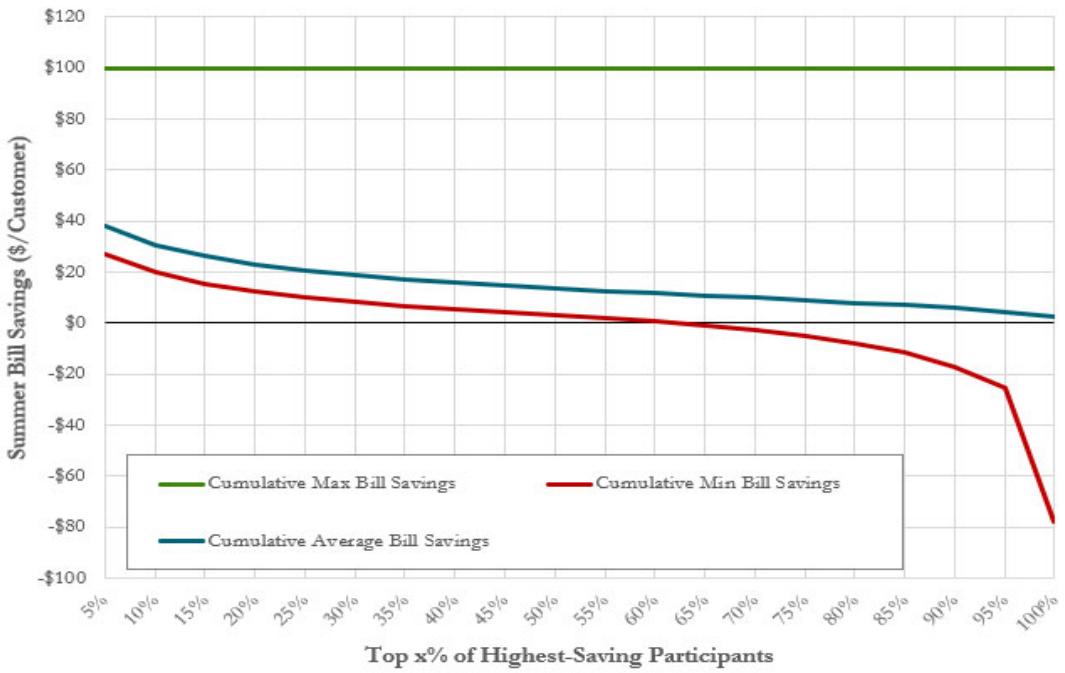
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	78.85	25.92	37.19	8.58%
10%	78.85	18.56	29.67	7.77%
15%	78.85	14.60	25.33	7.26%
20%	78.85	12.48	22.34	6.86%
25%	78.85	10.01	20.09	6.52%
30%	78.85	8.22	18.26	6.16%
35%	78.85	6.34	16.69	5.90%
40%	78.85	5.10	15.30	5.63%
45%	78.85	3.95	14.11	5.43%
50%	78.85	2.96	13.04	5.22%
55%	78.85	2.20	12.09	5.01%
60%	78.85	1.06	11.22	4.77%
65%	78.85	(0.02)	10.40	4.49%
70%	78.85	(1.45)	9.60	4.21%
75%	78.85	(3.65)	8.79	3.89%
80%	78.85	(5.98)	7.92	3.53%
85%	78.85	(9.43)	7.02	3.11%
90%	78.85	(14.80)	5.96	2.60%
95%	78.85	(24.72)	4.62	1.97%
100%	78.85	(80.26)	2.63	1.08%



