

Application No.: R.12-06-013
Exhibit No.: SDG&E-
Date: April 19, 2017

PREPARED OPENING TESTIMONY OF
CYNTHIA FANG
REGARDING SECTION 745 ISSUES
ON BEHALF OF
SAN DIEGO GAS AND ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

April 19, 2017



Table Of Contents

Section	Page
I. INTRODUCTION	1
II. DEFAULT TOU POLICY	6
A. COMMISSION & LEGISLATIVE OVERVIEW OF RESIDENTIAL TOU	6
B. DEFAULT TOU EXCLUSIONS	9
C. BENEFITS OF TOU.....	13
III. ENABLING DEFAULT TOU THROUGH RATE DESIGN	15
IV. ADDITIONAL ANALYSES REQUESTED BY THE ENERGY DIVISION.....	19
V. CONCLUSION.....	20
VI. WITNESS QUALIFICATIONS.....	21

1 I.

2 **INTRODUCTION**

3 Pursuant to the January 23, 2017 Assigned Commissioner and Administrative Law
4 Judge's Ruling Amending Scoping Memorandum and Ruling (January 23, 2017 Ruling), San
5 Diego Gas and Electric (SDG&E) respectfully submits this testimony addressing the in-scope
6 issues associated with the California Public Utilities Commission's (Commission) interpretation
7 and implementation of California Public Utilities Code (PU Code) Section 745 (Section 745) in
8 connection with the transition to residential default time-of-use (TOU) rates and supporting
9 SDG&E's position to limit the exclusions from residential default TOU.

10 The primary purpose of my testimony is to address default TOU policy issues. SDG&E
11 witness Sabrina Butler responds to the specific questions posed in the January 23, 2017 Ruling.
12 Together, our testimony is intended to assist the Commission in addressing the appropriate
13 identification of customer groups being considered for exclusion from default TOU. In
14 particular, our testimony is focused, among other things, on helping identify customers who are
15 at risk of experiencing "unreasonable hardship" under default TOU due to (i) economic impacts
16 and/or (ii) health and safety impacts, and possible ways of mitigating any such hardship. In
17 addition, detailed information on these issues can be found in the California Statewide Opt-In
18 Time-of-Use Pricing Pilot – Interim Evaluation report that was prepared by Nexant, Inc. and
19 Research Into Action (Nexant/RIA Report) for the TOU Working Group in this proceeding and
20 submitted on April 11, 2017. Based on the results of SDG&E's Opt-In TOU Pilot, presented in
21 the Nexant/RIA Report, SDG&E believes that:

- 22 • No observed customer group appears to experience unreasonable hardship due to
23 economic impacts and/or health and safety impacts; and

- Customers in the hot climate zone were able to change behavior to offset any structural bill increases so that overall bill impacts were not statistically significant at the population level.

In addition, the Nexant/RIA Report presented results that showed California Alternate Rates for Energy Program (CARE)/Family Electric Rates Assistance Program (FERA)-eligible customers do not appear to experience unreasonable hardship due to health impacts under TOU rates and the distribution of economic index scores was very similar between households with a senior in the household versus a non-senior in the household. These results are discussed in more detail in the testimony of witness Sabrina Butler.

SDG&E's bill impact and volatility analyses related to its proposed Default TOU Pilot rates, filed in Advice Letters (AL) 3020-E and 3020-E-B on December 16, 2016 and March 10, 2017, respectively, align with the findings related to SDG&E's Opt-In Pilot found in the Nexant/RIA Report, which indicate that there were limited impacts to SDG&E's customers who participated in the Opt-In TOU pilot. The structure and rate design for SDG&E's proposed Default TOU Pilot rates is very similar to that of the two rates being tested in its Opt-In TOU Pilot with only limited differences in the TOU differentials¹. Both sets of rates include a similar two-period and a three-period tiered TOU rate offering, with a baseline credit set equal to the Tier 1 and Tier 2 differential of the effective tiered rates. Because the rate structures that SDG&E has proposed for the Default TOU Pilot are so similar to those used in the Opt-In TOU Pilot, SDG&E anticipates similar findings, as was presented in the Nexant/RIA Report, for the Default TOU Pilot. This also is indicated by the similar results from the preliminary bill impact and volatility analysis provided by SDG&E in support of both pilot rates, which illustrated that

¹ SDG&E's Opt-In Pilots rates were designed to meet a total rate differential prescribed by the Commission in Resolution E-4796.

1 the bill impacts, with no change in usage patterns, are expected to be mild to moderate for the
2 majority of customers. As such, it is reasonable to conclude that the impacts of transitioning
3 customers from tiered rates to the proposed Default TOU rates will not cause unreasonable
4 hardship, and therefore can be managed through appropriate education and communications with
5 customers.

6 SDG&E supports limiting exclusions to residential default to TOU rates to the statutory
7 requirements, specifically: (1) residential customers receiving a medical baseline allowance
8 pursuant to subdivision (c) of PU Code Section 739, (2) customers requesting third-party
9 notification pursuant to subdivision (c) of PU Code Section 779.1 and (3) customers who the
10 Commission has ordered cannot be disconnected from service without an in-person visit from a
11 utility representative.² In addition, SDG&E identified in Advice Letter 3020-E (Attachment B,
12 p. IV-27) several additional exclusions from its Default TOU Pilot that SDG&E proposes to
13 apply to Default TOU. The complete list of SDG&E's proposed Section 745 exclusions is set
14 forth in the table below:

² See D.12-03-054 (Decision on Phase II Issues: Adoption of Practices to Reduce the Number of Gas and Electric Service Disconnections) at Ordering Paragraph 2(b) at p. 55.

1

Table CF-1: Default Pilot Exclusions

Description	Reason
Customers with less than 12 months of interval data	P.U. Code Section 745(c)(4)
Medical baseline customers	P.U. Code Section 745(c)(1)
Customers requesting third party notification	P.U. Code Section 745(c)(1)
Customers who require an in-person visit prior to disconnection (includes medical baseline)	P.U. Code Section 745(c)(1)
Customers who do not have a TOU meter	Customers do not have 12 months of interval data per P.U. Code Section 745(c)(4)
Opt-In TOU Pilot participants	Customers are already on a TOU Rate
Existing TOU customers	Customers are already on a TOU Rate
Smart Meter opt-out customers	99.9% of these customers do not have meters that collect interval data needed for TOU rates
Customers on master-meter Schedules DM, DT, DS, DT-RV	The master-meter customer bills the customer behind the meter.
Direct Access Customers	Non-commodity rates for these customers do not differ based on TOU period

2 In summary, once twelve months of data is available, SDG&E believes that all residential
3 customers should be eligible for default to TOU rates, with the exception of those groups of
4 customers identified above. The treatment of the twelve months of data criteria is discussed in
5 more detail in the testimony of SDG&E witness Sabrina Butler.

6 The remainder of this testimony is organized as follows:

- 7 • Section II provides additional background on default TOU policy and customer
8 exclusions;
- 9 • Section III discusses the rate design mechanism through which SDG&E proposes
10 to minimize impacts to defaulted customers; and
- 11 • Section IV briefly describes some additional information that the Commission’s
12 Energy Division has requested the investor-owned-utilities (IOUs) include in their
13 respective testimony:
 - 14 ○ Attachment A: Comparison of Rates Utilized in SDG&E’s Bill Impacts
15 and Bill Volatility Analysis;
 - 16 ○ Attachment B: Bill Impact Analysis, which includes:

1 (1) Population Distribution (\$ Impact) by Climate Region for: (a) all non-
2 NEM customers, (b) all non-NEM, non-CARE/FERA customers, (c) all
3 non-NEM, CARE/FERA customers and (d) non-NEM, all electric, CARE
4 customers (Hot areas only); and

5 (2) Percent (%) of Baseline (\$ Impact) by Climate Region for: (a) all non-
6 NEM customers, (b) all non-NEM, non-CARE/FERA customers, (c) all
7 non-NEM, CARE/FERA customers and (d) non-NEM, all electric, CARE
8 customers (Hot areas only)(3) Population Distribution (\$ Impact) and
9 Percent (%) of Baseline (\$ Impact) for (1) and (2) for a 1-in-10 weather
10 year³

11 • Attachment C: Bill Volatility Analysis, which includes:

12 (1) Standard Deviation of Bills in Summer vs. Winter Annual by Climate
13 Region for: (a) all non-NEM customers, (b) all non-NEM, non-
14 CARE/FERA customers, (c) all non-NEM, CARE/FERA customers and
15 (d) non-NEM, all electric, CARE customers (Hot areas only);

16 (2) Distribution of Difference between Average Summer and Average
17 Winter Bill by Climate Region for: (a) all non-NEM customers, (b) all
18 non-NEM, non-CARE/FERA customers, (c) all non-NEM, CARE/FERA
19 customers and (d) non-NEM, all electric, CARE customers (Hot areas
20 only);

21 (3) Average Bill by Month by Climate Region for: (a) all non-NEM
22 customers, (b) all non-NEM, non-CARE/FERA customers, (c) all non-
23 NEM, CARE/FERA customers, and (d) non-NEM, all electric, CARE
24 customers (Hot areas only);and

25 ○ Attachment D: Electricity Burden Analysis, which includes:

26 (1) Electricity Burden as a ratio of the household electricity bill as a
27 percentage of household income by Climate Region for: (a) CARE/FERA
28 customers, and (b) non-CARE customers.
29

³ SDG&E has defined a 1-in-10 weather year as having a 10% chance of being equaled or exceeded each year. It would be expected to be equaled or exceeded once every 10 years on average (exceeding the value will not necessarily occur at regular intervals). SDG&E's 1-in-10 year is calculated using cooling degree days (CDD) (with a base 65) over the entire year. The 1-in-2 is about 1,000 CDDs and a 1-in-10 is 1,320 CDDs. 2016 was identified as a 1-in-10 year.

1 **II.**

2 **DEFAULT TOU POLICY**

3 **A. COMMISSION & LEGISLATIVE OVERVIEW OF RESIDENTIAL TOU**

4 Assembly Bill (AB) 327 was signed into law in October 2013, providing, among other
5 things, the removal of constraints to rate design previously legislated by AB 1X to allow changes
6 to residential rate structures. On July 3, 2015, the Commission approved Decision (D.) 15-07-
7 001, Decision on Residential Rate Reform for Pacific Gas and Electric Company (PG&E),
8 Southern California Edison Company (SCE), and SDG&E [collectively, the investor-owned
9 utilities or IOUs] and Transition to Time-of-Use Rates. Generally, D.15-07-001 reforms
10 residential electric rates during the years 2015 through 2020 and seeks to transition residential
11 customers to default TOU rates in 2019, conditioned on meeting the requirements of Section
12 745.⁴ As stated in the Commission’s rulemaking order (R.12-06-013), “The goal of this
13 Commission is to ensure that default TOU is implemented in a meaningful way that benefits and
14 empowers electricity customers.”⁵ As a result of D.15-07-001, most residential customers will
15 be migrated to a default TOU rate. However, under Section 745, certain customers are excluded
16 from default TOU and certain requirements must be met before residential customers are
17 transitioned to a default TOU rate.⁶

⁴ D.15-07-001, p.172.

⁵ R.12-06-013, Decision on Residential Rate Reform for Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company and Transition to Time-of-use Rates, 3 July 2015, p.3.

⁶ PU Code Section 745(c)(d).

(Continued)

1 D.16-09-016 provided interpretations of some terms contained in Section 745 for the
2 purposes of designing the 2018 Default TOU rate pilots. In addition, a significant portion of
3 SDG&E’s 745 testimony relies on the interim results of the Opt-In TOU pilots, presented in the
4 Nexant/RIA Report, which were designed to provide data to support the evaluation of the
5 requirements of Section 745, including the determination of whether TOU Opt-in Pilots rates
6 result in unreasonable hardship for senior citizens⁷ and “economically vulnerable customers”⁸ in
7 hot climate zones,² with “unreasonable hardship” falling into one of two categories (economic
8 impacts or health and safety impacts resulting from reduced air conditioning use). These results
9 are discussed further in the testimony of SDG&E witness Sabrina Butler.

10 In R.12-06-013, the Commission adopted the following ten Rate Design Principles
11 (RDP) for rate design. While R.12-06-013 was limited to residential rate design, SDG&E
12 believes these principles should guide the rate design for all customers. Table CF-2 below
13 presents the RDPs in the four categories consistent with D.15-07-001: cost of service, affordable
14 electricity, conservation and customer acceptance.

⁷ “Senior Citizen” means a permanent resident of a household, age 65 or older, in any income bracket.

⁸ “Economically Vulnerable Customers” are those customers who are eligible for CARE or FERA.

² D.16-09-016, Ordering Paragraph 2.

1

Table CF-2: Rate Design Principles

Cost Of Service RDP	Affordable Electricity RDP	Conservation RDP	Customer Acceptance RDP
(2) Rates should be based on marginal cost; (3) Rates should be based on cost-causation principles; (7) Rates should generally avoid cross-subsidies, unless the cross-subsidies appropriately support explicit state policy goals; (8) Incentives should be explicit and transparent; (9) Rates should encourage economically efficient decision-making.	(1) Low-income and medical baseline customers should have access to enough electricity to ensure basic needs (such as health and comfort) are met at an affordable cost.	(4) Rates should encourage conservation and energy efficiency; (5) Rates should encourage reduction of both coincident and non-coincident peak demand.	(6) Rates should be stable and understandable and provide customer choice; (10) Transitions to new rate structures should emphasize customer education and outreach that enhances customer understanding and acceptance of new rates, and minimizes and appropriately considers the bill impacts associated with such transitions.

2

Since the signing of AB 327, progress has been made to move towards rates that better

3

reflect the cost of services provided, but future work is still needed in order to achieve this goal.

4

While TOU rates have been a part of California’s energy policy for over 40 years, very few

5

residential customers are currently on TOU rates. Greater progress has been made with cost-

6

based rates for non-residential customers. TOU rates are currently mandatory for all SDG&E

7

non-residential customers:

8

- SDG&E’s medium/large commercial and industrial (M/L C&I) customers are now required to be on a mandatory TOU commodity rate with default dynamic pricing;¹⁰

9

10

- SDG&E’s small commercial customers are now required to be on a mandatory TOU commodity rate with default dynamic pricing;¹¹ and

11

12

- SDG&E’s agricultural customers are now required to be on a mandatory TOU commodity rate with large agricultural customers having dynamic pricing as their default

13

¹⁰ D.08-02-034 adopted default dynamic pricing for SDG&E’s M/L C&I customers. D.15-08-040 adopted mandatory TOU rates for all M/L C&I.

¹¹ D.12-12-004 adopted mandatory TOU and default dynamic pricing rates for small commercial customers. Small commercial customers were transitioned to mandatory TOU and default dynamic rates over the period November 2015 through April 2016.

(Continued)

1 rate and small/medium agricultural customers having dynamic pricing as an option.¹²

2
3 Defaulting residential customers to TOU is a critical next step toward cost-based rates for
4 this customer class in order to enable the potential benefits the Commission foresees may result
5 from TOU rates.¹³ SDG&E has had TOU rate options for residential customers since 1977 and
6 currently only 29,000 residential customers, or 2.3% of residential customers, are on TOU rates
7 (including customers on electric vehicle (EV) rate options). As such, it is of utmost importance
8 to note that the benefits of TOU would be significantly diluted if large segments of customers are
9 excluded from defaulting to TOU rates. Customers who are excluded from default TOU will not
10 receive the price signals to incent reducing energy use during the high-cost hours. As a result,
11 individual customers would be unable to receive potential bill benefits and the utility and
12 ratepayers as a whole would fail to see the potential system benefits of residential customers
13 from shifting usage away from high-cost time periods into low-cost time periods.

14 **B. DEFAULT TOU EXCLUSIONS**

15 Section 745(d) states the Commission may not “employ default time-of-use rates for
16 residential customers unless it has first explicitly considered evidence addressing the extent to
17 which hardship will be caused....” In D.16-09-016, the Commission addressed the Section 745
18 briefs and adopted specific definitions and interpretations. It also set forth next steps for Section
19 745 compliance including: (1) a process for addressing Section 745 Matrix issues not

¹² D.08-02-034 adopted default dynamic pricing for SDG&E’s large agricultural customers. D.12-12-004 adopted mandatory TOU for small agricultural customers and optional dynamic pricing rates for small/medium agricultural customers. D.15-08-040 adopted mandatory TOU rates for all agricultural customers, including medium and large agricultural customers. Agricultural customers were transitioned to mandatory TOU rates over the period November 2015 through April 2016.

¹³ R.12-06-013, Decision on Residential Rate Reform for Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company and Transition to Time-of-use Rates, 3 July 2015, p. 82.

1 specifically addressed in the decision and (2) evaluating hardship in the context of the data and
2 actual rate design. While D.16-09-016 identified potential sources of hardship on which data
3 should be gathered, it did not set a threshold or cut-off for hardship.

4 Nexant and RIA were engaged as third party consultants to structure an internally valid
5 experimental design to evaluate the results of the Opt-in Pilots for the IOUs. The Opt-in Pilots
6 were designed as randomized control trials (RCTs) and allowed the consultants to statistically
7 evaluate the change in electricity consumption, the distribution of bill impacts associated with
8 each rate option before and after enrolling on the TOU rates, and the extent to which TOU rates
9 potentially cause unreasonable hardship among selected customer segments.¹⁴ This econometric
10 methodology produced sound quantitative data from which SDG&E – and the Commission – can
11 draw reasonable conclusions.

12 Per the Nexant/RIA Report, 90% of SDG&E’s CARE/FERA customers on Rate 1 of
13 SDG&E’s Opt-In TOU Pilot in the cool and moderate climate regions had annual bill impacts in
14 the neutral range,¹⁵ and the pattern was similar for summer months.¹⁶ The results of Rate 2 were
15 nearly identical to Rate 1 in this regard.¹⁷ Within SDG&E’s hot climate zone population, just

¹⁴ Nexant/RIA Report, pp. 1-3.

¹⁵ Nexant/RIA define “neutral” as bill impacts of +/- \$3. Id., p. 373.

¹⁶ Id., pp. 373-374.

¹⁷ The differences between Rate 1 and Rate 2 in SDG&E’s Opt-In TOU Pilot are discussed in greater detail in Section III below.

(Continued)

1 over 50% of customers were structural non-benefiters¹⁸ in the summer and annual time frames.¹⁹
2 When estimating average bill impacts due to changes in usage, CARE/FERA customers in
3 moderate and cool climate zones saw statistically significant average bill reductions of 3.4%, and
4 customers in hot climate zones exhibited large bill reductions of over \$5.²⁰ In reality, customers
5 in hot climate zones have the greatest potential opportunity to save on their electricity bills, as
6 currently they have the highest bills on average. Transitioning to TOU rates would allow these
7 customers to choose when to use energy in order to save on their energy bills by shifting load.
8 The interim results of the Opt-in Pilot show that customers in SDG&E’s hot climate zone can
9 potentially produce behavioral bill impacts large enough to offset structural increases.²¹

10 SDG&E deliberately and conscientiously proposed a TOU rate structure that was
11 designed to limit the impacts to customers as they are defaulted. SDG&E’s rate design limits
12 economic impacts to customers through setting the baseline credits within TOU rates equal to the
13 Tier 1 and Tier 2 differential of the effective tiered rates. The baseline adjustment essentially
14 eliminates the impact of a customer transitioning from SDG&E’s tiered rates and the existing
15 seasonality in SDG&E’s tiered rates also is reflected in TOU rates. Because SDG&E has
16 designed rates to minimize other structural impacts on customers, the Nexant/RIA Report found
17 that “[g]enerally, CARE/FERA customers tend to have very small [structural] bill impacts

¹⁸ Structural benefiters and non-benefiters refer to whether a customer would benefit from being on a TOU rate relative to a flat rate without any changes in their usage profile. Absent a behavioral change in usage, a structural benefitter will see a lower bill from the move from a flat rate to a TOU rate, while a structural non-benefitter will see a higher bill from the move from a flat rate to a TOU rate.