Annual Bill Analysis

Segment: Renters

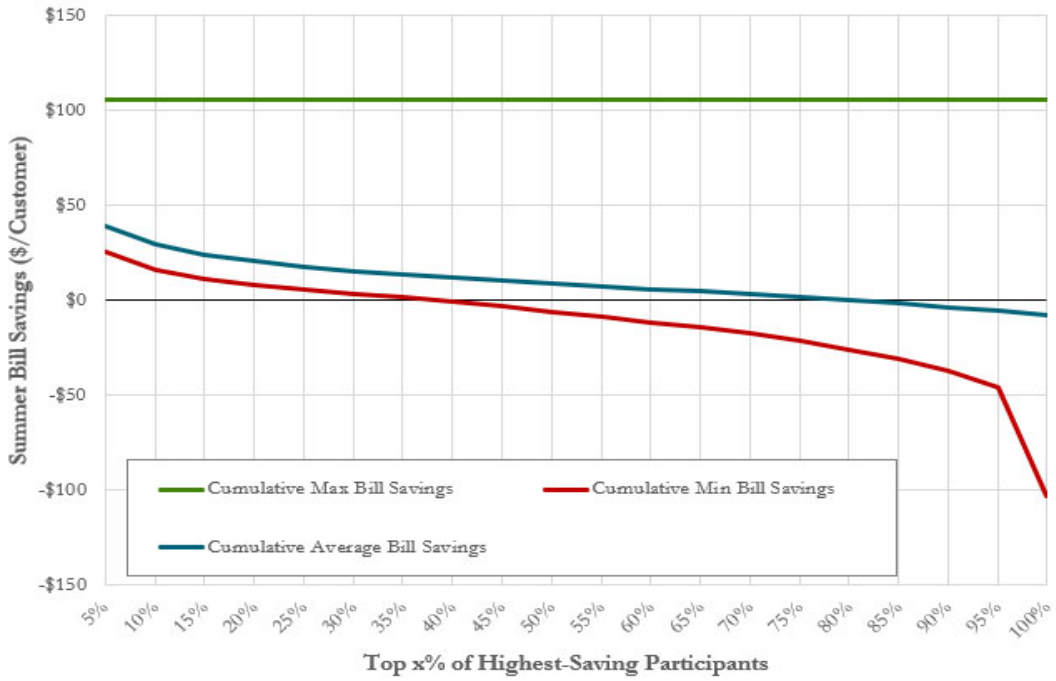
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	99.64	26.84	37.87	9.41%
10%	99.64	19.84	30.52	8.26%
15%	99.64	15.37	26.17	7.58%
20%	99.64	12.69	23.10	7.09%
25%	99.64	10.22	20.76	6.67%
30%	99.64	8.47	18.86	6.29%
35%	99.64	6.77	17.26	5.95%
40%	99.64	5.43	15.87	5.67%
45%	99.64	4.11	14.64	5.42%
50%	99.64	2.96	13.53	5.20%
55%	99.64	2.00	12.52	4.95%
60%	99.64	0.77	11.60	4.72%
65%	99.64	(0.85)	10.71	4.45%
70%	99.64	(2.81)	9.81	4.10%
75%	99.64	(5.14)	8.89	3.74%
80%	99.64	(8.08)	7.94	3.33%
85%	99.64	(11.63)	6.89	2.86%
90%	99.64	(17.07)	5.73	2.34%
95%	99.64	(25.46)	4.31	1.73%
100%	99.64	(77.64)	2.23	0.87%



Annual Bill Analysis

Segment: Seniors

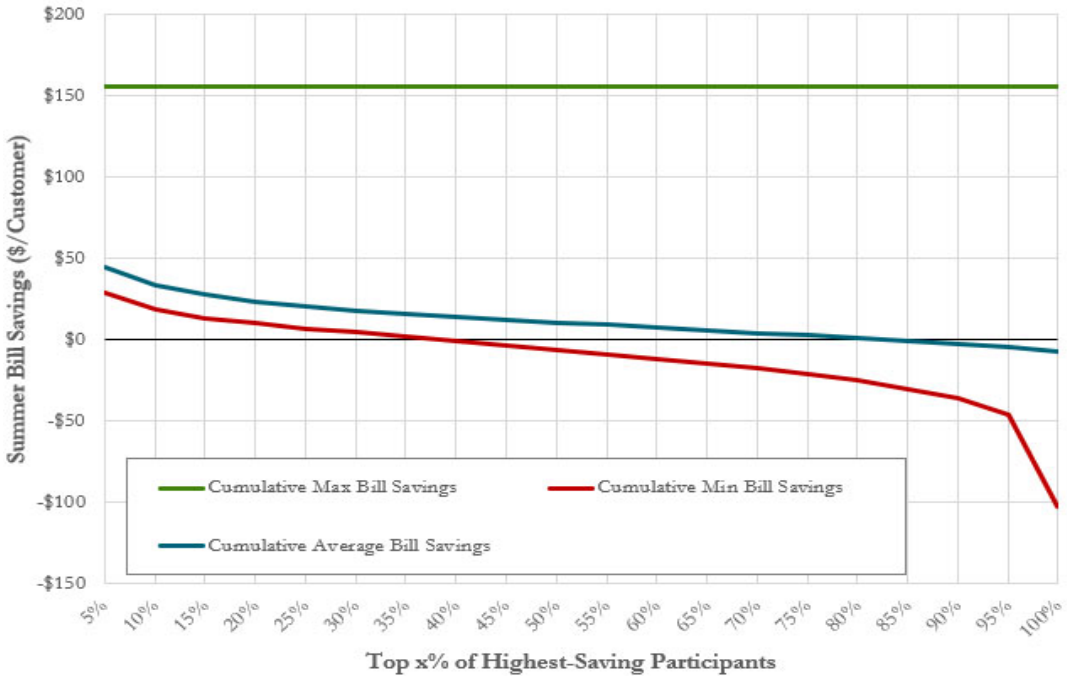
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	105.95	25.25	38.92	9.16%
10%	105.95	15.75	29.41	7.74%
15%	105.95	11.22	24.07	6.74%
20%	105.95	8.18	20.44	6.05%
25%	105.95	5.58	17.71	5.48%
30%	105.95	3.35	15.50	5.04%
35%	105.95	1.39	13.63	4.66%
40%	105.95	(0.76)	11.96	4.19%
45%	105.95	(3.33)	10.40	3.66%
50%	105.95	(6.04)	8.89	3.15%
55%	105.95	(8.69)	7.42	2.60%
60%	105.95	(11.61)	5.94	2.06%
65%	105.95	(14.37)	4.49	1.54%
70%	105.95	(17.65)	3.02	1.03%
75%	105.95	(21.23)	1.52	0.51%
80%	105.95	(25.77)	(0.04)	-0.01%
85%	105.95	(30.70)	(1.69)	-0.55%
90%	105.95	(36.87)	(3.47)	-1.11%
95%	105.95	(46.17)	(5.47)	-1.72%
100%	105.95	(103.12)	(8.12)	-2.50%