¹⁹ Nexant/RIA Report, Figure 6.4-4, p. 375.

²⁰ Id., Figure 6.4-8, p. 379.

²¹ Id., p. 430.

(Continued)

1 compared to non-CARE/FERA customers.”²² The small structural bill impacts for these
2 customers is important guidance for the direction of default TOU since these results indicate that
3 customers are expected to see limited bill impacts as a result of moving to TOU from their
4 otherwise applicable tariff (OAT) even **before** a customer changes usage patterns (or chooses not
5 to).

6 Because of SDG&E’s rate design and the results of the Opt-In TOU Pilot, discussed in
7 more detail in Section III below, SDG&E’s position is that no customers should be excluded
8 from defaulting to TOU rates, with the exception of those groups of customers identified in
9 Table CF-1 above. Based on the quantitative results of the Nexant/RIA Report, “at-risk”
10 segments of the population did not appear to experience “unreasonable hardship” when
11 transitioning from SDG&E’s current tiered rates to Opt-in Pilot TOU rates.

12 In compliance with Administrative Law Judge (ALJ) Park’s March 6, 2017 Email Ruling
13 Regarding Bill Protection for Customers Opting-in to Default TOU Pilot Programs, the IOUs
14 also will be providing one year of bill protection to all residential customers who opt-in to a
15 default TOU rate during the default pilot period, including customers who opt-in to a default
16 TOU pilot rate. As stated in AL 3020-E-A, SDG&E will apply bill protection credits, as
17 applicable, after a customer: (1) remains on the default TOU rate for 12 months, (2) transfers
18 service to a different location, (3) changes rates or (4) closes its account and moves out of
19 SDG&E’s service territory. This credit will be applied to the customer’s final bill (or a check
20 will be mailed, if necessary). Bill protection will allow customers to adjust their schedules to
21 TOU over an entire year to maximize their potential opportunities to save through load shifting.
22 As SDG&E will be providing bill protection to all defaulted customers, it does not believe that

²² Id., Figure 6.4-4, p. 375.

1 portions of the population should be excluded from default TOU at this time, with the exception
2 of the customer groups noted above in Table CF-1. However, SDG&E is open to delaying
3 defaulting “at-risk” customers until such time as data from the Default TOU Pilot is available;
4 SDG&E also is open to other possible mitigation measures that may ease the transition for the
5 small population of customers who are significant non beneficiaries.

6 In addition, as discussed in SDG&E witness Sabrina Butler’s testimony, because of
7 SDG&E’s unique customer and climate zone composition, SDG&E has the ability to provide
8 significantly more attention to the small number of customers who reside in its hot zones.²³

9 **C. BENEFITS OF TOU**

10 The potential benefits of TOU rates are well recognized. As stated by the Commission,
11 “TOU rate designs are considered beneficial because they are potentially the most cost-based
12 rate design, they can be designed to allow customers to respond when reducing load could reduce
13 the need for additional infrastructure, they could potentially reduce overall greenhouse gas
14 (GHG) emissions by reducing the need to run peaker plants and less efficient fossil fuel plants on
15 hot afternoons. By flattening the load curve, TOU rates could also improve grid reliability.”²⁴ A
16 rate design that reflects accurate prices and transparent incentives balances opportunities for
17 customers to save with increasingly complex rates, and is necessary to provide a platform for
18 utility customers to make economically efficient decisions. Many of the issues related to the
19 methodology behind the development and updating of TOU periods, as well as the definition of
20 TOU periods, have been or are being vetted before the Commission in other proceedings (i.e.,

²³ SDG&E currently has roughly 17,000 residential customers residing in what is classified as its hot climate zone.

²⁴ D.15-07-001, p. 84.

1 TOU Order Instituting Rulemaking (OIR) (R.15-12-012) and SDG&E's 2016 General Rate Case
2 (GRC) Phase 2 (Application (A.) 15-04-012) and are not being addressed here.

3 However, as the Commission considers the question of exclusion from Residential
4 Default TOU, it is important to recount both the system and customer benefits that can result
5 from TOU rates. SDG&E's proposed Default TOU pilot rates were designed to enable a smooth
6 transition to default TOU (as described further in Section III below).

7 **1. System Benefits**

8 When customers see the correct price signals, they are able to make economically
9 efficient decisions, and will receive bill benefits due to behaviors that reduce their cost of
10 service, rather than for behaviors that increase cost shifts to other customers. Only when the
11 changes in customer behavior result in a reduction of individual customers' cost of service will it
12 also result in lower overall system costs, which benefits all customers. Long-term cost savings
13 have been cited as a potential benefit of TOU rates.²⁵ In order to realize this potential long-term
14 cost savings, customers need to see the correct price signals in order to respond to incentives in
15 such a way that mirrors actual cost of utility services.

16 **2. Customer Benefits**

17 With a TOU rate structure, customers can take control of and reduce their individual bills
18 in two ways. First, they can continue to utilize energy efficiency tools to reduce their overall
19 electricity consumption, as they are currently able to do on a tiered structure. Second, TOU rates
20 provide customers with the incentive to shift usage that cannot be eliminated to the off-peak time
21 period, in order to avoid the high-cost hours, which they currently cannot do under tiered rates.
22 This does not mean that customers must eliminate all electricity usage during the high cost/on-

²⁵ Id., p. 82.

1 peak hours, but that they can make decisions to perform energy intensive tasks, such as running a
2 dishwasher, or doing laundry, during the lower-cost hours in order to achieve bill savings. As
3 noted in the Nexant/RIA Report, all customers overall on SDG&E's Opt-In Pilot Rates 1 and 2
4 saw average bill reductions of \$3.14 and \$4.33 (or 3.1% and 4.1%) respectively, due to changes
5 in energy use.²⁶

6 III.

7 ENABLING DEFAULT TOU THROUGH RATE DESIGN

8 SDG&E tested two opt-in TOU rates for piloting to residential customers. In AL 2835-
9 E-A, SDG&E detailed how its two Opt-In Pilot TOU rates were designed to limit impacts to
10 customers as they are transitioned. This rate design limits impacts to customers through setting
11 the baseline credits within TOU equal to the difference between SDG&E's current Tier 1 and
12 Tier 2 rates. The baseline adjustment virtually eliminates the impact of a customer transitioning
13 from SDG&E's tiered rates.

14 Rate 1 of SDG&E's Opt-In TOU Pilot has three rate periods in all seasons and all days of
15 the week. The peak period, from 4 to 9 PM, is constant across all days of the week and seasons.
16 The timing and length of the Off-Peak and Super-Off-Peak periods also are constant across
17 seasons but differ on weekdays and weekends. The Peak to Super-Off-Peak price ratio (without
18 the baseline credit) is roughly 1.9 to 1 in summer and a very modest 1.06 to 1 in spring and
19 winter. The summer Peak to Off-Peak price ratio is roughly 1.6 to 1.²⁷

²⁶ Nexant/RIA Report, pp. 377-378.

²⁷ Differentials for the Opt-In Pilot rates are directed by Resolution E-4796. However, general TOU
differentials of TOU rates are subject to change depending effective revenue requirements.

(Continued)

Figure 6.1-1: SDG&E Pilot Rate 1²⁸

Tariff	Season	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00
Weekday	Summer	Super Off Peak (29.71¢)						Off Peak (34.91¢)									Peak (56.57¢)			Off Peak (34.91¢)					
	Winter	Super Off Peak (35.12¢)						Off Peak (36.2¢)									Peak (37.31¢)			Off Peak (36.2¢)					
Weekend	Summer	Super Off Peak (29.71¢)													Off Peak (34.91¢)	Peak (56.57¢)			Off Peak (34.91¢)						
	Winter	Super Off Peak (35.12¢)													Off Peak (36.2¢)	Peak (37.31¢)			Off Peak (36.2¢)						

The primary difference between SDG&E’s Opt-In Pilot Rate 2 and Rate 1 is that Rate 2 has only two TOU rate periods whereas Rate 1 has three TOU rate periods. Rate 2 has the same Peak period from 4 to 9 PM in effect all days of the year, as does Rate 1. In summer, the Peak-to-Off-Peak price ratio for Rate 2 is roughly 1.7 to 1.

Figure 6.1-2: SDG&E Pilot Rate 2²⁹

Tariff	Season	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00
Weekday	Summer	Off Peak (32.94¢)															Peak (56.57¢)			Off Peak (32.94¢)					
	Winter	Off Peak (35.77¢)															Peak (37.31¢)			Off Peak (35.77¢)					
Weekend	Summer	Off Peak (32.94¢)															Peak (56.57¢)			Off Peak (32.94¢)					
	Winter	Off Peak (35.77¢)															Peak (37.31¢)			Off Peak (35.77¢)					

Opt-In Pilot Rates 1 and 2 have baseline credits to reflect the tiered structure of the standard rate. The credits for up to 130% of baseline usage are 20.32¢ and 18.64¢ for the summer and winter seasons respectively. This credit significantly reduces average prices, especially for lower usage customers. A table summarizing the differences between Rate 1 and Rate 2 is set forth below:

Table 6-1-1: Summary of SDG&E’s TOU Rates³⁰

Rate Description		Rate 1	Rate 2	
Rate Periods	Summer	3	2	
	Winter	3	2	
		Summer	26.9	23.6

²⁸ Nexant/RIA Report, p. 335.

²⁹ Id.

³⁰ Id., p. 334.

Highest Price Differential (¢)	Winter	2.2	1.5
Peak Period		4-9 PM	4-9 PM
Duration of Peak		5 Hours	5 Hours
Super Off-Peak?		Yes	No
Super On-Peak?		No	No

1 For reference, the table below shows the tiered rate that control customers were placed on:

2 **Table 6.1-2: 2016 Schedule DR & Schedule DR-LI Tariffs³¹**

Tier	Baseline	Summer		Winter	
		DR	DR-LI ³²	DR	DR-LI
1	0-130%	19.13¢	18.34¢	17.55¢	16.76¢
2	> 130%	39.46¢	38.67¢	36.19¢	35.39¢

3 In the Nexant/RIA Report, customers samples were stratified to study groups that were
4 “at-risk” of unreasonable hardship defined in Section 745, including CARE/FERA customers,
5 seniors, customers in hot climate zones and customers with incomes stratified by Federal Poverty
6 Guidelines (FPG). SDG&E’s hot region is extremely small (about 17,000 customers), and the
7 sample of customers recruited into the pilot was not large enough to support estimation of load
8 impacts separately for CARE/FERA and non-CARE/FERA customers or to support
9 segmentation of the sample into seniors or various income groups, as was done in hot regions for
10 PG&E and SCE.³³ All customers in the hot region were placed on Rate 2 or in the control group.
11 It is to be expected that there will be benefitters and non-benefitters in any rate change, including

³¹ Id., p. 335.

³² DR-LI rates presented exclude the line item discount and CARE Surcharge Exemption.

³³ Nexant/RIA Report, p. 351.

1 in the Opt-in Pilot, Default TOU Pilot and default TOU rollout. However, SDG&E
2 conscientiously structured its rate design to mitigate negative impacts.

3 The results of the Nexant/RIA Report demonstrate that there are significant opportunities
4 for SDG&E's customers to reduce peak load and usage, with the potential for system benefits in
5 full default. To be specific, Rate 1 saw statistically significant³⁴ absolute peak load reductions (4
6 PM – 9 PM) of 4.7%, 6.1%, and 5.4% in cool, moderate, and cool/moderate zones,
7 respectively.³⁵ Additionally, for the moderate and cool regions combined, there was a
8 statistically significant 2.4% reduction in daily electricity use on the average weekday. Overall,
9 both CARE/FERA and non-CARE customers reduced their overall consumption as well as
10 shifted load to off-peak hours on Rate 1. On Rate 2, the conservation for all customers (e.g., the
11 reduction in daily usage) was between 2.5% and 3.0% in nearly all regions.³⁶ Non-CARE/FERA
12 customers in the moderate and cool climate regions combined reduced their average weekday
13 electricity demand by 2.4% or 0.01kW. CARE/FERA customers reduced their average weekday
14 electricity demand by 3.1%, or 0.02kW, and had similar reductions on weekends. Customers in
15 hot climate zones saw significant absolute peak load reductions (4 – 9 PM) of 6.8% on average
16 weekdays and 7.5% on average weekends, as well as a monthly system peak day reduction of
17 8.4%, or 0.13kW.³⁷

18 Based on these results, it appears that default TOU rates with few to no exclusions may
19 yield significant reductions in both usage and absolute peak load reductions, potentially altering

³⁴The Nexant/RIA Report utilized a 95% level of confidence in all statistical evaluation ($\alpha = .10$). Id., p. 47.

³⁵Id., Figure 6.3-3, p. 354.

³⁶ Id., p. 363.

³⁷ Id., Table 6.3-4, p. 363.

1 SDG&E’s load shape and providing the system benefits that TOU seeks to create. In SDG&E’s
2 Opt-in Pilot Advice Letter 2835-E-A, filed December 30, 2015, SDG&E proposed three opt-in
3 rates, which were modified by Resolution E-4769 and implemented with AL 2890-D. In Advice
4 Letter 3020-E - filed one year later on December 16, 2016 - and in supplemental ALs 3020-E-A
5 and 3020-E-B, filed on February 24, 2017 and March 10, 2017, SDG&E proposed two different
6 pilot rates for the purposes of default, which are structurally the same as the two rates tested in
7 its Opt-in TOU Pilot. In SDG&E’s upcoming 2018 Residential Rate Design Window (RDW)
8 application, SDG&E will propose to adopt one of the two proposed default pilot rates as the
9 single default rate. In evaluating the evidence provided through this testimony, parties and the
10 Commission should consider how the proposed default rates may impact customers relative to
11 the Opt-in Pilot rates, which are used for the purposes of this analysis. Additionally, any future
12 changes to the Default TOU Rate Structure – after the initial default TOU migration - should be
13 considered within SDG&E’s future rate design proceedings, including its 2019 General Rate
14 Case (GRC) Phase 2 and 2018 Residential RDW.

IV.

ADDITIONAL ANALYSES REQUESTED BY THE ENERGY DIVISION

Per the request of the Commission’s Energy Division (or relevant to the Energy
Division’s request), SDG&E is providing the following additional information as attachments to
this testimony:

- 15 • Attachment A: Comparison of Rates Utilized in SDG&E’s Bill Impacts and Bill
16 Volatility Analysis;
- 17 • Attachment B: Bill Impact Analysis, which includes:
 - 18 (1) Population Distribution (\$ Impact) by Climate Region for: (a) all non-NEM
19 customers, (b) all non-NEM, non-CARE/FERA customers, (c) all non-NEM,
20 CARE/FERA customers, and (d) non-NEM, all electric, CARE customers (Hot
21 areas only); and

1 (2) Percent (%) of Baseline (\$ Impact) by Climate Region for: (a) all non-NEM
2 customers, (b) all non-NEM, non-CARE/FERA customers, (c) all non-NEM,
3 CARE/FERA customers, and (d) non-NEM, all electric, CARE customers (Hot
4 areas only)(3) Population Distribution (\$ Impact) and Percent (%) of Baseline (\$
5 Impact) for (1) and (2) for a 1-in-10 weather year³⁸

- 6 • Attachment C: Bill Volatility Analysis, which includes:

7 (1) Standard Deviation of Bills in Summer vs. Winter Annual by Climate Region
8 for: (a) all non-NEM customers, (b) all non-NEM, non-CARE/FERA customers,
9 (c) all non-NEM, CARE/FERA customers, and (d) non-NEM, all electric, CARE
10 customers (Hot areas only);

11 (2) Distribution of Difference between Average Summer and Average Winter Bill
12 by Climate Region for: (a) all non-NEM customers, (b) all non-NEM, non-
13 CARE/FERA customers, (c) all non-NEM, CARE/FERA customers, and (d) non-
14 NEM, all electric, CARE customers (Hot areas only);

15 (3) Average Bill by Month by Climate Region for: (a) all non-NEM customers,
16 (b) all non-NEM, non-CARE/FERA customers, (c) all non-NEM, CARE/FERA
17 customers, and (d) non-NEM, all electric, CARE customers (Hot areas only);and

- 18 • Attachment D: Electricity Burden Analysis, which includes:

19 (1) Electricity Burden as a ratio of the household electricity bill as a percentage of
20 household income by Climate Region for: (a) CARE/FERA customers, and (b)
21 non-CARE customers.

SDG&E hopes this additional information will be helpful to the Commission in
addressing the issues in this Section 745 phase of the proceeding.

V.

CONCLUSION

22 This concludes my prepared opening testimony.

³⁸ SDG&E has defined a 1-in-10 weather year as having a 10% chance of being equaled or exceeded each year. It would be expected to be equaled or exceeded once every 10 years on average (exceeding the value will not necessarily occur at regular intervals). SDG&E's 1-in-10 year is calculated using cooling degree days (CDD) (with a base 65) over the entire year. The 1-in-2 is about 1,000 CDDs and a 1-in-10 is 1,320 CDDs. 2016 was identified as a 1-in-10 year.

Appendix A
Witness Qualifications

1 VI.

2 WITNESS QUALIFICATIONS

3 My name is Cynthia Fang and my business address is 8330 Century Park Court, San
4 Diego, California 92123. I am the Rate Strategy and Analysis Manager in the Customer Pricing
5 Department of San Diego Gas and Electric. My primary responsibilities include the
6 development of cost-of-service studies, determination of revenue allocation and electric rate
7 design methods, analysis of ratemaking theories, preparation of various regulatory filings and
8 overseeing electric load analysis, electric demand forecasting and electric rate strategies for
9 SDG&E. I began work at SDG&E in May 2006 as a Regulatory Economic Advisor and have
10 held positions of increasing responsibility in the Electric Rate Design group. Prior to joining
11 SDG&E, I was employed by the Minnesota Department of Commerce, Energy Division, as a
12 Public Utilities Rates Analyst from 2003 through May 2006.

13 In 1993, I graduated from the University of California at Berkeley with a Bachelor of
14 Science in Political Economics of Natural Resources. I also attended the University of
15 Minnesota where I completed all coursework required for a Ph.D. in Applied Economics.

16 I have previously submitted testimony before the California Public Utilities Commission
17 and the Federal Energy Regulatory Commission regarding SDG&E's electric rate design and
18 other regulatory proceedings. In addition, I have previously submitted testimony and testified
19 before the Minnesota Public Utilities Commission on numerous rate and policy issues applicable
20 to the electric and natural gas utilities.