Annual Bill Analysis

Segment: Smart Thermostats

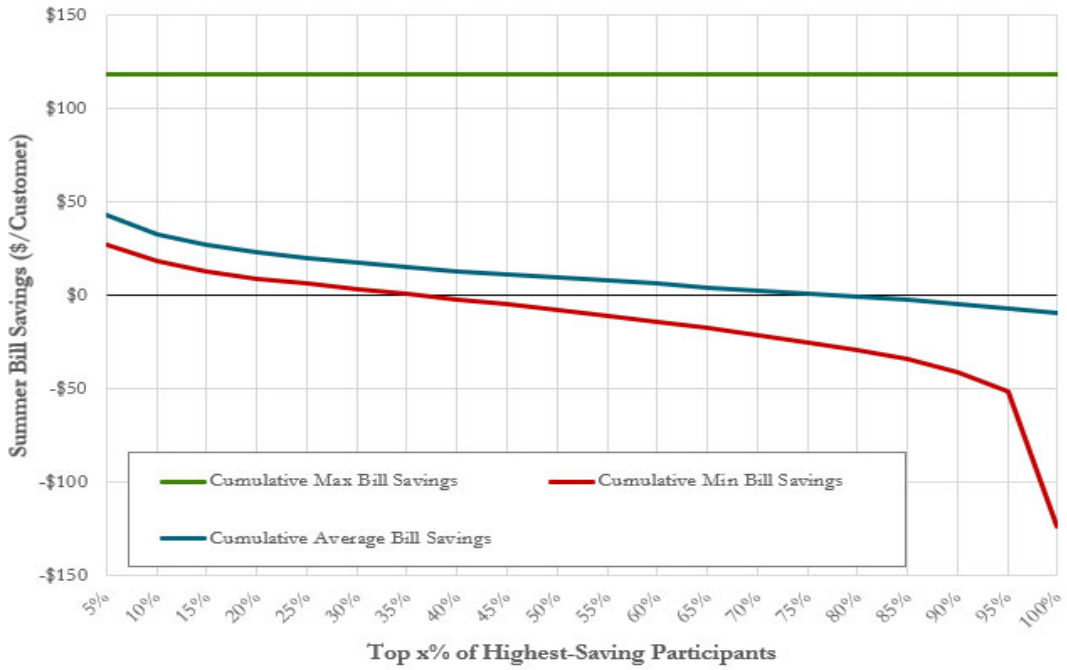
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	155.64	28.54	44.18	9.90%
10%	155.64	18.41	33.60	8.07%
15%	155.64	13.54	27.69	7.09%
20%	155.64	10.13	23.74	6.36%
25%	155.64	6.97	20.68	5.80%
30%	155.64	4.42	18.17	5.26%
35%	155.64	1.80	16.00	4.83%
40%	155.64	(0.84)	14.07	4.33%
45%	155.64	(3.27)	12.27	3.77%
50%	155.64	(6.07)	10.58	3.28%
55%	155.64	(8.90)	8.94	2.77%
60%	155.64	(12.10)	7.33	2.26%
65%	155.64	(14.85)	5.73	1.75%
70%	155.64	(17.89)	4.14	1.26%
75%	155.64	(21.30)	2.56	0.77%
80%	155.64	(25.19)	0.96	0.29%
85%	155.64	(30.23)	(0.72)	-0.21%
90%	155.64	(36.10)	(2.52)	-0.74%
95%	155.64	(46.30)	(4.53)	-1.31%
100%	155.64	(103.12)	(7.32)	-2.08%



Annual Bill Analysis

Segment: General Population (Customers not in any other segments)

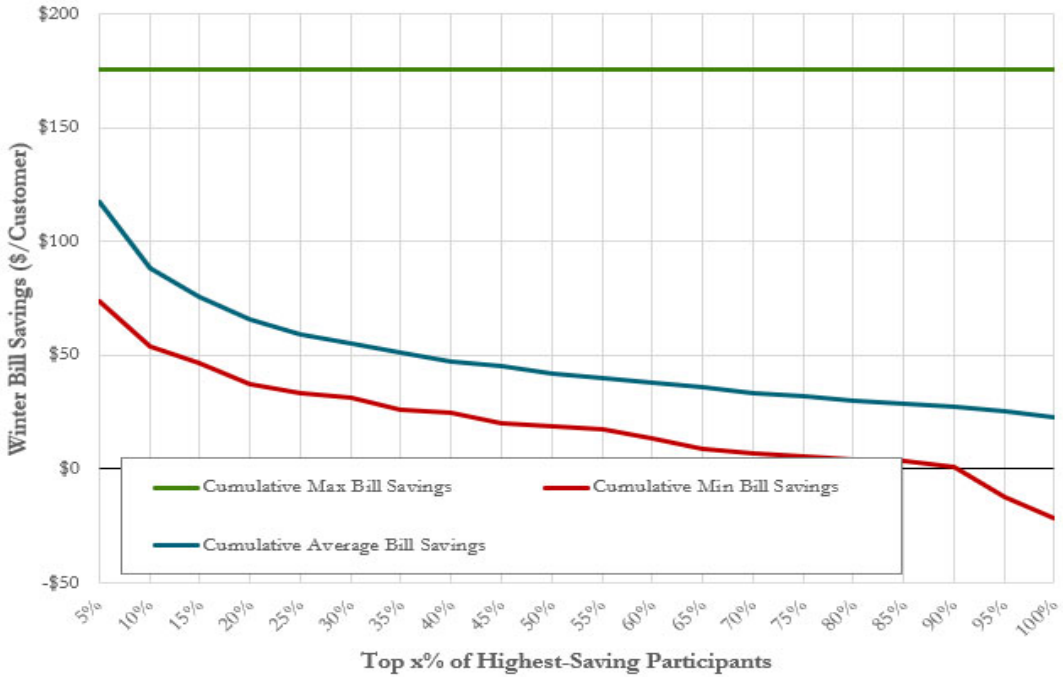
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	118.67	27.51	43.10	7.86%
10%	118.67	18.26	32.80	6.84%
15%	118.67	12.76	26.95	6.16%
20%	118.67	8.84	22.82	5.56%
25%	118.67	6.27	19.75	5.08%
30%	118.67	3.53	17.27	4.61%
35%	118.67	0.78	15.13	4.16%
40%	118.67	(1.91)	13.17	3.69%
45%	118.67	(4.88)	11.33	3.22%
50%	118.67	(7.54)	9.57	2.72%
55%	118.67	(10.85)	7.87	2.23%
60%	118.67	(14.20)	6.16	1.73%
65%	118.67	(17.73)	4.45	1.24%
70%	118.67	(21.40)	2.75	0.76%
75%	118.67	(25.31)	1.00	0.27%
80%	118.67	(29.42)	(0.79)	-0.21%
85%	118.67	(34.35)	(2.62)	-0.71%
90%	118.67	(40.79)	(4.55)	-1.21%
95%	118.67	(51.58)	(6.73)	-1.75%
100%	118.67	(124.13)	(9.60)	-2.44%



Annual Bill Analysis

Segement: Electric Vehicles

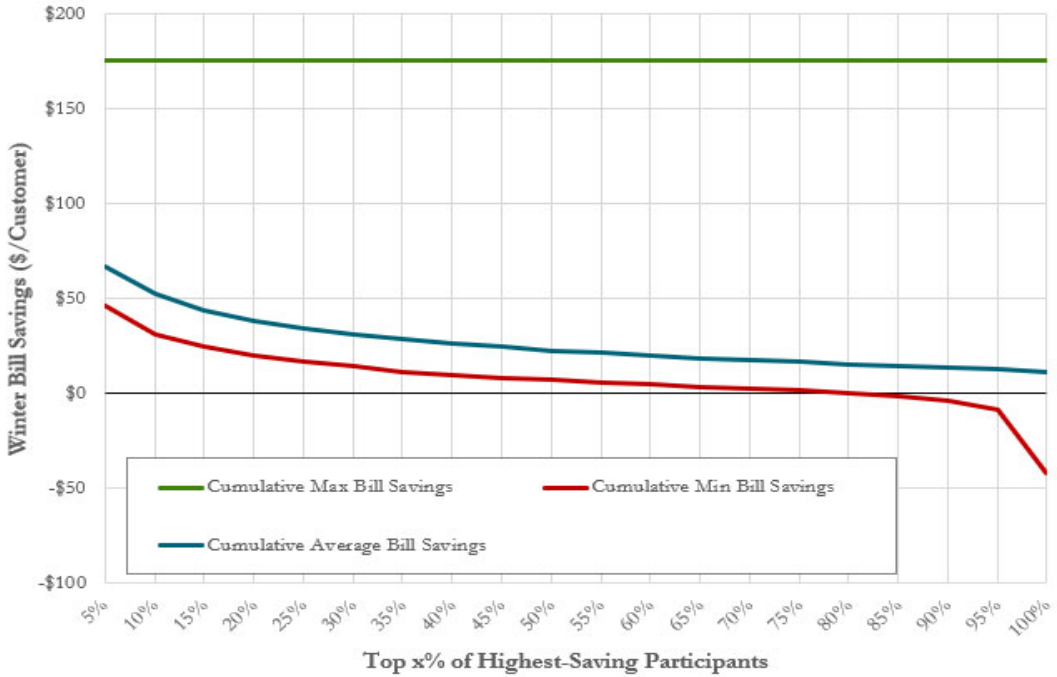
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	175.46	73.80	117.30	14.30%
10%	175.46	53.68	88.04	12.66%
15%	175.46	46.57	76.08	12.33%
20%	175.46	37.58	65.90	10.78%
25%	175.46	33.68	59.12	9.65%
30%	175.46	31.39	55.29	8.83%
35%	175.46	26.26	51.07	8.30%
40%	175.46	24.66	47.48	7.79%
45%	175.46	20.30	45.19	7.43%
50%	175.46	18.74	42.29	7.16%
55%	175.46	17.32	39.88	6.87%
60%	175.46	13.40	38.14	6.69%
65%	175.46	9.16	35.83	6.40%
70%	175.46	6.78	33.65	6.13%
75%	175.46	5.50	32.13	5.98%
80%	175.46	4.36	30.26	5.68%
85%	175.46	3.66	28.55	5.56%
90%	175.46	0.85	27.33	5.31%
95%	175.46	(12.61)	25.24	5.02%
100%	175.46	(21.41)	22.82	4.56%