Attachment A

Comparison of Rates Utilized in SDG&E's Bill Impacts and Bill Volatility Analysis

Non-CARE					
Illustrative 2018 Tiered	Total Rate	TOU-DR2 (3 Periods)	Total Rate	TOU-DR3 (2 Periods)	Total Rate
<i>Summer</i>		On-Peak: Summer	0.45338	On-Peak: Summer	0.42240
0% - 130% Baseline	0.22908	Off-Peak: Summer	0.27329	Off-Peak: Summer	0.26870
131% - 400% Baseline	0.31112	Super Off-Peak: Summer	0.23007	On-Peak: Winter	0.28775
Above 400% Baseline	0.43755	On-Peak: Winter	0.28775	Off-Peak: Winter	0.27489
<i>Winter</i>		Off-Peak: Winter	0.27856	Up to 130% of Baseline Credit, Summer	(0.08204)
0% - 130% Baseline	0.20501	Super Off-Peak: Winter	0.26948	Up to 130% of Baseline Credit, Winter	(0.07342)
131%-400% Baseline	0.27843	Up to 130% of Baseline Credit, Summer	(0.08204)	Minimum Bill	0.32900
Above 400% Baseline	0.39158	Up to 130% of Baseline Credit, Winter	(0.07342)		
Minimum Bill	0.32900	Minimum Bill	0.32900		

CARE								
Illustrative 2018 Tiered	Total Rate	Effective Rate After Discount	TOU-DR2 (3 Periods)	Total Rate	Effective Rate After Discount	TOU-DR3 (2 Periods)	Total Rate	Effective Rate After Discount
<i>Summer</i>			On-Peak: Summer	0.44546	0.29425	On-Peak: Summer	0.41448	0.27348
0% - 130% Baseline	0.22116	0.14388	Off-Peak: Summer	0.26537	0.17351	Off-Peak: Summer	0.26078	0.17044
131% - 400% Baseline	0.30320	0.19888	Super Off-Peak: Summer	0.22215	0.14454	On-Peak: Winter	0.27983	0.18321
Above 400% Baseline	0.42963	0.28363	On-Peak: Winter	0.27983	0.18321	Off-Peak: Winter	0.26697	0.17459
<i>Winter</i>			Off-Peak: Winter	0.27064	0.17705	Up to 130% of Baseline Credit, Summer	(0.08204)	(0.05500)
0% - 130% Baseline	0.19709	0.12774	Super Off-Peak: Winter	0.26156	0.17096	Up to 130% of Baseline Credit, Winter	(0.07342)	(0.04922)
131%-400% Baseline	0.27051	0.17696	Up to 130% of Baseline Credit, Summer	(0.08204)	(0.05500)	Minimum Bill	0.16400	0.16400
Above 400% Baseline	0.38366	0.25281	Up to 130% of Baseline Credit, Winter	(0.07342)	(0.04922)			
Minimum Bill	0.16400	0.16400	Minimum Bill	0.16400	0.16400			

Attachment B

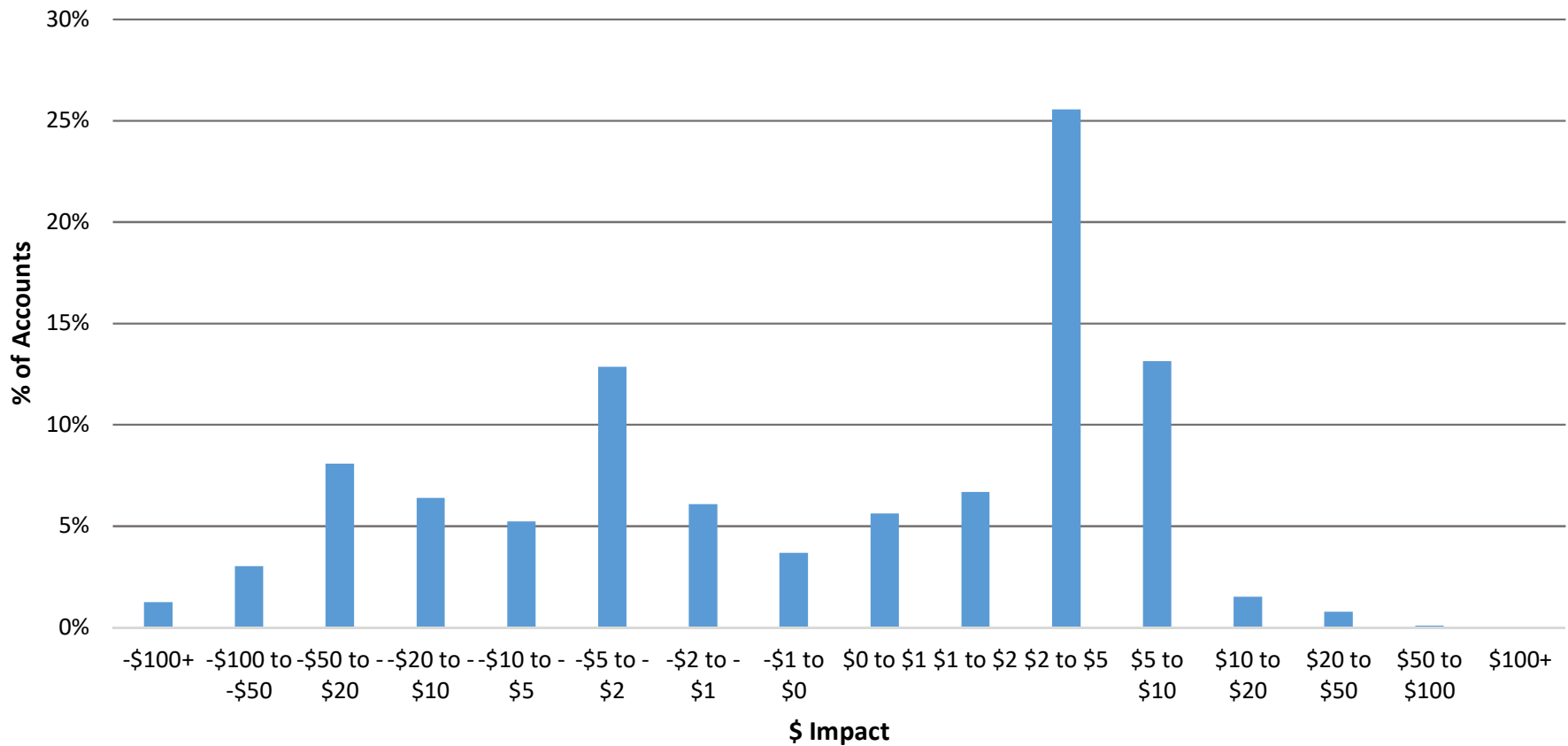
Bill Impact Analysis

Bill Impact Analysis

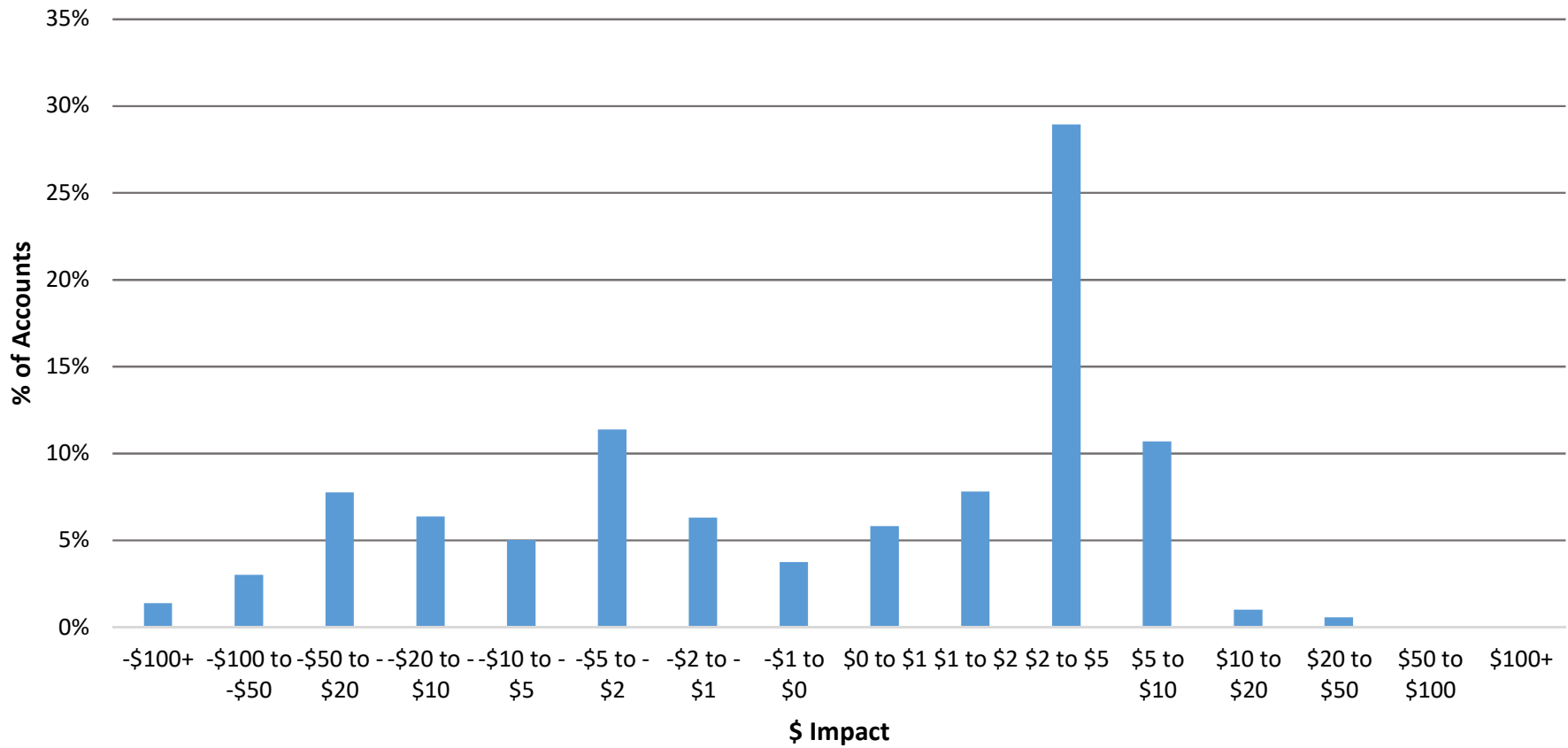
Average Annual Impact

2016

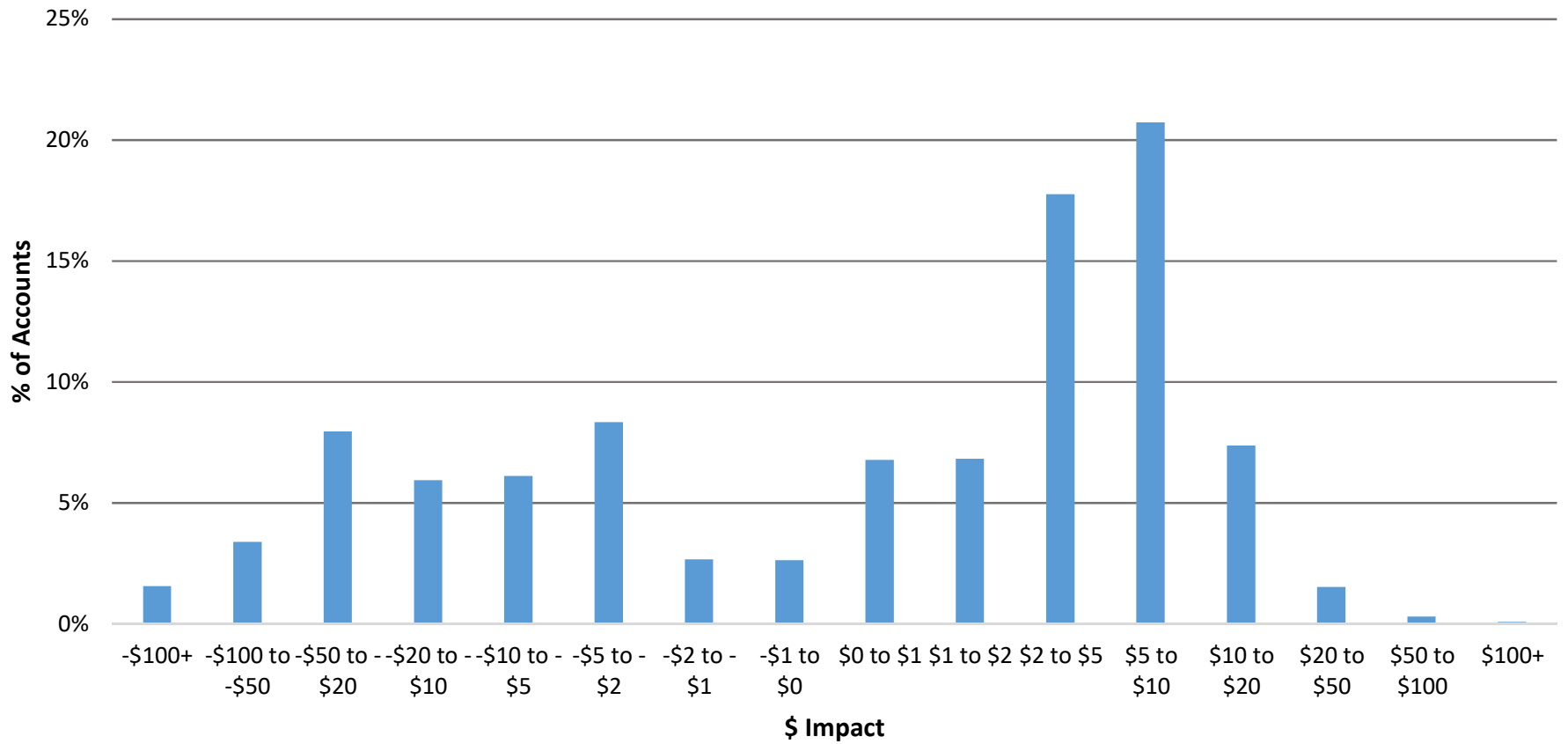
**All Customers non-NEM, All Climate Zones
Annual Average Monthly Bill Gain/Loss
Percentage of Customers
2018 Tiered Rates vs 3 Period Default TOU**



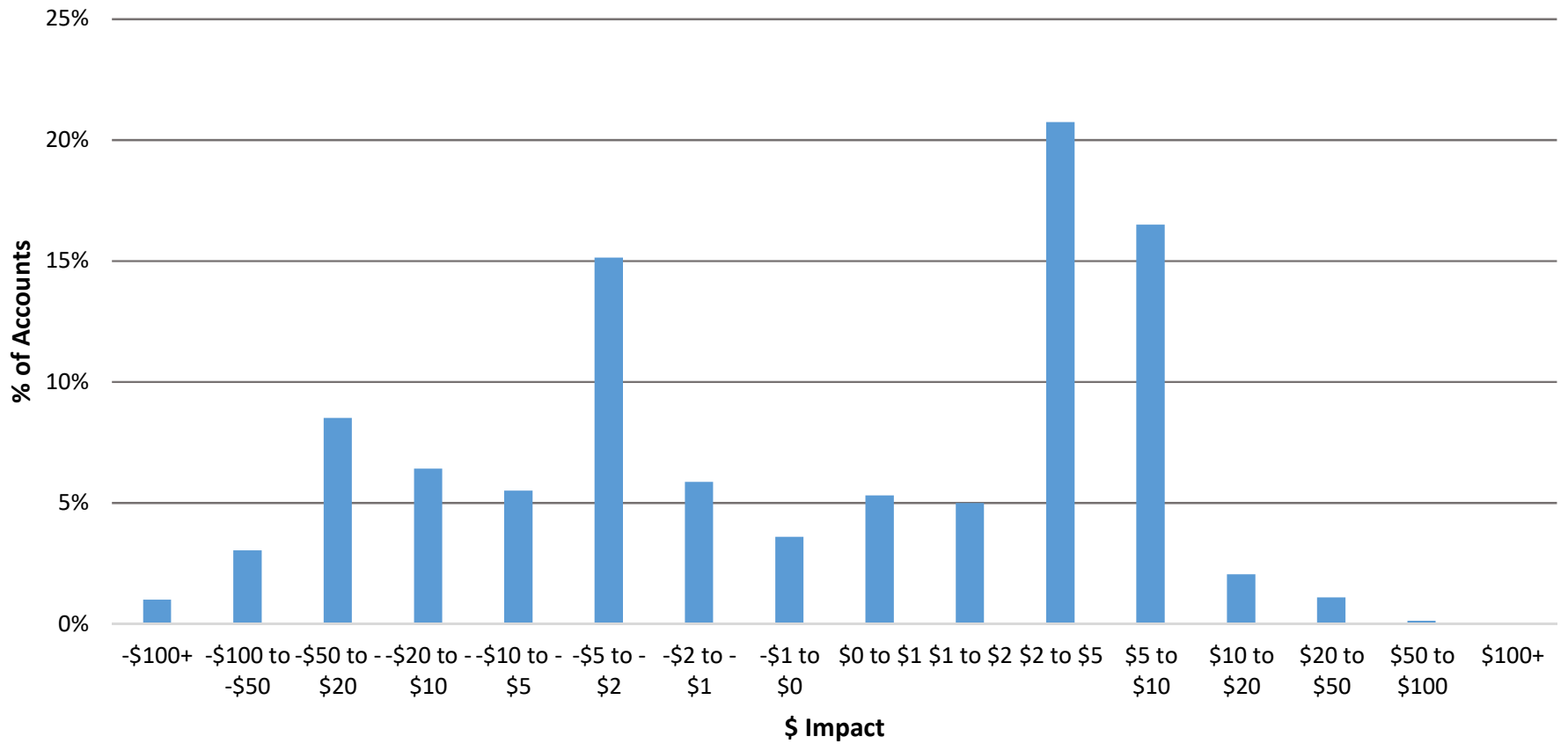
**All Customers non-NEM, Cool Climate Zone
 Annual Average Monthly Bill Gain/Loss
 Percentage of Customers
 2018 Tiered Rates vs 3 Period Default TOU**



**All Customers non-NEM, Hot Climate Zone
Annual Average Monthly Bill Gain/Loss
Percentage of Customers
2018 Tiered Rates vs 3 Period Default TOU**



**All Customers non-NEM, Moderate Climate Zone
 Annual Average Monthly Bill Gain/Loss
 Percentage of Customers
 2018 Tiered Rates vs 3 Period Default TOU**