Annual Bill Analysis

Segment: Low-Income

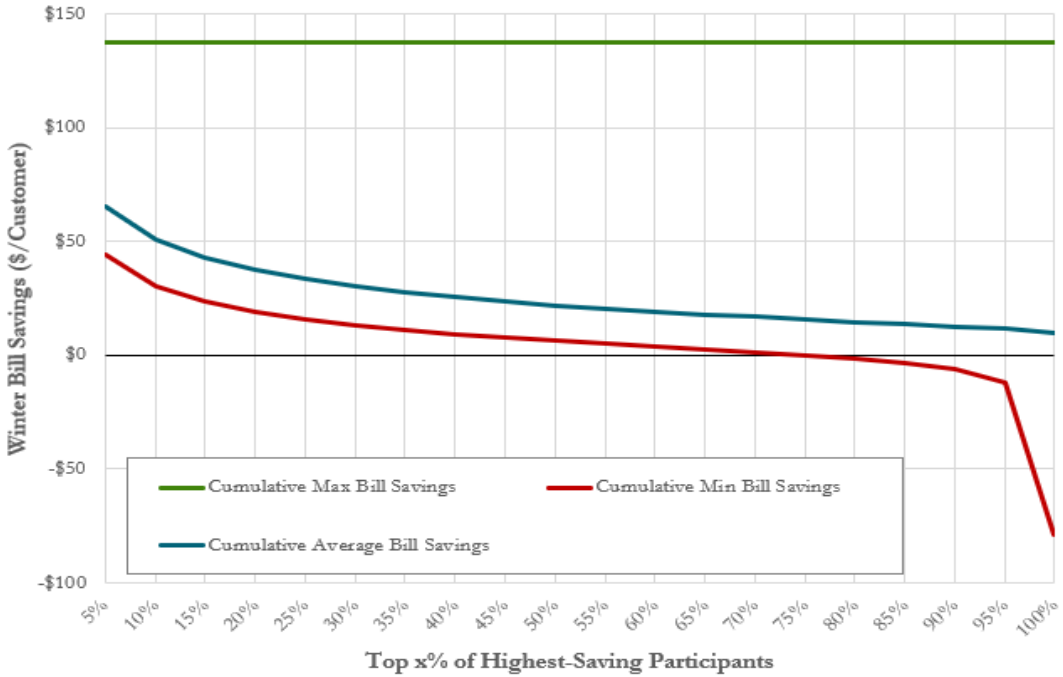
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	175.46	46.40	67.14	9.14%
10%	175.46	30.90	52.19	8.08%
15%	175.46	24.36	43.75	7.38%
20%	175.46	19.98	38.29	6.96%
25%	175.46	16.63	34.30	6.67%
30%	175.46	14.03	31.13	6.41%
35%	175.46	11.50	28.46	6.18%
40%	175.46	9.83	26.23	5.96%
45%	175.46	8.14	24.32	5.72%
50%	175.46	7.12	22.65	5.56%
55%	175.46	5.86	21.19	5.44%
60%	175.46	4.75	19.87	5.27%
65%	175.46	3.62	18.66	5.14%
70%	175.46	2.50	17.53	4.97%
75%	175.46	1.28	16.49	4.80%
80%	175.46	(0.14)	15.50	4.62%
85%	175.46	(1.55)	14.53	4.42%
90%	175.46	(4.19)	13.57	4.18%
95%	175.46	(8.66)	12.54	3.90%
100%	175.46	(41.83)	11.06	3.43%



Annual Bill Analysis

Segment: Renters

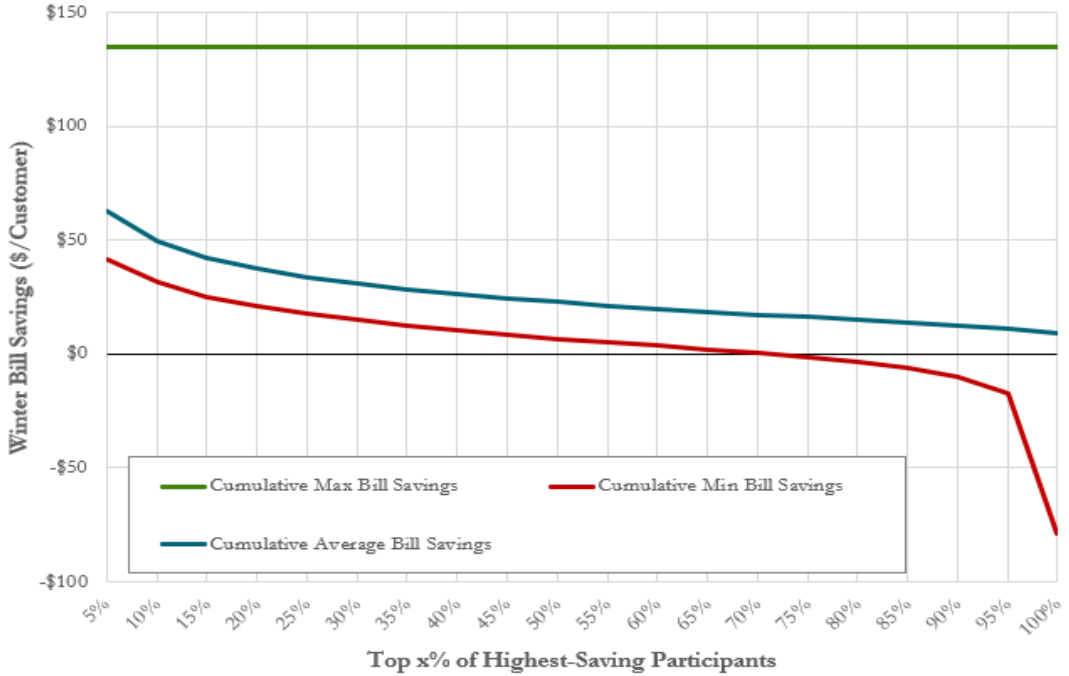
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	137.31	44.23	65.74	8.95%
10%	137.31	30.47	51.04	7.85%
15%	137.31	23.49	42.95	7.23%
20%	137.31	19.01	37.49	6.81%
25%	137.31	15.97	33.45	6.51%
30%	137.31	13.23	30.31	6.25%
35%	137.31	11.15	27.72	6.02%
40%	137.31	9.33	25.53	5.79%
45%	137.31	7.86	23.64	5.57%
50%	137.31	6.45	21.99	5.40%
55%	137.31	5.17	20.52	5.24%
60%	137.31	3.95	19.18	5.06%
65%	137.31	2.81	17.96	4.88%
70%	137.31	1.44	16.83	4.70%
75%	137.31	(0.04)	15.76	4.51%
80%	137.31	(1.48)	14.72	4.30%
85%	137.31	(3.63)	13.71	4.07%
90%	137.31	(6.31)	12.67	3.81%
95%	137.31	(11.73)	11.54	3.49%
100%	137.31	(78.98)	9.95	2.99%



Annual Bill Analysis

Segment: Seniors

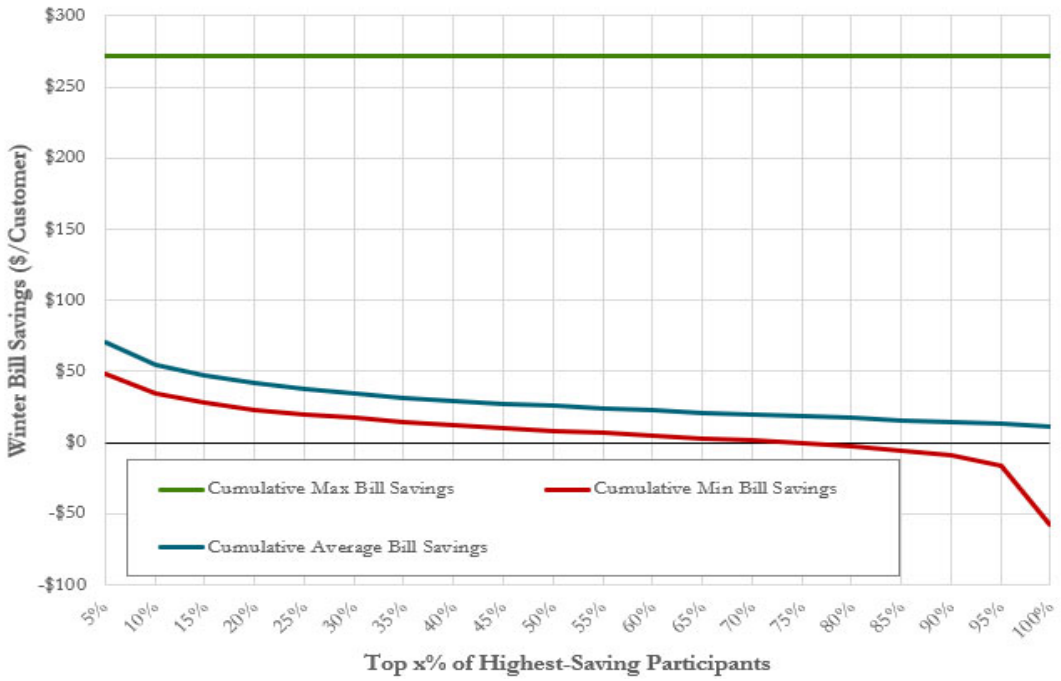
Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	134.86	41.78	62.84	7.92%
10%	134.86	31.43	49.28	7.04%
15%	134.86	25.35	42.29	6.54%
20%	134.86	20.86	37.46	6.09%
25%	134.86	17.90	33.83	5.76%
30%	134.86	15.08	30.93	5.49%
35%	134.86	12.58	28.46	5.26%
40%	134.86	10.49	26.35	5.04%
45%	134.86	8.66	24.49	4.83%
50%	134.86	6.88	22.82	4.61%
55%	134.86	5.39	21.31	4.42%
60%	134.86	3.88	19.92	4.26%
65%	134.86	2.10	18.62	4.09%
70%	134.86	0.33	17.37	3.90%
75%	134.86	(1.33)	16.18	3.70%
80%	134.86	(3.56)	15.02	3.46%
85%	134.86	(6.33)	13.85	3.22%
90%	134.86	(9.90)	12.63	2.94%
95%	134.86	(17.25)	11.29	2.63%
100%	134.86	(78.98)	9.39	2.17%