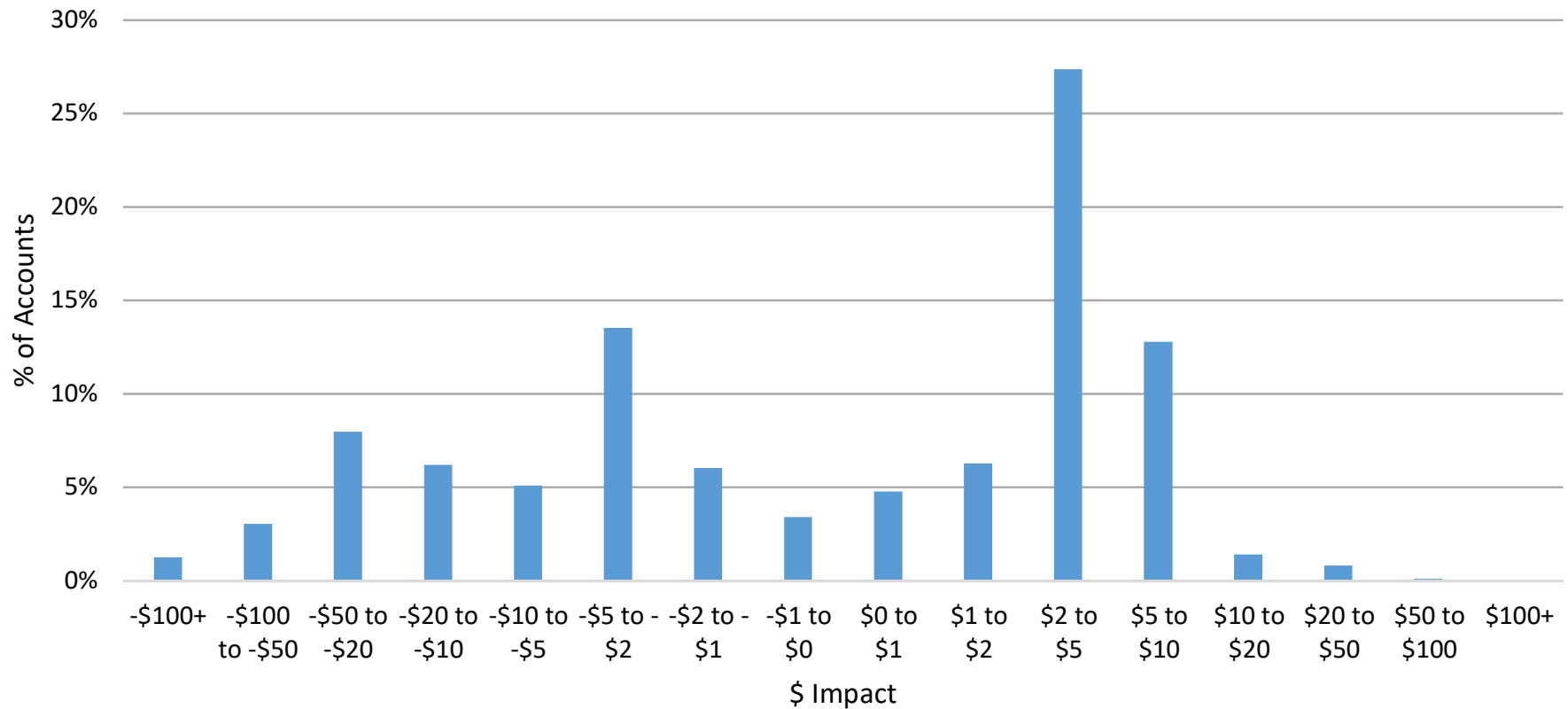


All Customers non-NEM, All Climate Zones

Annual Average Monthly Bill Gain/Loss

Percentage of Customers

2018 Tiered Rates vs 2 Period Default TOU

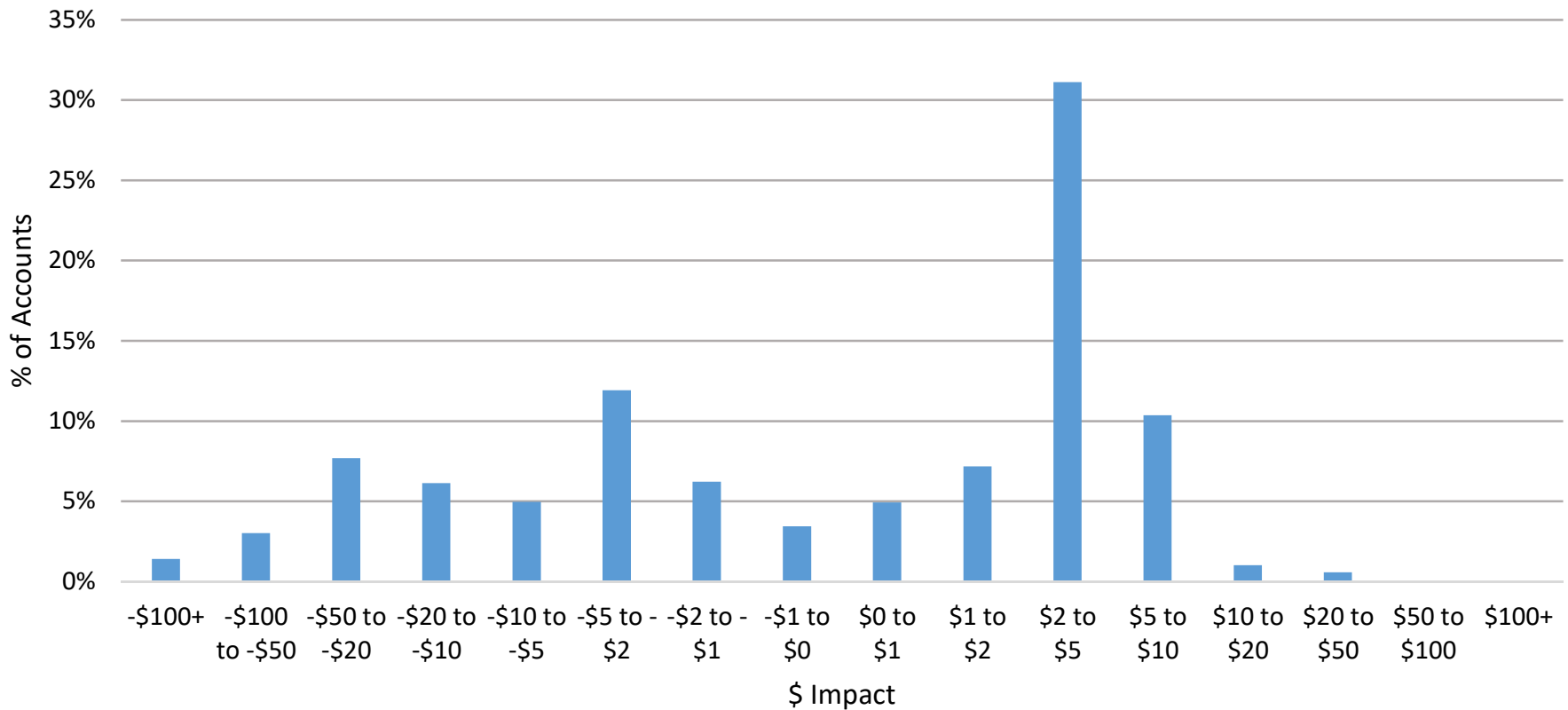


All Customers non-NEM, Cool Climate Zone

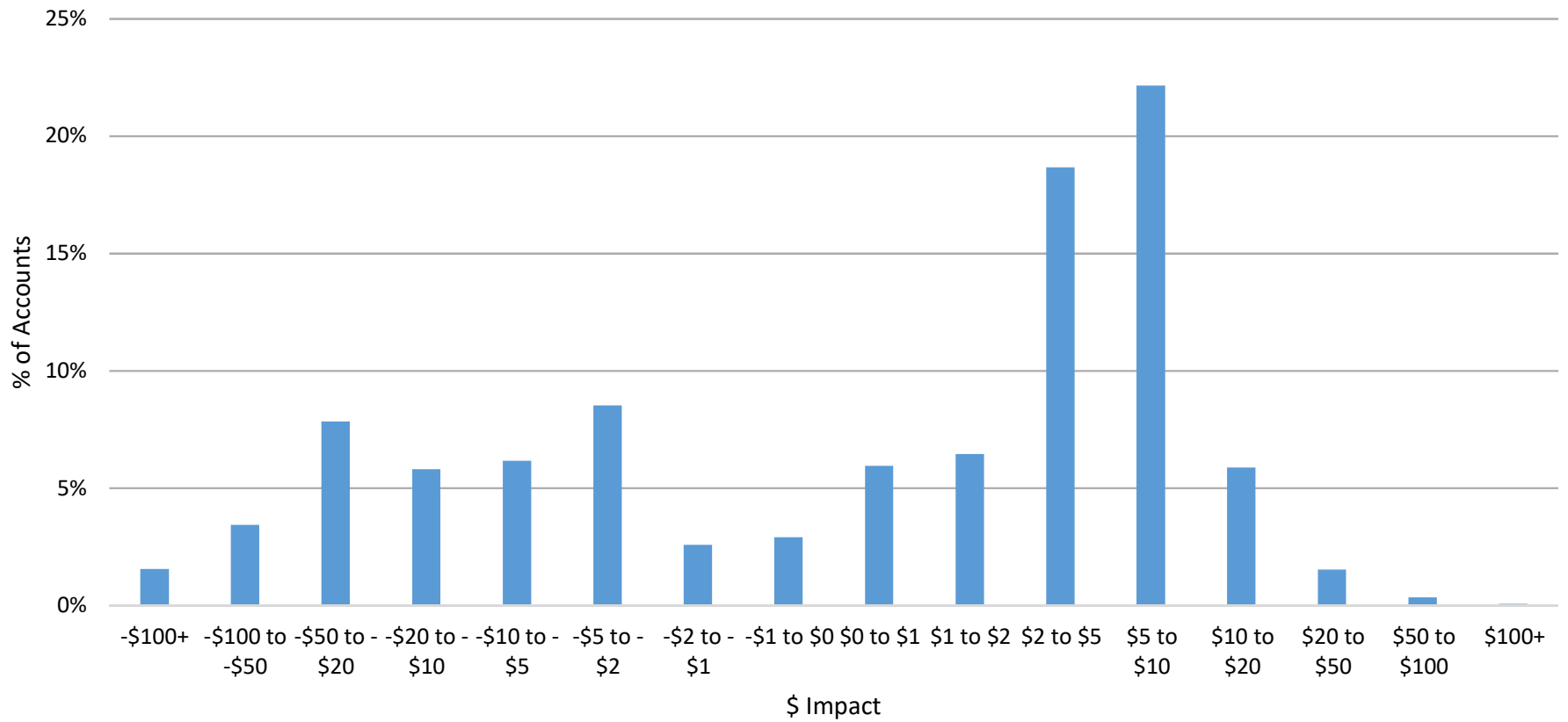
Annual Average Monthly Bill Gain/Loss

Percentage of Customers

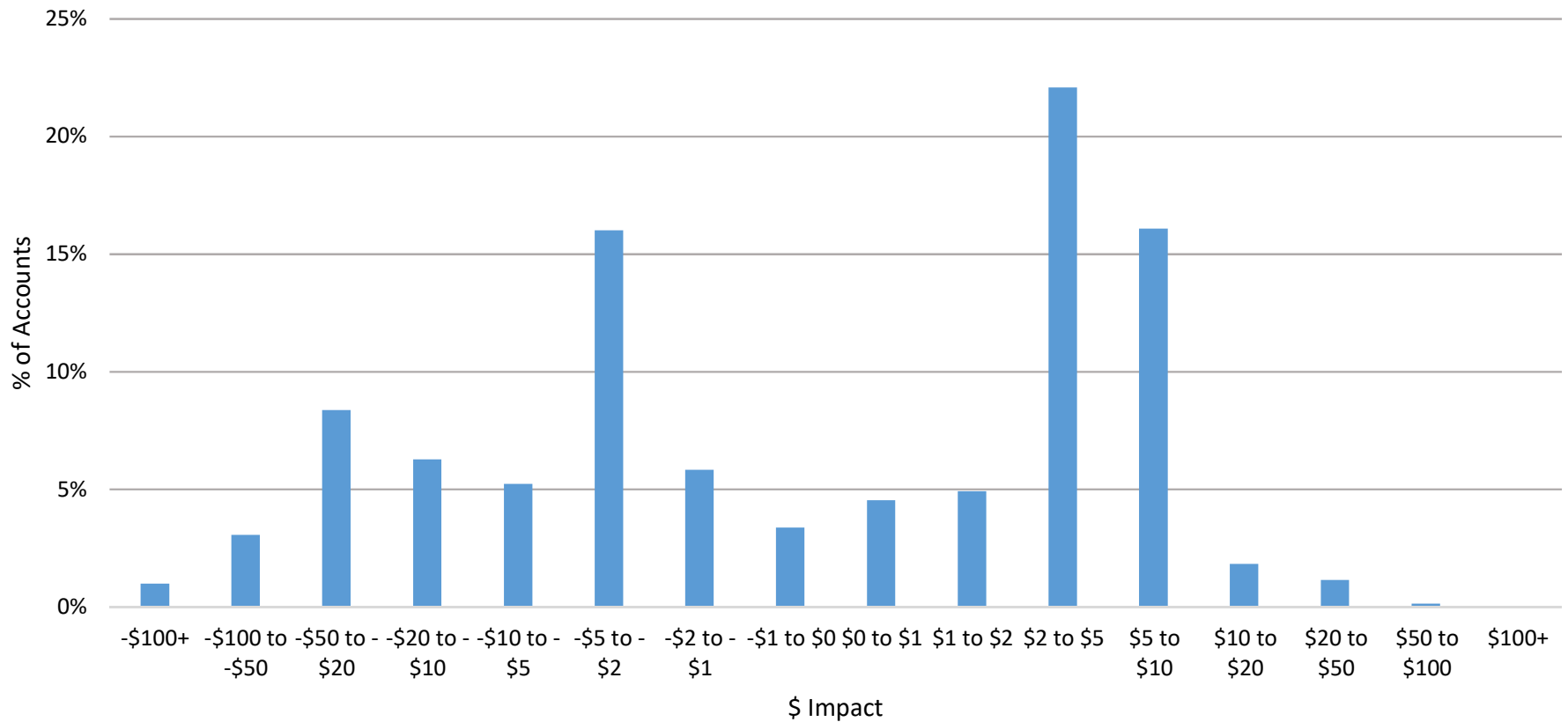
2018 Tiered Rates vs 2 Period Default TOU



**All Customers non-NEM, Hot Climate Zone
Annual Average Monthly Bill Gain/Loss
Percentage of Customers
2018 Tiered Rates vs 2 Period Default TOU**



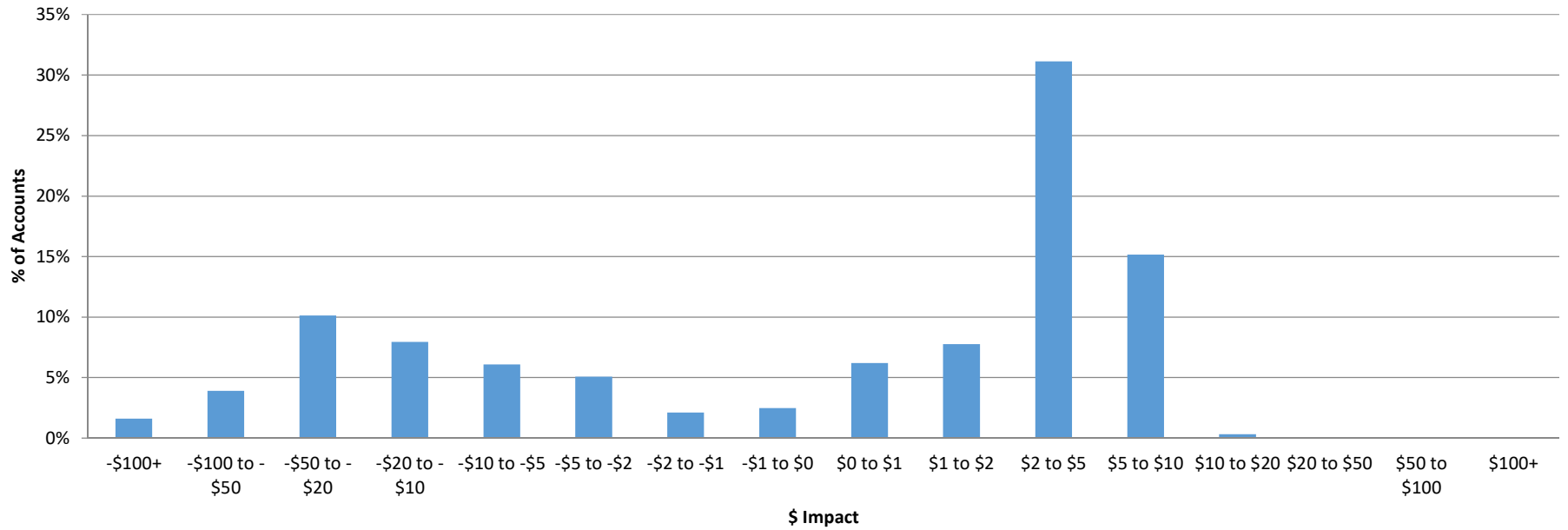
**All Customers non-NEM, Moderate Climate Zone
Annual Average Monthly Bill Gain/Loss
Percentage of Customers
2018 Tiered Rates vs 2 Period Default TOU**



CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, All Climate Zones Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

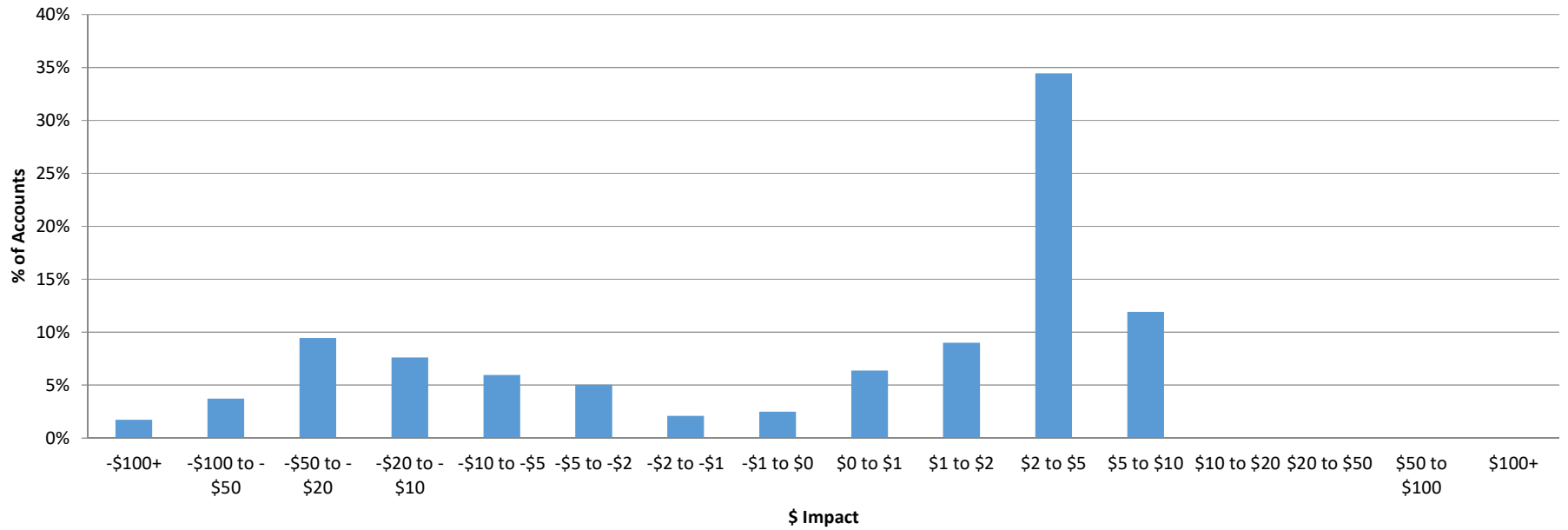


T to 3 \$ Annual Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, Cool Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

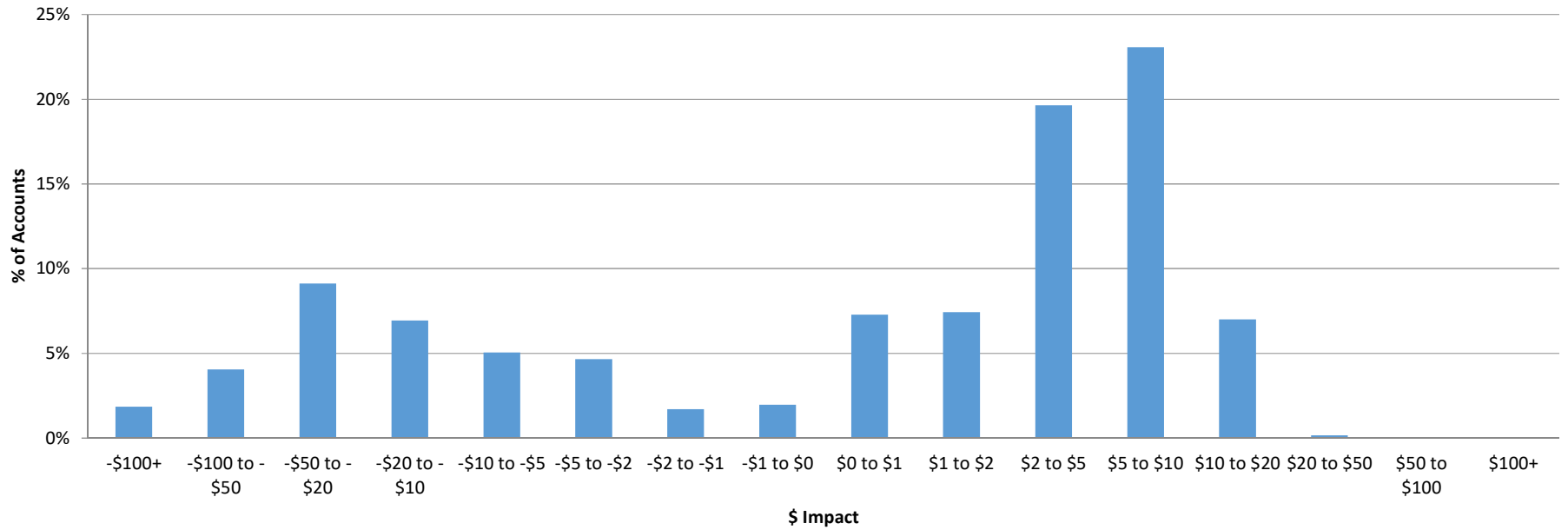


T to 3 \$ Annual Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, Hot Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

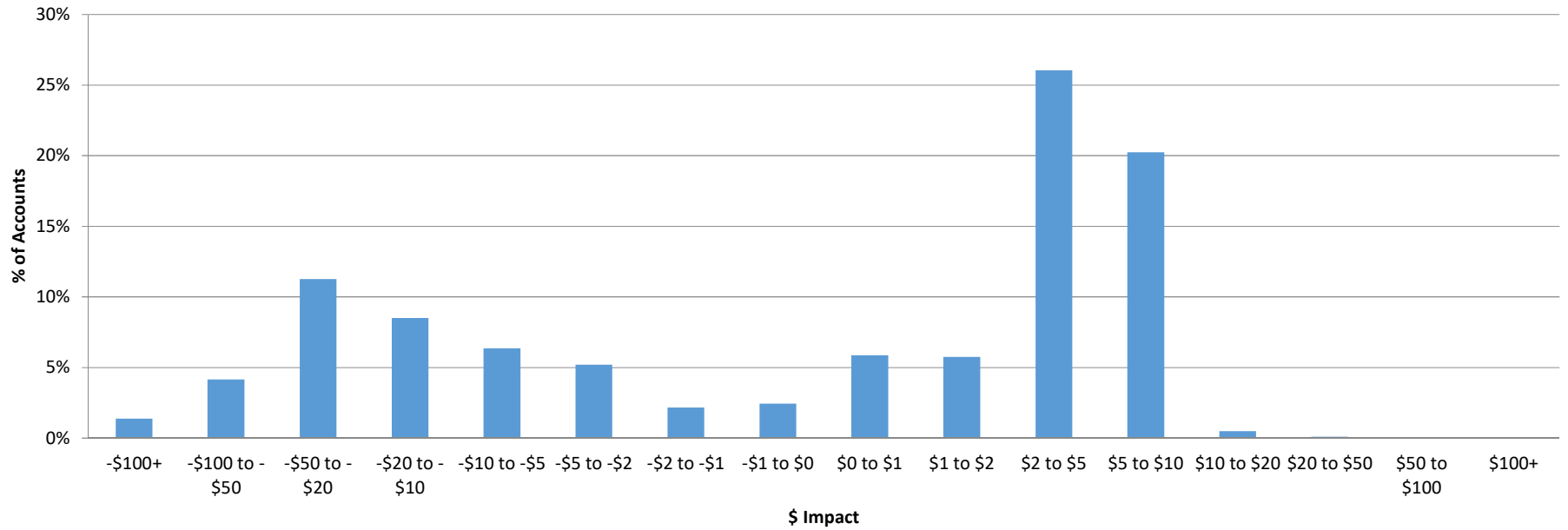


T to 3 \$ Annual Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, Moderate Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

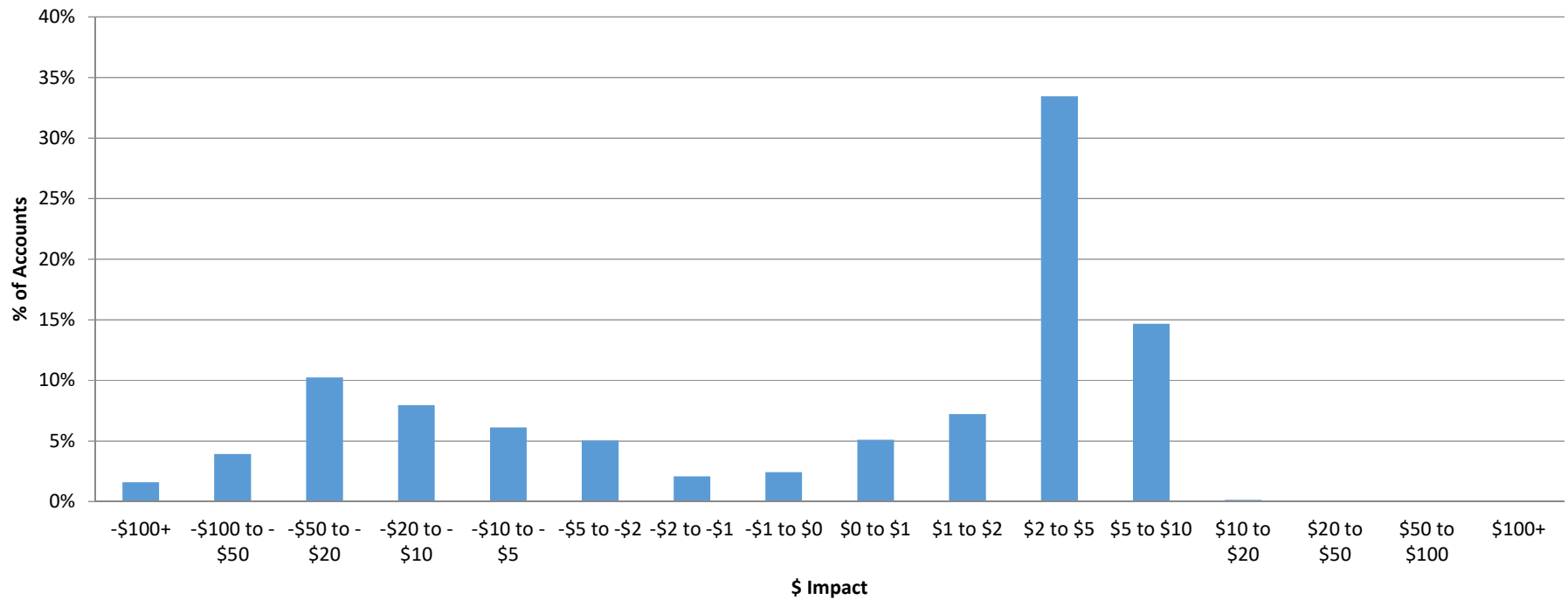


T to 3 \$ Annual Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, All Climate Zones Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

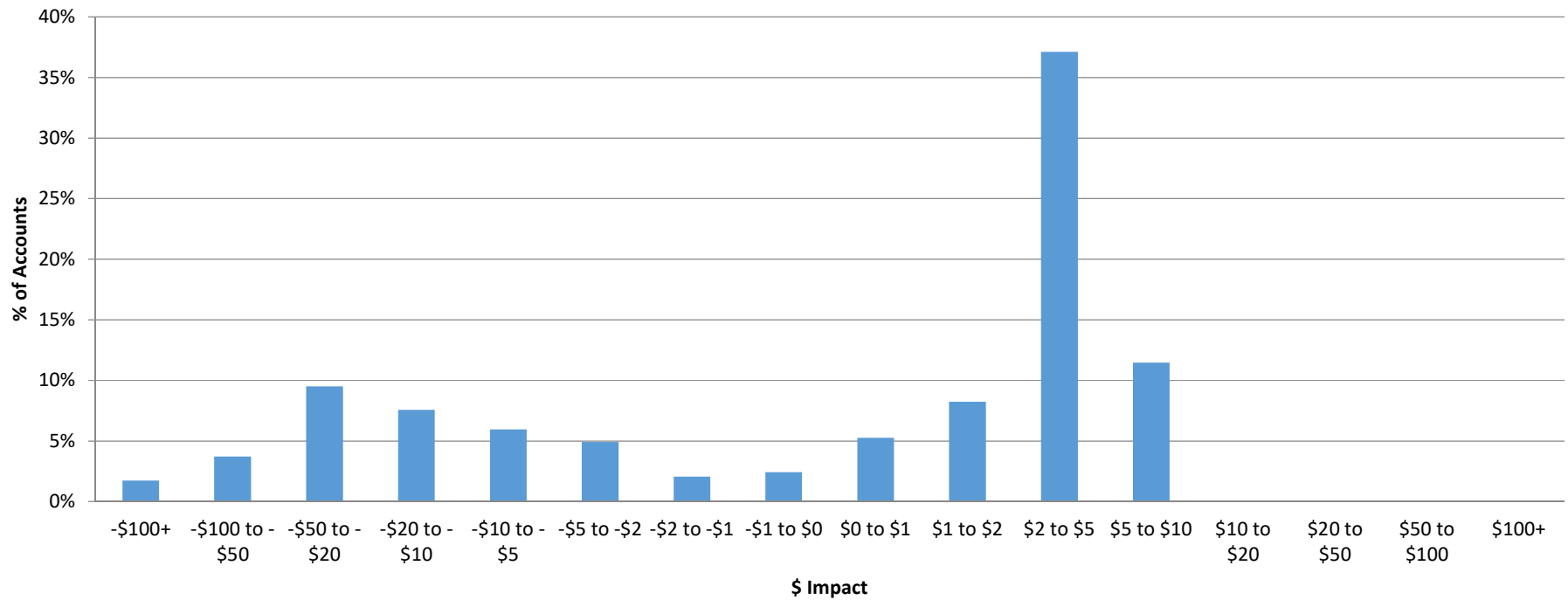


T to 2 \$ Annual Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, Cool Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

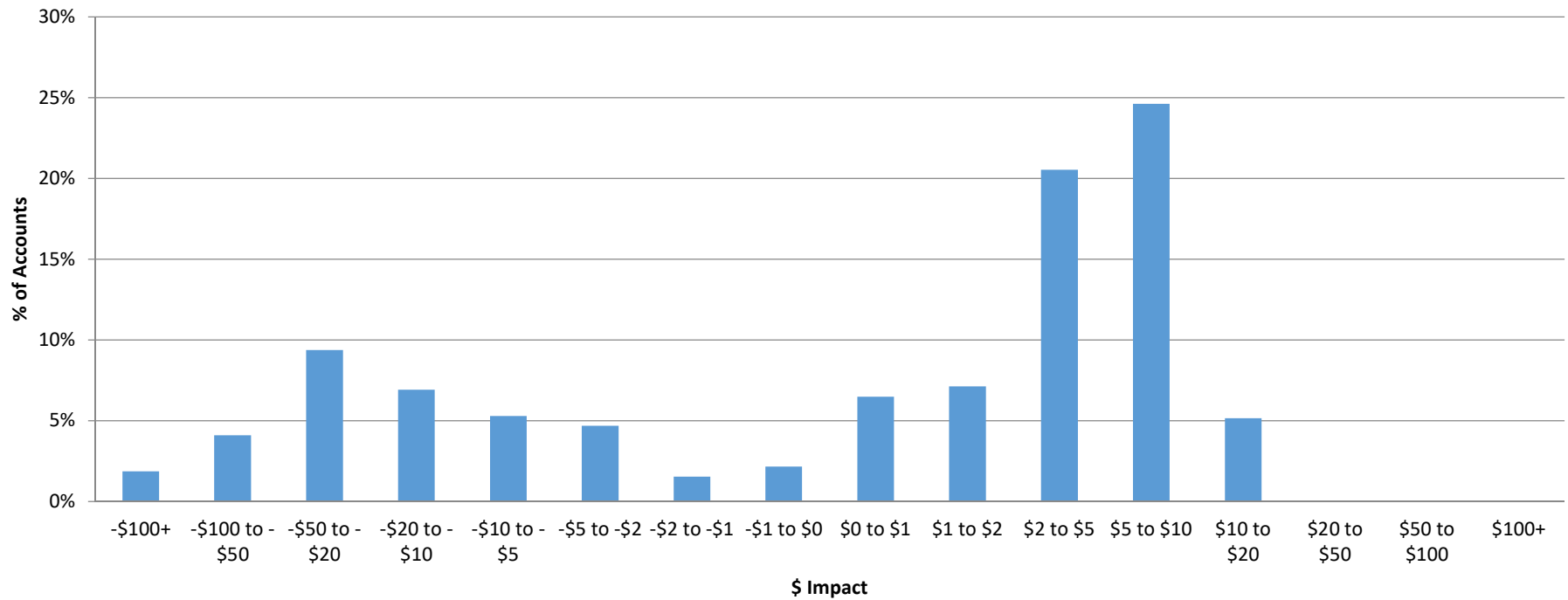


T to 2 \$ Annual Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, Hot Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

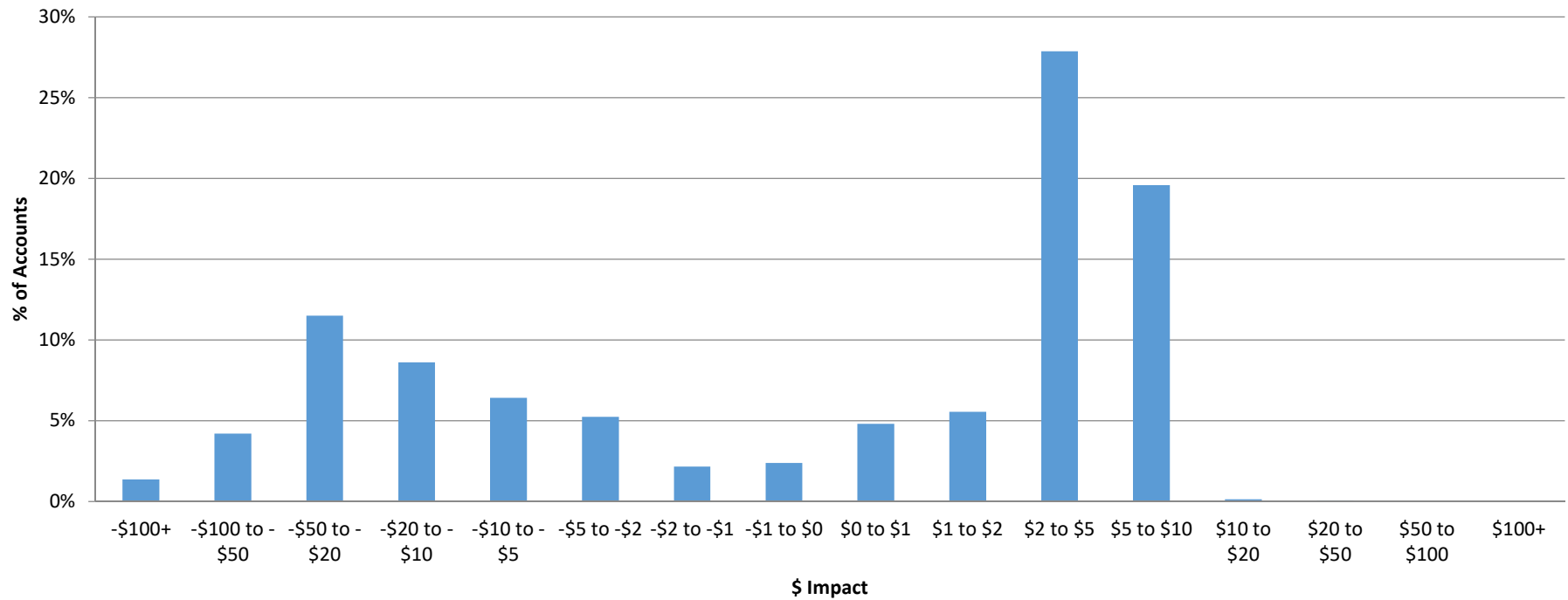


T to 2 \$ Annual Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, Moderate Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