Annual Bill Analysis

Segment: Smart Thermostats

Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	272.05	48.52	70.29	8.12%
10%	272.05	34.11	55.02	7.29%
15%	272.05	27.77	46.97	6.77%
20%	272.05	23.20	41.56	6.32%
25%	272.05	19.63	37.51	6.00%
30%	272.05	17.10	34.32	5.73%
35%	272.05	14.48	31.67	5.49%
40%	272.05	12.12	29.37	5.24%
45%	272.05	10.19	27.35	5.03%
50%	272.05	8.38	25.54	4.84%
55%	272.05	6.64	23.90	4.62%
60%	272.05	4.90	22.39	4.43%
65%	272.05	3.13	20.97	4.24%
70%	272.05	1.37	19.63	4.05%
75%	272.05	(0.51)	18.35	3.86%
80%	272.05	(2.67)	17.11	3.64%
85%	272.05	(5.46)	15.86	3.40%
90%	272.05	(9.19)	14.58	3.15%
95%	272.05	(16.76)	13.15	2.84%
100%	272.05	(57.38)	11.21	2.41%



Annual Bill Analysis

Segment: General Population (Customers not in any other segments)

Cumulative Percentile	Cumulative Max Bill Savings ($)	Cumulative Min Bill Savings ($)	Cumulative Average Bill Savings ($)	Cumulative Average % Savings
5%	151.61	53.70	71.58	7.41%
10%	151.61	39.19	58.48	6.82%
15%	151.61	32.06	50.69	6.33%
20%	151.61	26.23	45.24	5.91%
25%	151.61	22.02	41.01	5.61%
30%	151.61	18.28	37.50	5.41%
35%	151.61	15.09	34.51	5.19%
40%	151.61	12.53	31.94	5.00%
45%	151.61	10.29	29.63	4.80%
50%	151.61	8.16	27.60	4.60%
55%	151.61	6.18	25.74	4.41%
60%	151.61	4.36	24.02	4.25%
65%	151.61	2.56	22.45	4.08%
70%	151.61	0.58	20.96	3.91%
75%	151.61	(1.58)	19.52	3.70%
80%	151.61	(4.16)	18.12	3.48%
85%	151.61	(7.50)	16.71	3.24%
90%	151.61	(11.67)	15.25	2.97%
95%	151.61	(18.71)	13.68	2.67%
100%	151.61	(61.71)	11.58	2.25%

CERTIFICATE OF SERVICE

I, Marie Horner, hereby certify that I have this day served copies of the foregoing document on the attached list of persons.

xx by depositing a true and correct copy thereof, properly enveloped with postage paid in the United States mail at Minneapolis, Minnesota