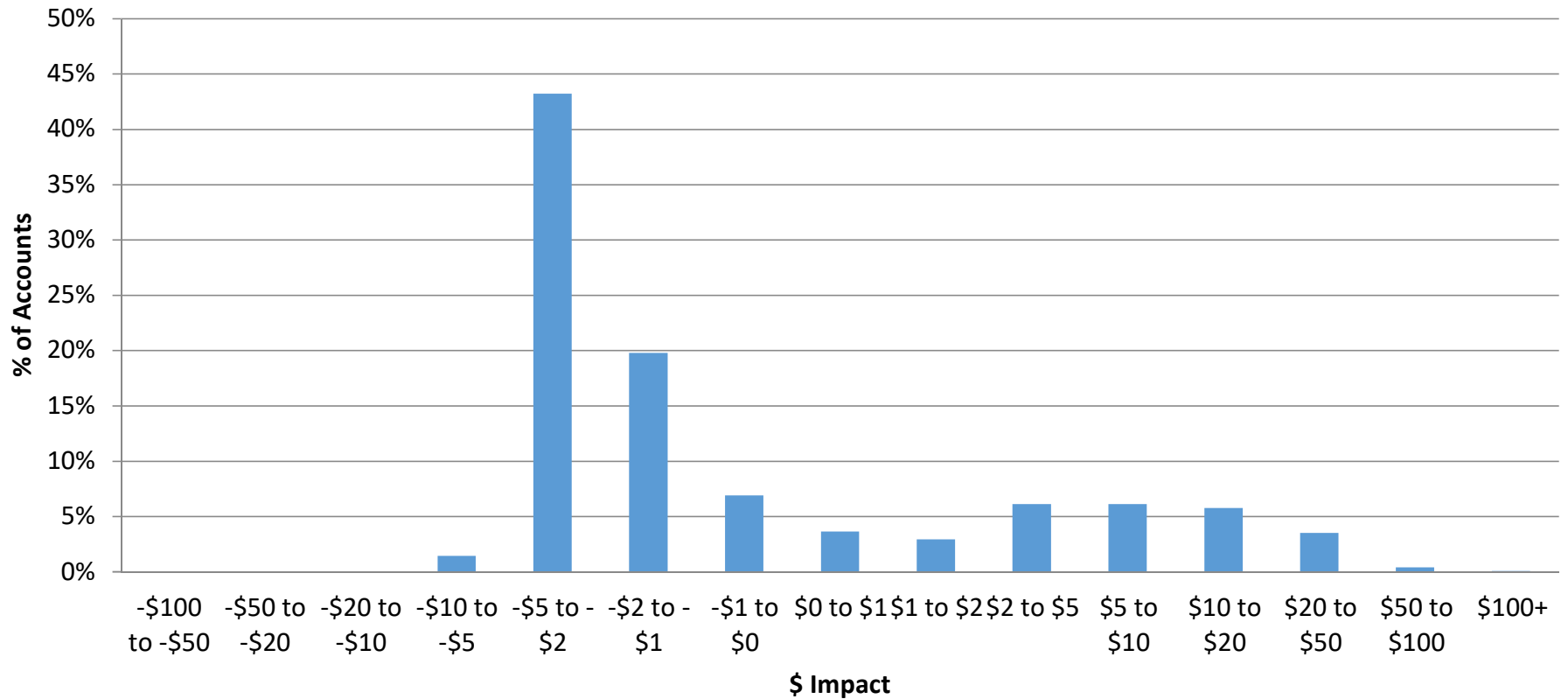


T to 2 \$ Annual Group

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, All Climate Zones Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

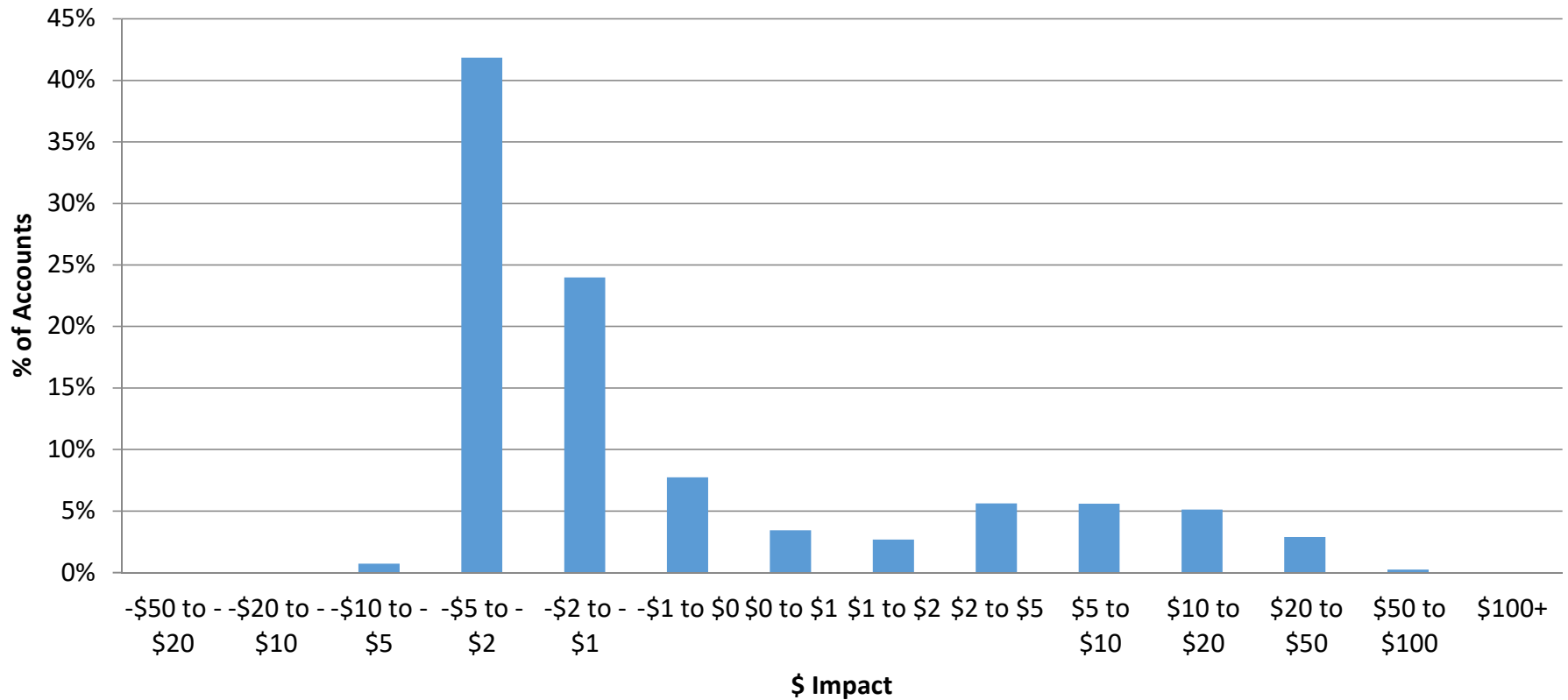


T -> 2P Annual Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, Cool Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

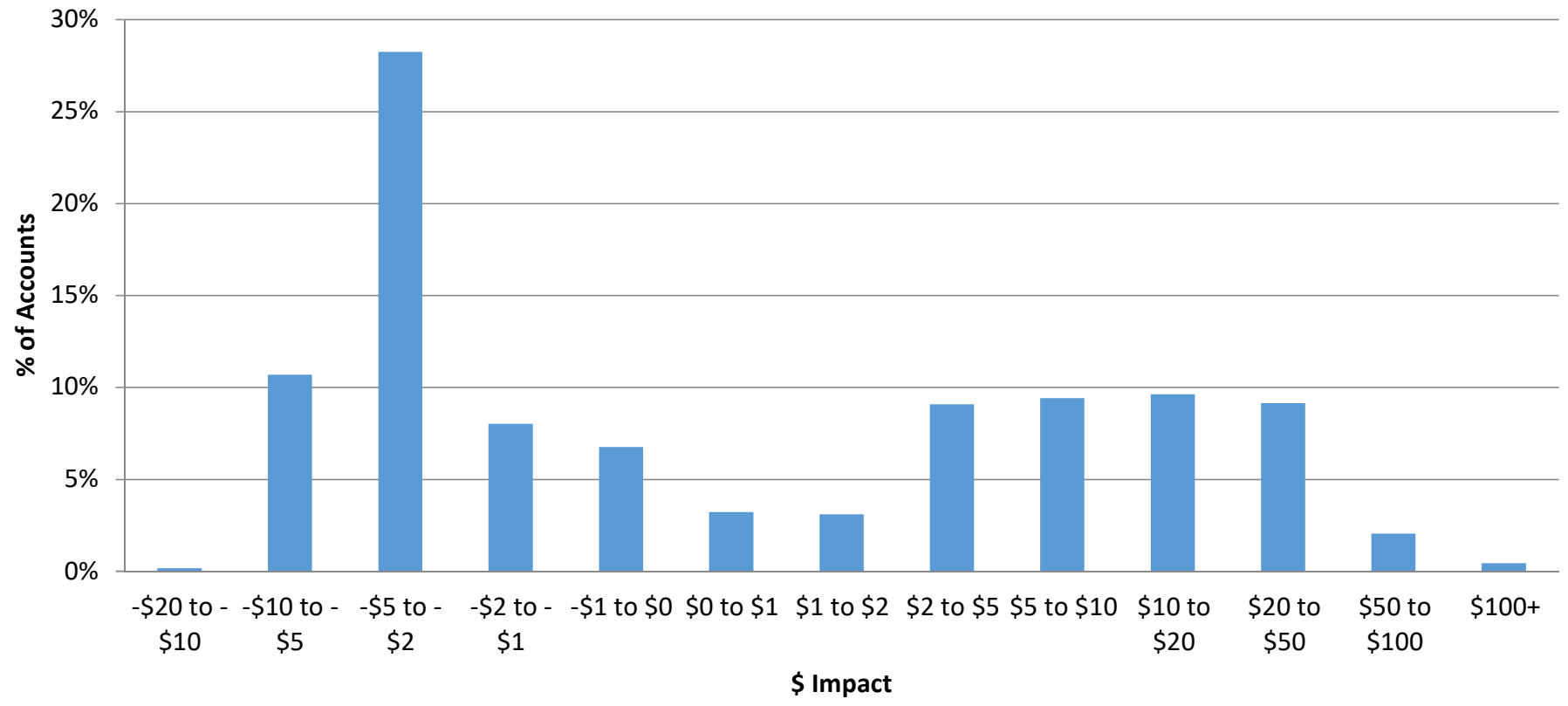


T -> 2P Annual Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, Hot Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

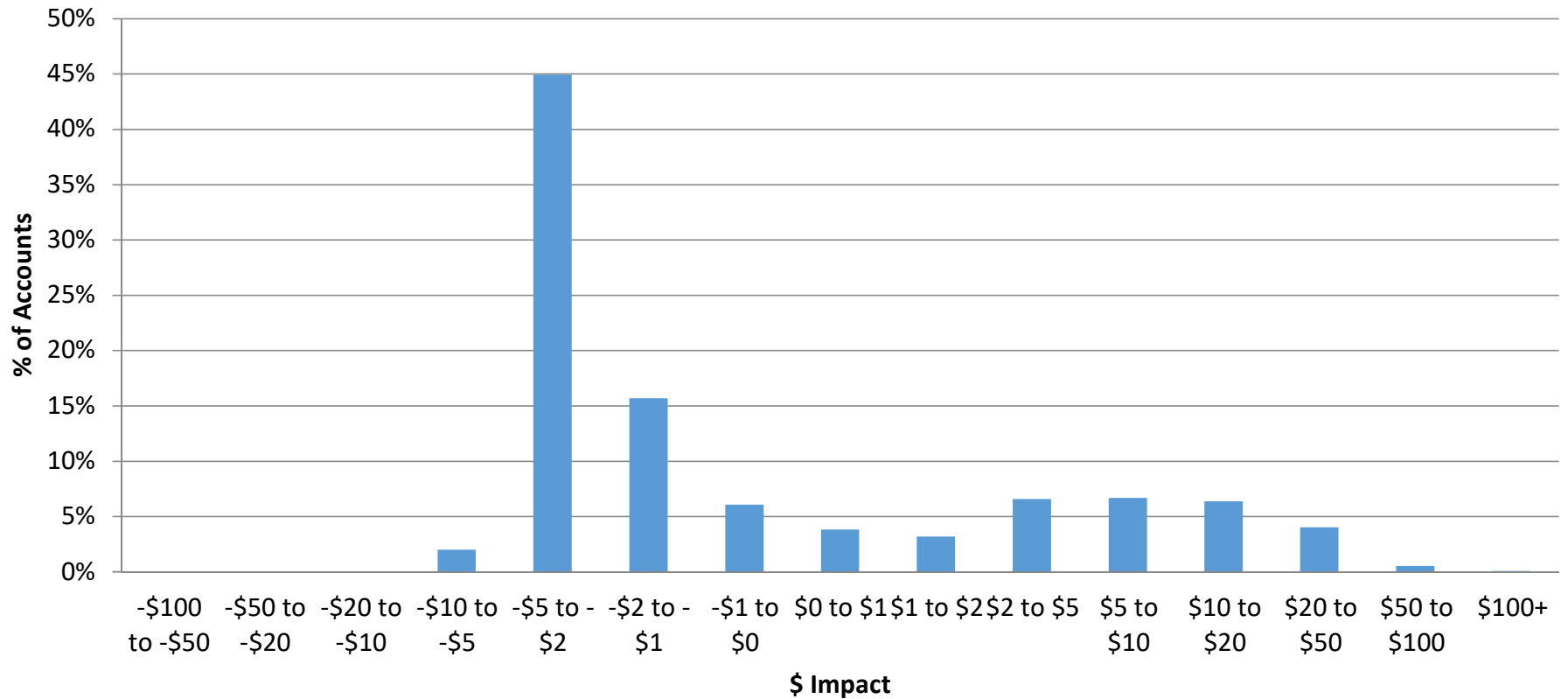


T -> 2P Annual Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, Moderate Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

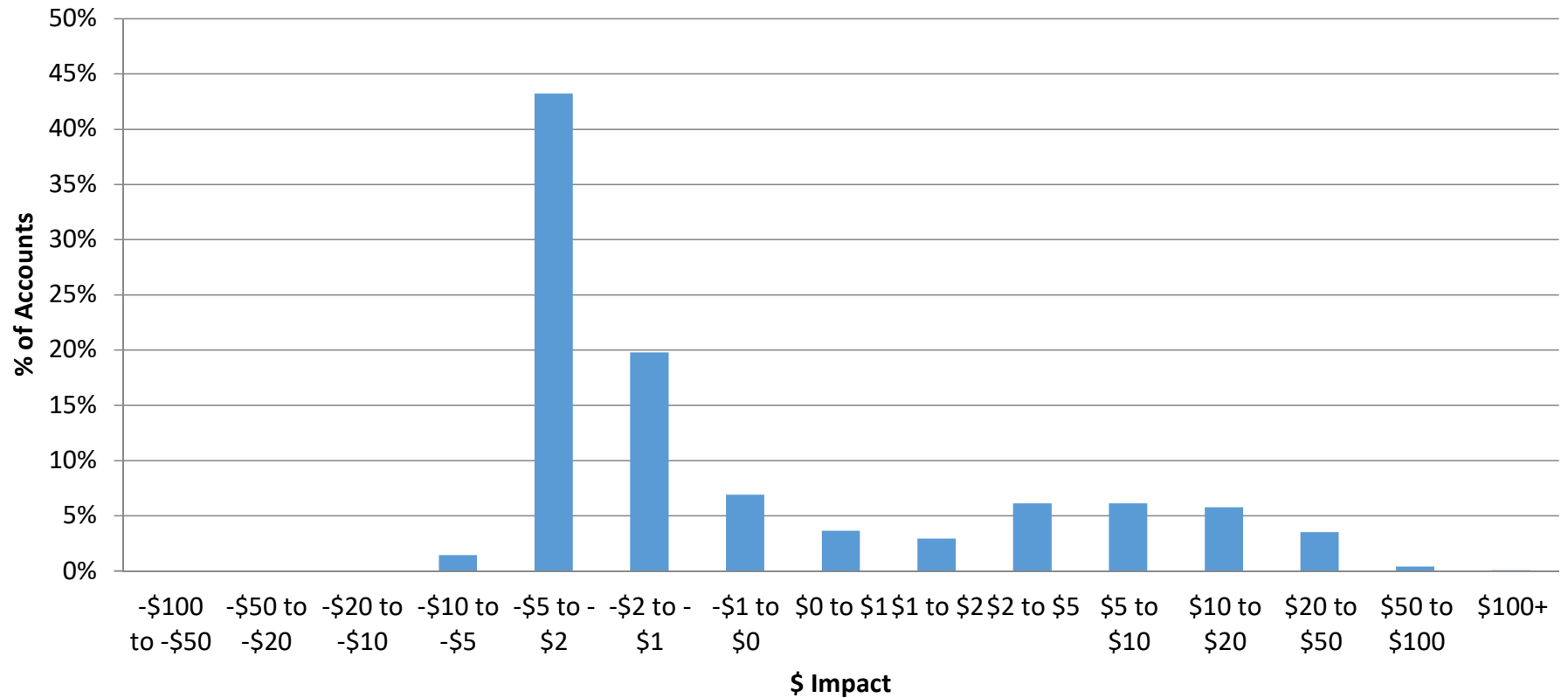


T -> 2P Annual Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, All Climate Zones Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

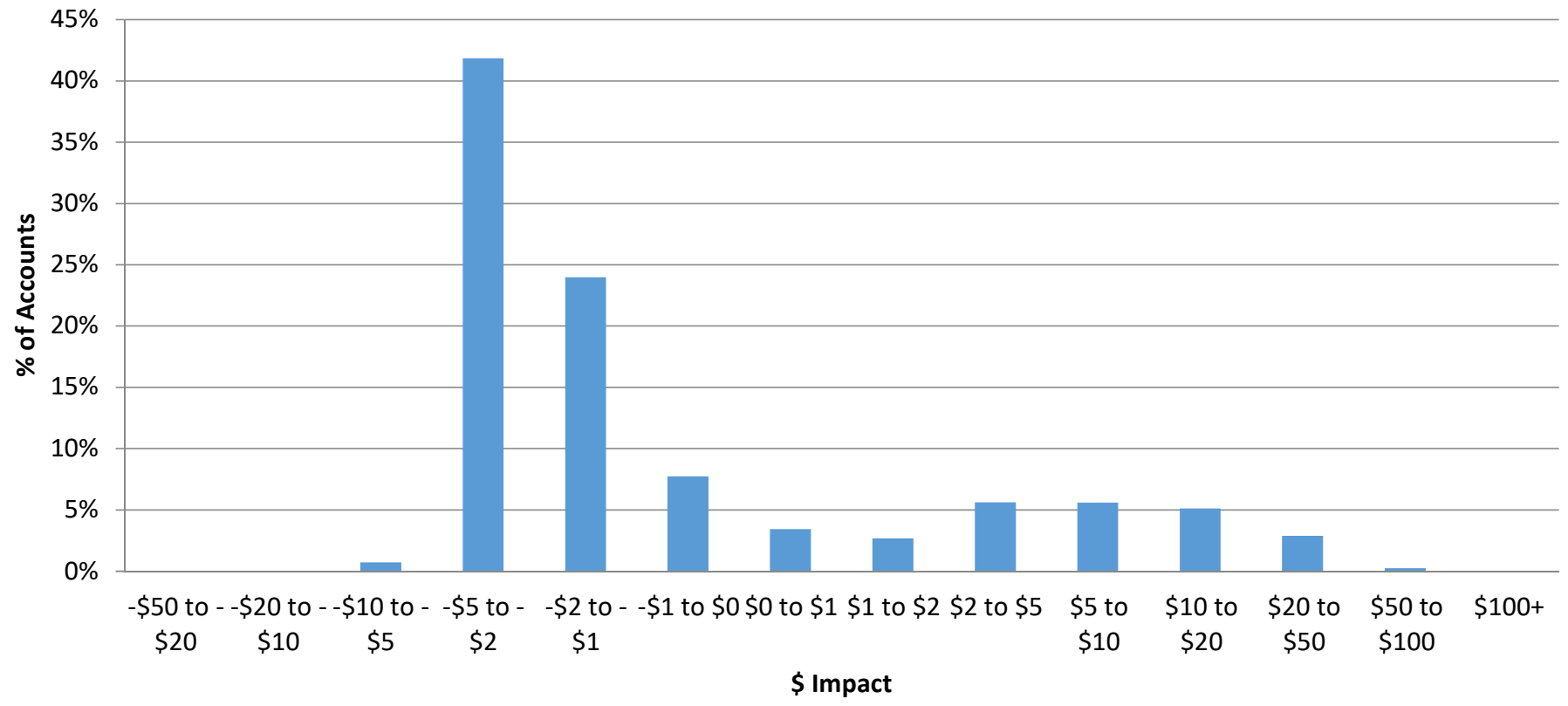


T -> 2P Annual Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, Cool Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