xx electronic filing

DOCKET NO. E002/M-23-524

Dated this 16th day of August 2024

/s/

Marie Horner
Regulatory Administrator

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Michael	Allen	michael.allen@allenergysolar.com	All Energy Solar	721 W 26th st Suite 211 Minneapolis, MN 55405	Electronic Service	No	OFF_SL_23-524_Official
Mara	Ascheman	mara.k.ascheman@xcelenergy.com	Xcel Energy	414 Nicollet Mall Fl 5 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_23-524_Official
James J.	Bertrand	james.bertrand@stinson.com	STINSON LLP	50 S 6th St Ste 2600 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_23-524_Official
Rachel	Bryant	rachel.bryant@gridx.com	GridX	14055 W Amherst Ave Lakewood, CO 80228	Electronic Service	No	OFF_SL_23-524_Official
James	Canaday	james.canaday@ag.state.mn.us	Office of the Attorney General-RUD	Suite 1400 445 Minnesota St. St. Paul, MN 55101	Electronic Service	No	OFF_SL_23-524_Official
John	Coffman	john@johncoffman.net	AARP	871 Tuxedo Blvd. St, Louis, MO 63119-2044	Electronic Service	No	OFF_SL_23-524_Official
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_23-524_Official
James	Denniston	james.r.denniston@xcelenergy.com	Xcel Energy Services, Inc.	414 Nicollet Mall, 401-8 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_23-524_Official
John	Farrell	jfarrell@ilsr.org	Institute for Local Self-Reliance	2720 E. 22nd St Institute for Local Self-Reliance Minneapolis, MN 55406	Electronic Service	No	OFF_SL_23-524_Official
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_23-524_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Edward	Garvey	edward.garvey@AESLconsulting.com	AESL Consulting	32 Lawton St Saint Paul, MN 55102-2617	Electronic Service	No	OFF_SL_23-524_Official
Kim	Havey	kim.havey@minneapolismn.gov	City of Minneapolis	350 South 5th Street, Suite 315M Minneapolis, MN 55415	Electronic Service	No	OFF_SL_23-524_Official
Adam	Heinen	aheinen@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	OFF_SL_23-524_Official
Michael	Hoppe	lu23@ibew23.org	Local Union 23, I.B.E.W.	445 Etna Street Ste. 61 St. Paul, MN 55106	Electronic Service	No	OFF_SL_23-524_Official
Alan	Jenkins	aj@jenkinsatlaw.com	Jenkins at Law	2950 Yellowtail Ave. Marathon, FL 33050	Electronic Service	No	OFF_SL_23-524_Official
Richard	Johnson	Rick.Johnson@lawmoss.com	Moss & Barnett	150 S. 5th Street Suite 1200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_23-524_Official
Sarah	Johnson Phillips	sarah.phillips@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_23-524_Official
Dan	Juhl	in.another.account.info@juhlenergy.com	Juhl Energy Inc.	1502 17th St SE Pipestone, MN 56164	Paper Service	No	OFF_SL_23-524_Official
Mark	Kresowik	mkresowik@aceee.org	American Council for an Energy-Efficient Economy	529 14th St NW, Suite 600 Washington, DC 20045	Electronic Service	No	OFF_SL_23-524_Official
Peder	Larson	plarson@larkinhoffman.com	Larkin Hoffman Daly & Lindgren, Ltd.	8300 Norman Center Drive Suite 1000 Bloomington, MN 55437	Electronic Service	No	OFF_SL_23-524_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kavita	Maini	kmaini@wi.rr.com	KM Energy Consulting, LLC	961 N Lost Woods Rd Oconomowoc, WI 53066	Electronic Service	No	OFF_SL_23-524_Official
Mary	Martinka	mary.a.martinka@xcelenergy.com	Xcel Energy Inc	414 Nicollet Mall 7th Floor Minneapolis, MN 55401	Electronic Service	Yes	OFF_SL_23-524_Official
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_23-524_Official
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_23-524_Official
David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_23-524_Official
Carol A.	Overland	overland@legalectric.org	Legalectric - Overland Law Office	1110 West Avenue Red Wing, MN 55066	Electronic Service	No	OFF_SL_23-524_Official
Audrey	Partridge	apartridge@mncee.org	Center for Energy and Environment	212 3rd Ave. N. Suite 560 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_23-524_Official
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_23-524_Official
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_23-524_Official
Isabel	Ricker	ricker@fresh-energy.org	Fresh Energy	408 Saint Peter Street Suite 220 Saint Paul, MN 55102	Electronic Service	No	OFF_SL_23-524_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Joseph L	Sathe	jsathe@kennedy-graven.com	Kennedy & Graven, Chartered	150 S 5th St Ste 700 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_23-524_Official
Peter	Scholtz	peter.scholtz@ag.state.mn.us	Office of the Attorney General-RUD	Suite 1400 445 Minnesota Street St. Paul, MN 55101-2131	Electronic Service	No	OFF_SL_23-524_Official
Christine	Schwartz	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_23-524_Official
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_23-524_Official
Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates	7400 Lyndale Ave S Ste 190 Richfield, MN 55423	Electronic Service	Yes	OFF_SL_23-524_Official
Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.	76 W Kellogg Blvd St. Paul, MN 55102	Electronic Service	No	OFF_SL_23-524_Official
Peggy	Sorum	peggy.sorum@centerpointenergy.com	CenterPoint Energy	505 Nicollet Mall Minneapolis, MN 55402	Electronic Service	No	OFF_SL_23-524_Official
Byron E.	Starns	byron.starns@stinson.com	STINSON LLP	50 S 6th St Ste 2600 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_23-524_Official
Lauren	Steinhaeuser	lauren.steinheauser@xcelenergy.com	Northern States Power Company dba Xcel Energy	414 Nicollet Mall, 401-08 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_23-524_Official
James M	Strommen	jstrommen@kennedy-graven.com	Kennedy & Graven, Chartered	150 S 5th St Ste 700 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_23-524_Official

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Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_23-524_Official
Rachel	Wiedewitsch	wiedewitsch@fresh-energy.org	Fresh Energy	408 St Peter St #350 St. Paul, MN 55102	Electronic Service	No	OFF_SL_23-524_Official
Joseph	Windler	jwindler@winthrop.com	Winthrop & Weinstine	225 South Sixth Street, Suite 3500 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_23-524_Official
Jeff	Zethmayr	jzethmayr@citizensutilityboard.org	Citizens Utility Board	309 W. Washington, Ste 800 Chicago, IL 60606	Electronic Service	No	OFF_SL_23-524_Official
Kurt	Zimmerman	kwz@ibew160.org	Local Union #160, IBEW	2909 Anthony Ln St Anthony Village, MN 55418-3238	Electronic Service	No	OFF_SL_23-524_Official
Patrick	Zomer	Pat.Zomer@lawmoss.com	Moss & Barnett PA	150 S 5th St #1200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_23-524_Official