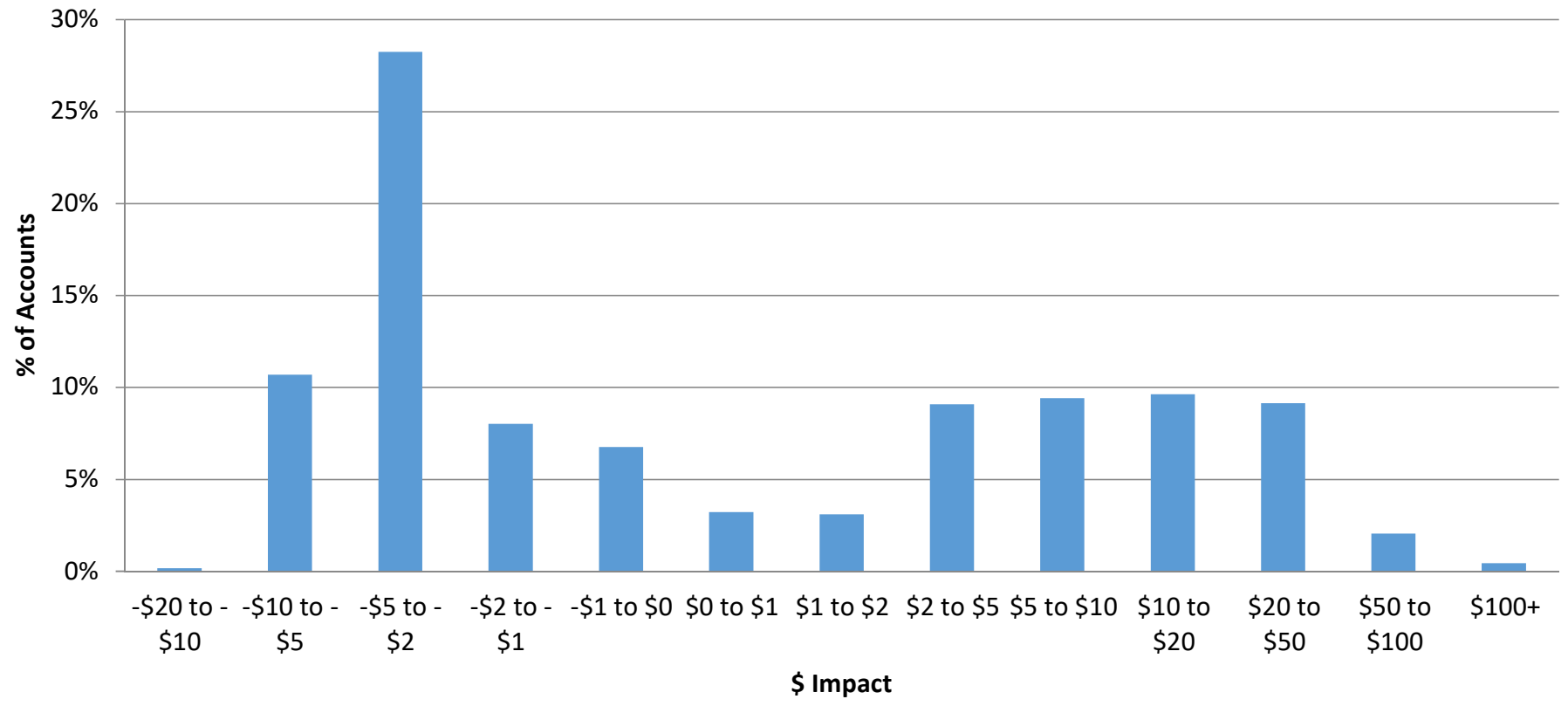


T -> 2P Annual Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, Hot Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

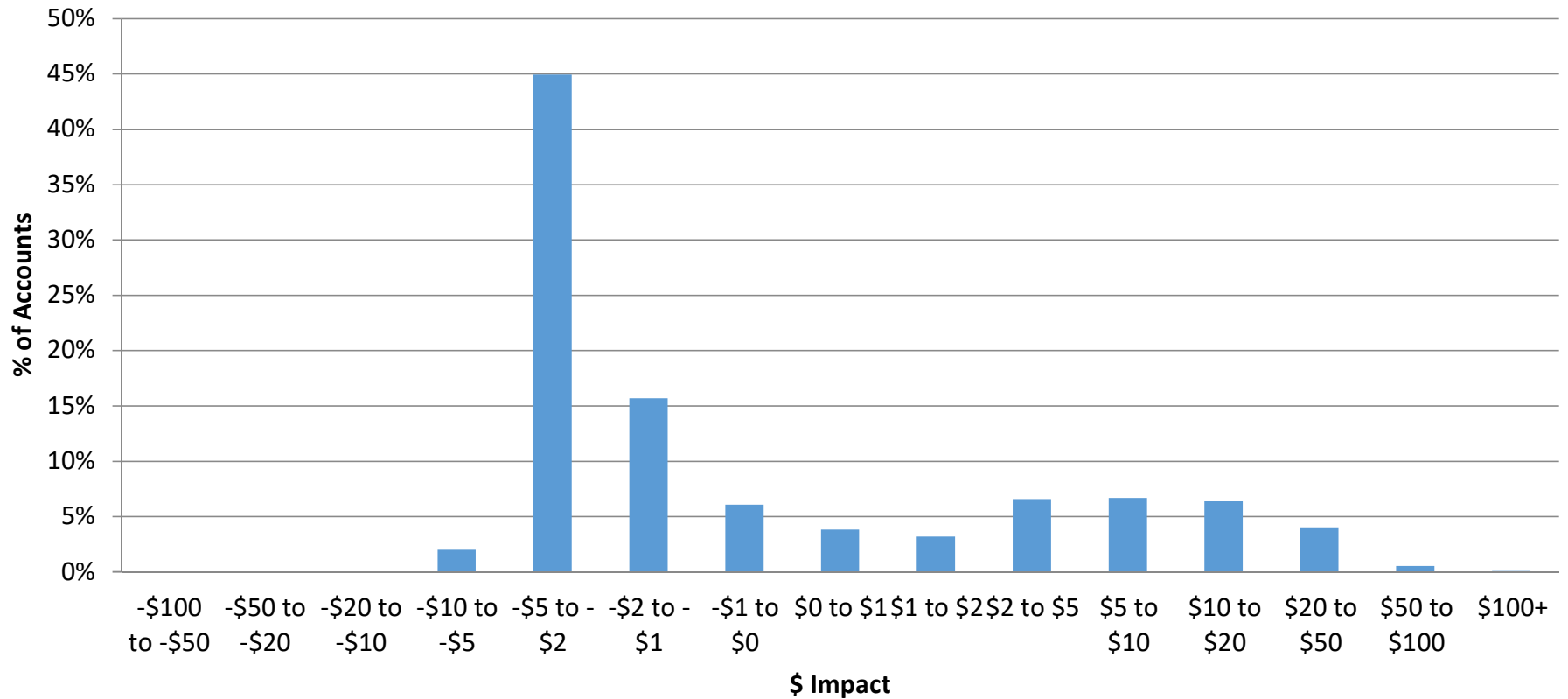


T -> 2P Annual Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, Moderate Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

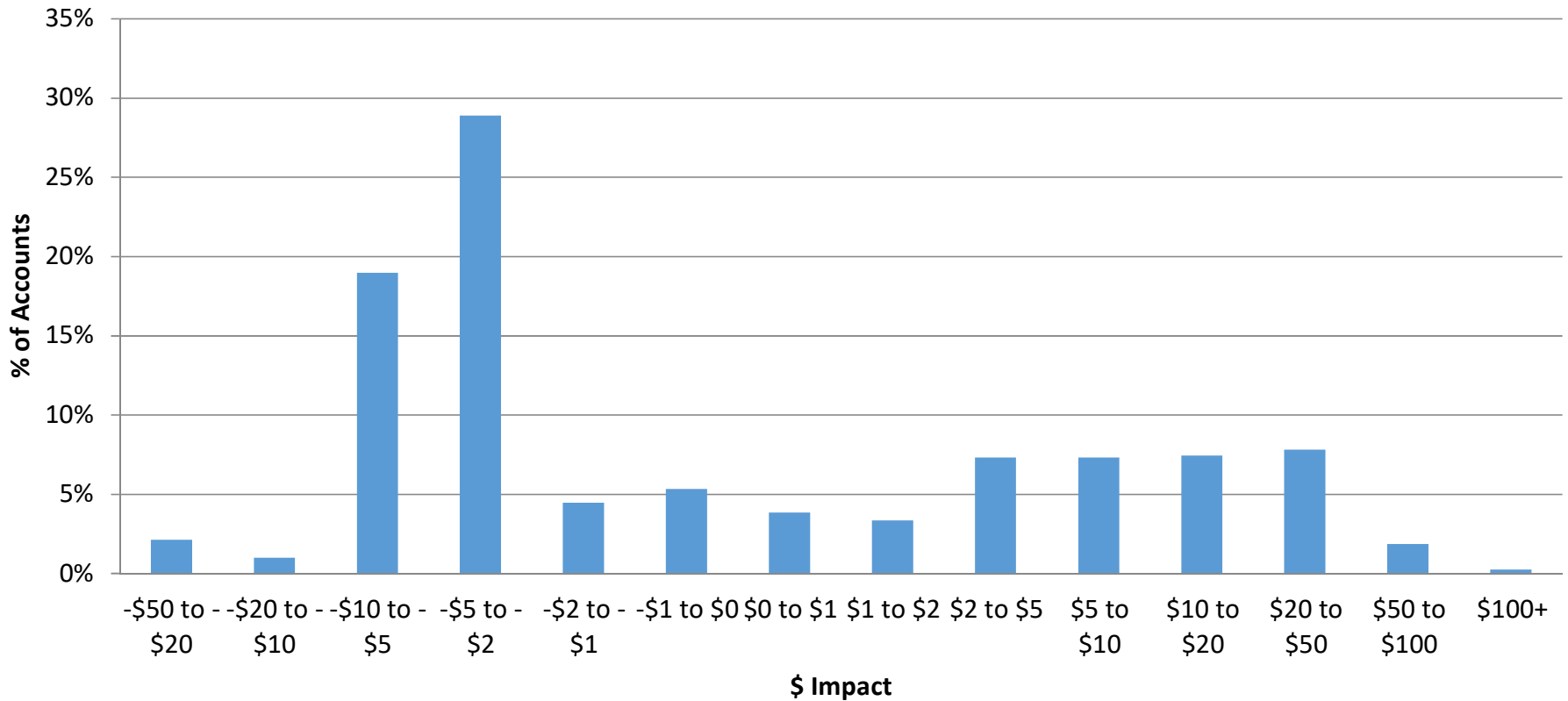


T -> 2P Annual Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE CARE

Count of PREM_ID

CARE non-NEM All Electric, Hot Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

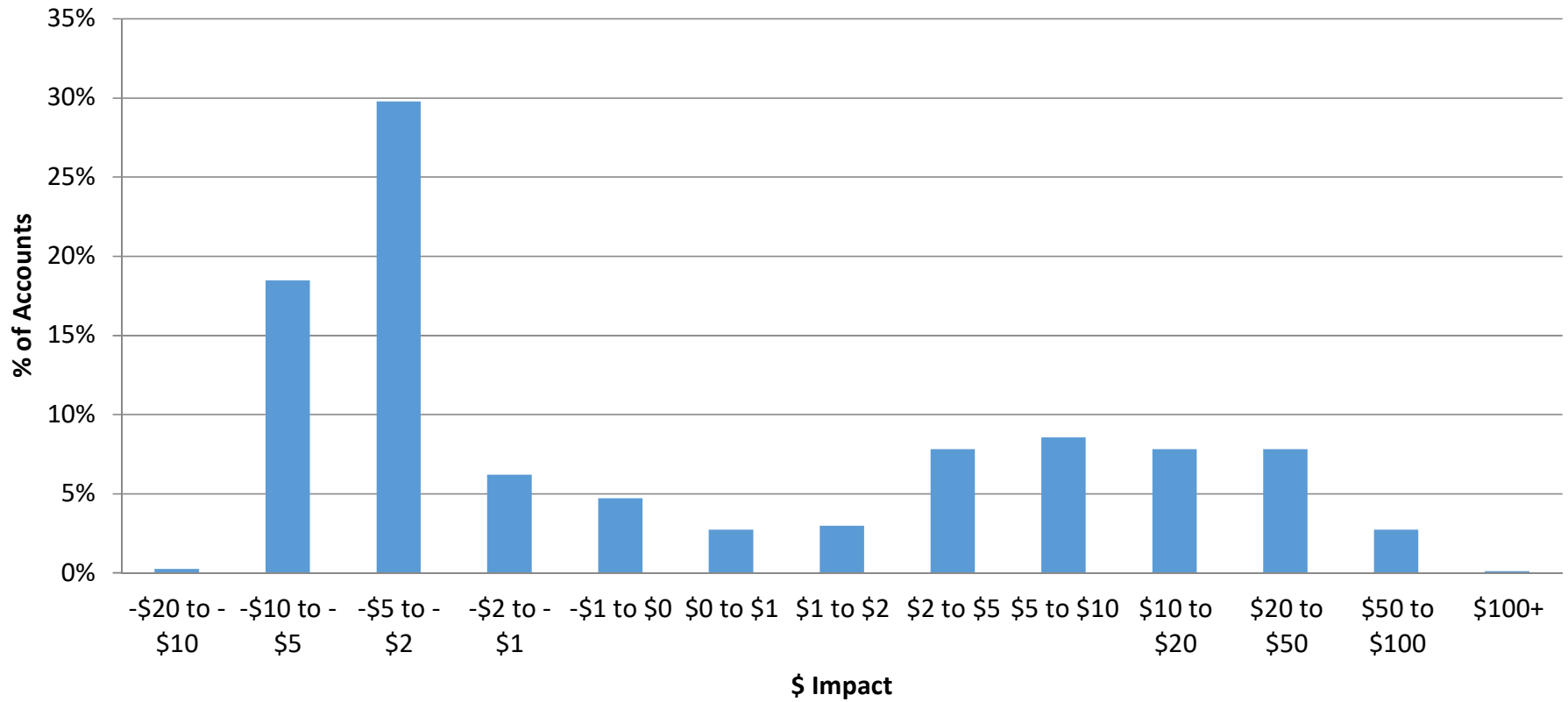


T -> 3P Annual Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE CARE

Count of PREM_ID

CARE non-NEM All Electric, Hot Climate Zone Annual Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU



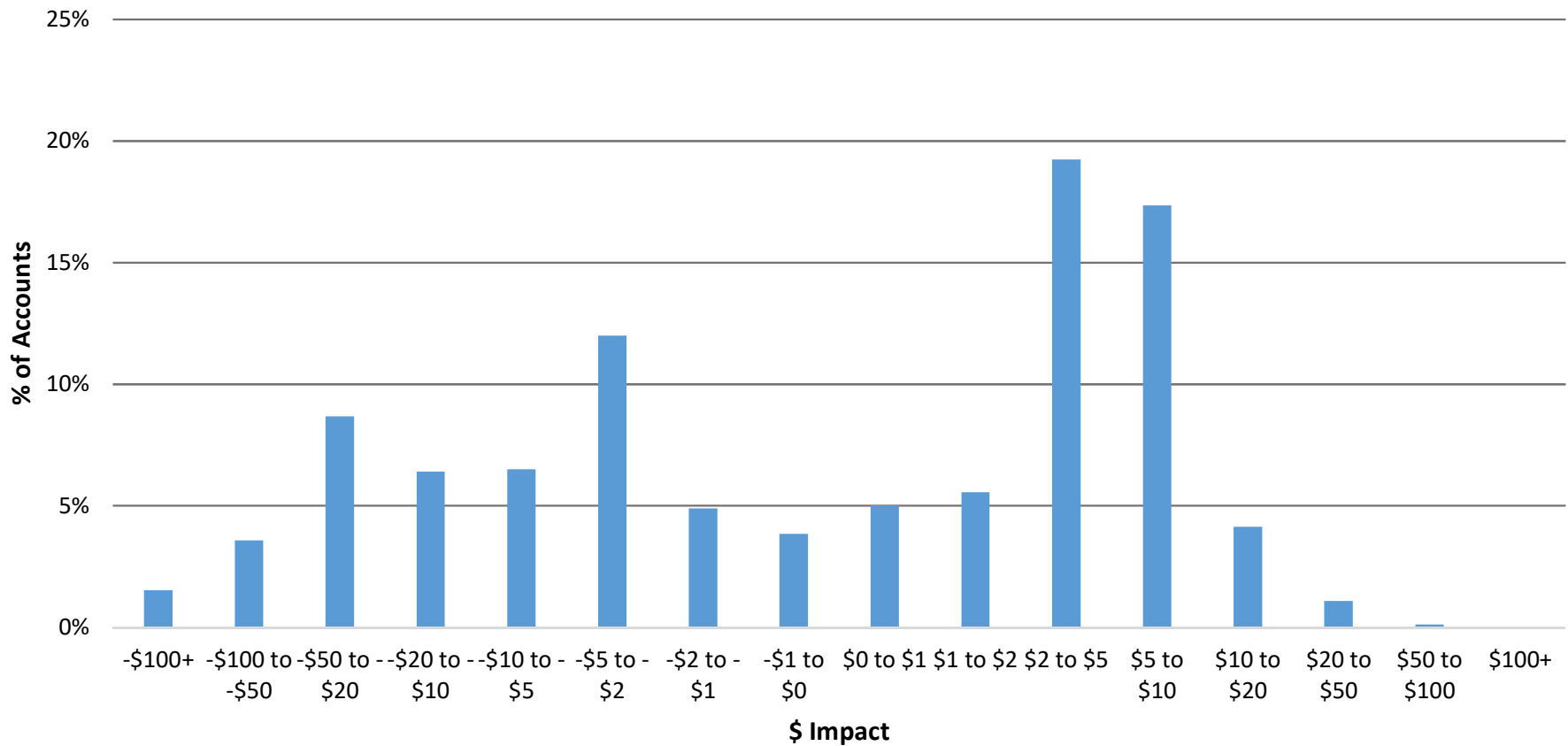
T -> 2P Annual Bill Impact

Bill Impact Analysis

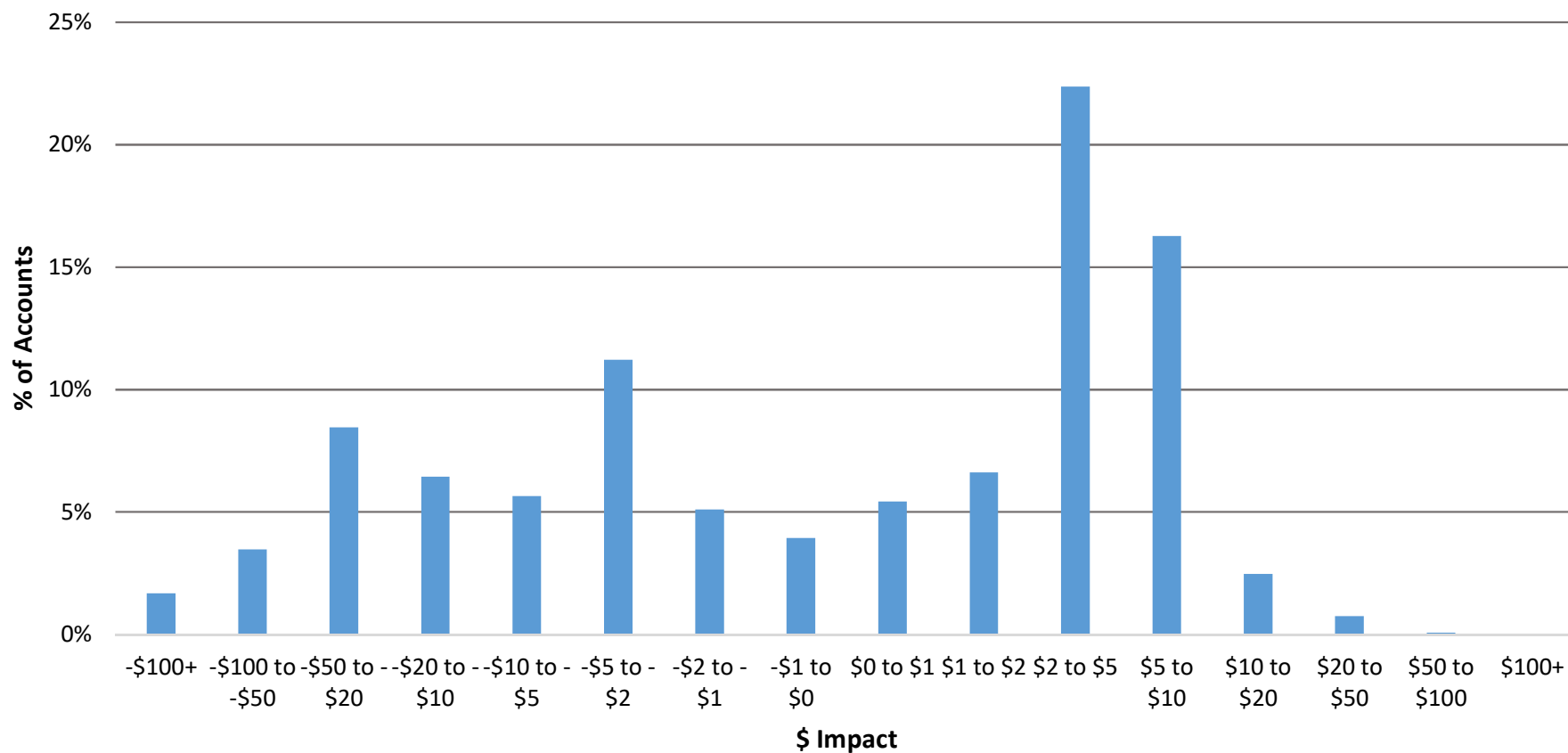
Average Summer Impact 2016

Hot Zone, Non-NEM, CARE/FERA Customers

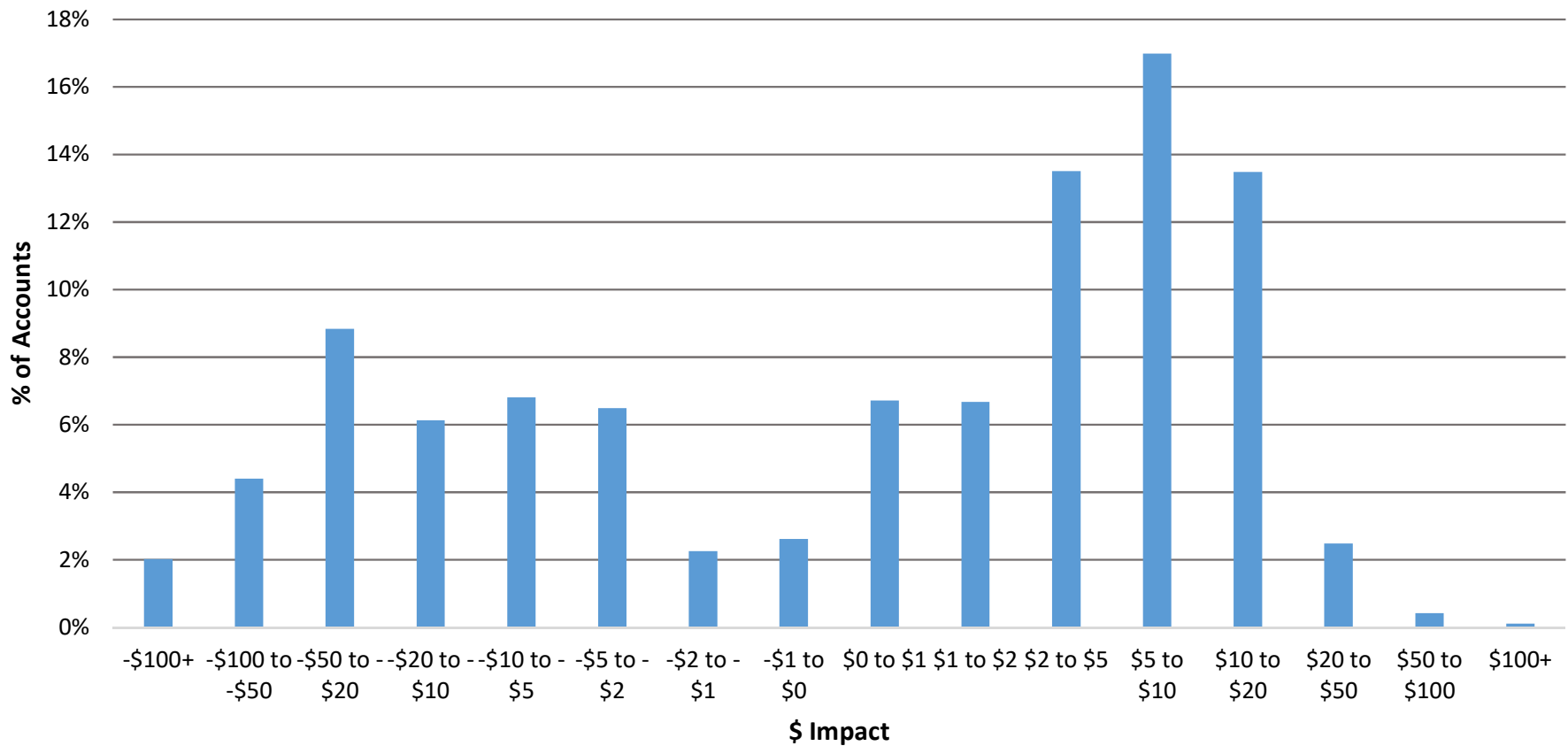
**All Customers non-NEM, All Climate Zones
 Summer Average Monthly Bill Gain/Loss
 Percentage of Customers
 2018 Tiered Rates vs 3 Period Default TOU**



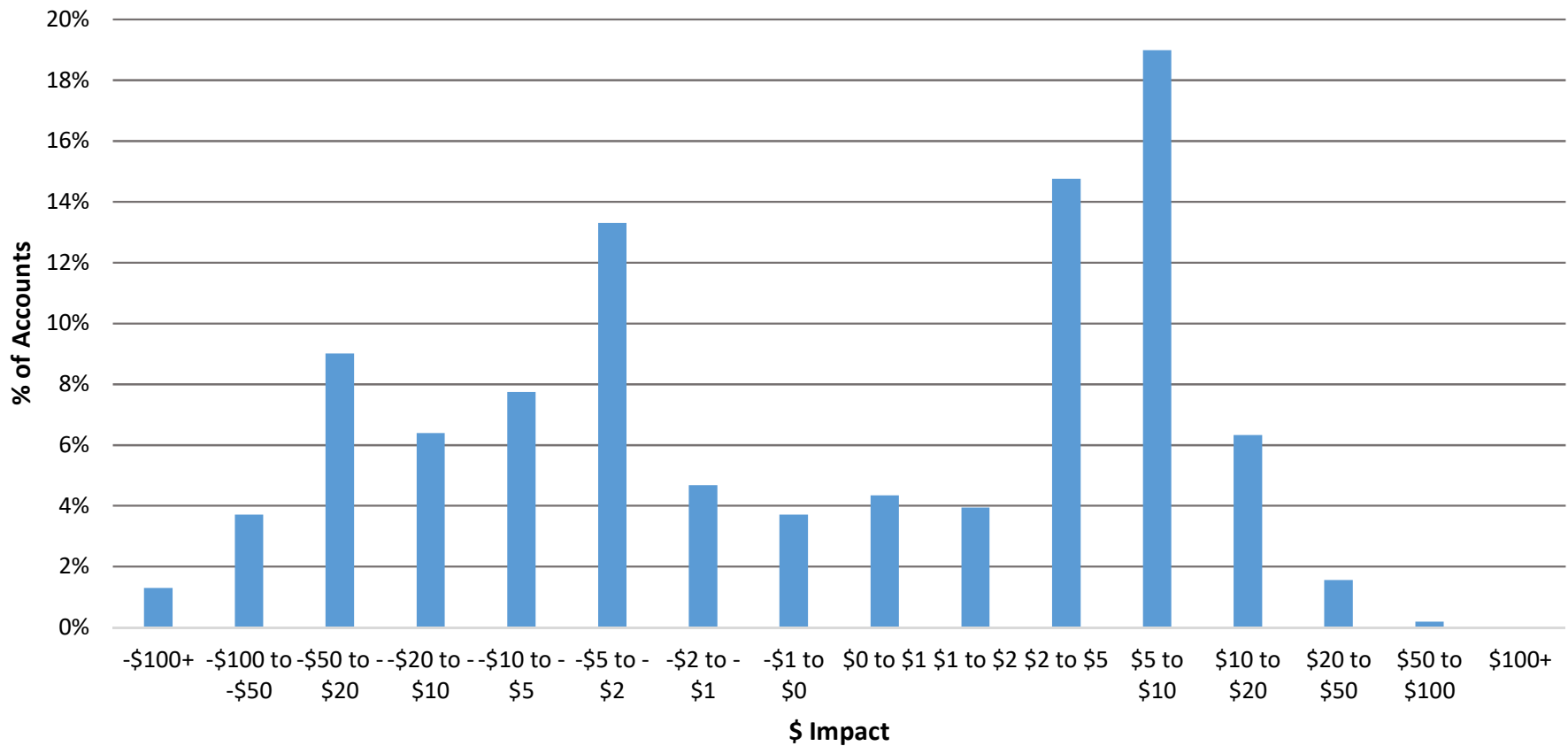
**All Customers non-NEM, Cool Climate Zone
 Summer Average Monthly Bill Gain/Loss
 Percentage of Customers
 2018 Tiered Rates vs 3 Period Default TOU**



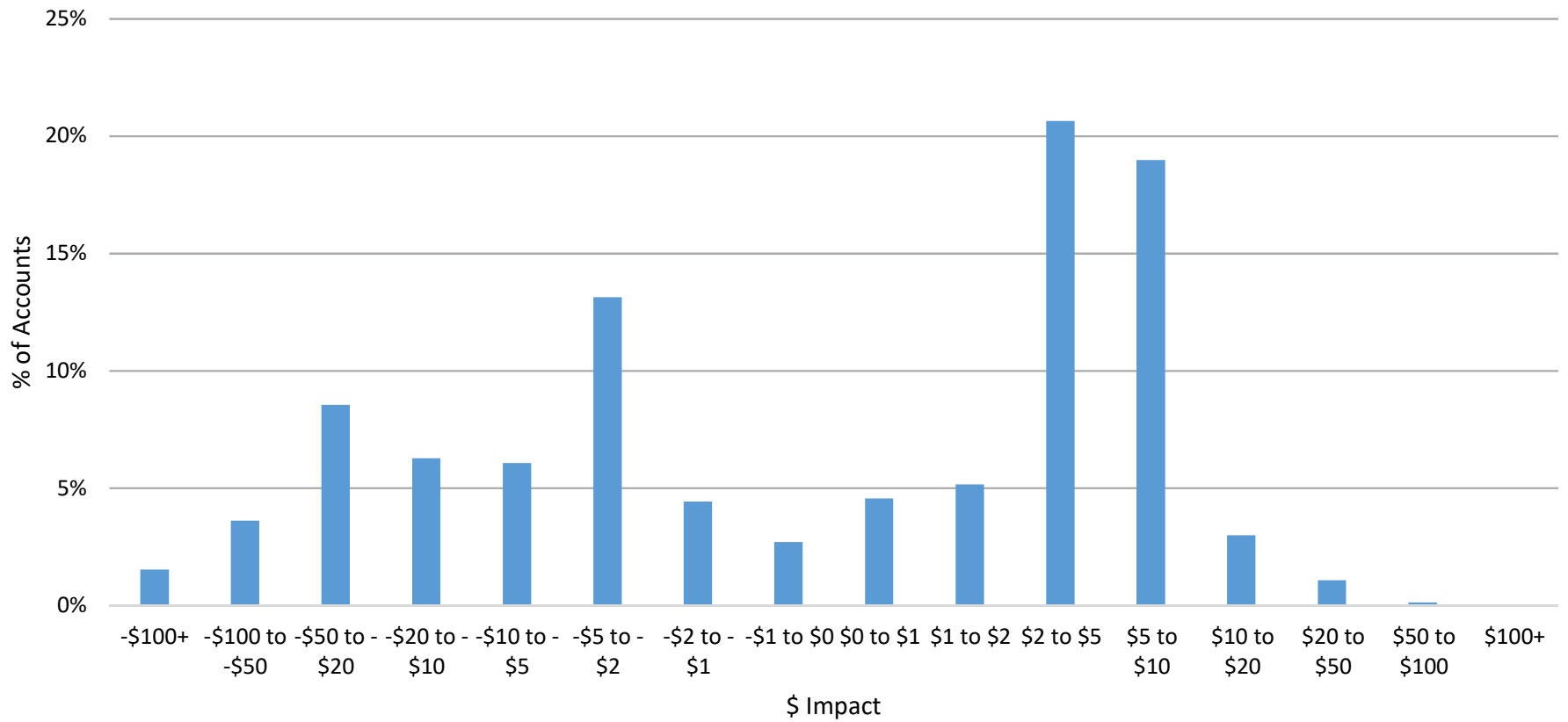
**All Customers non-NEM, Hot Climate Zone
 Summer Average Monthly Bill Gain/Loss
 Percentage of Customers
 2018 Tiered Rates vs 3 Period Default TOU**



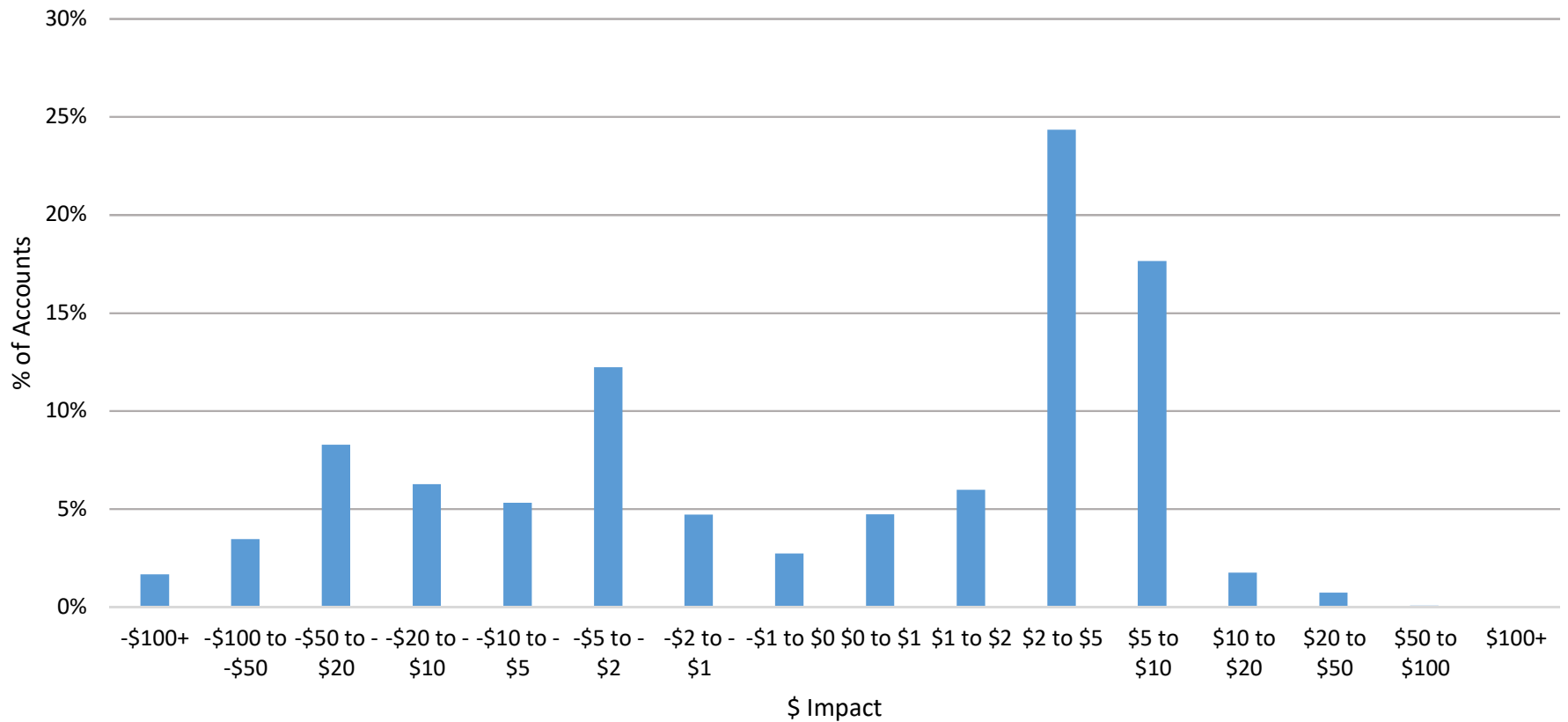
**All Customers non-NEM, Moderate Climate Zone
 Summer Average Monthly Bill Gain/Loss
 Percentage of Customers
 2018 Tiered Rates vs 3 Period Default TOU**



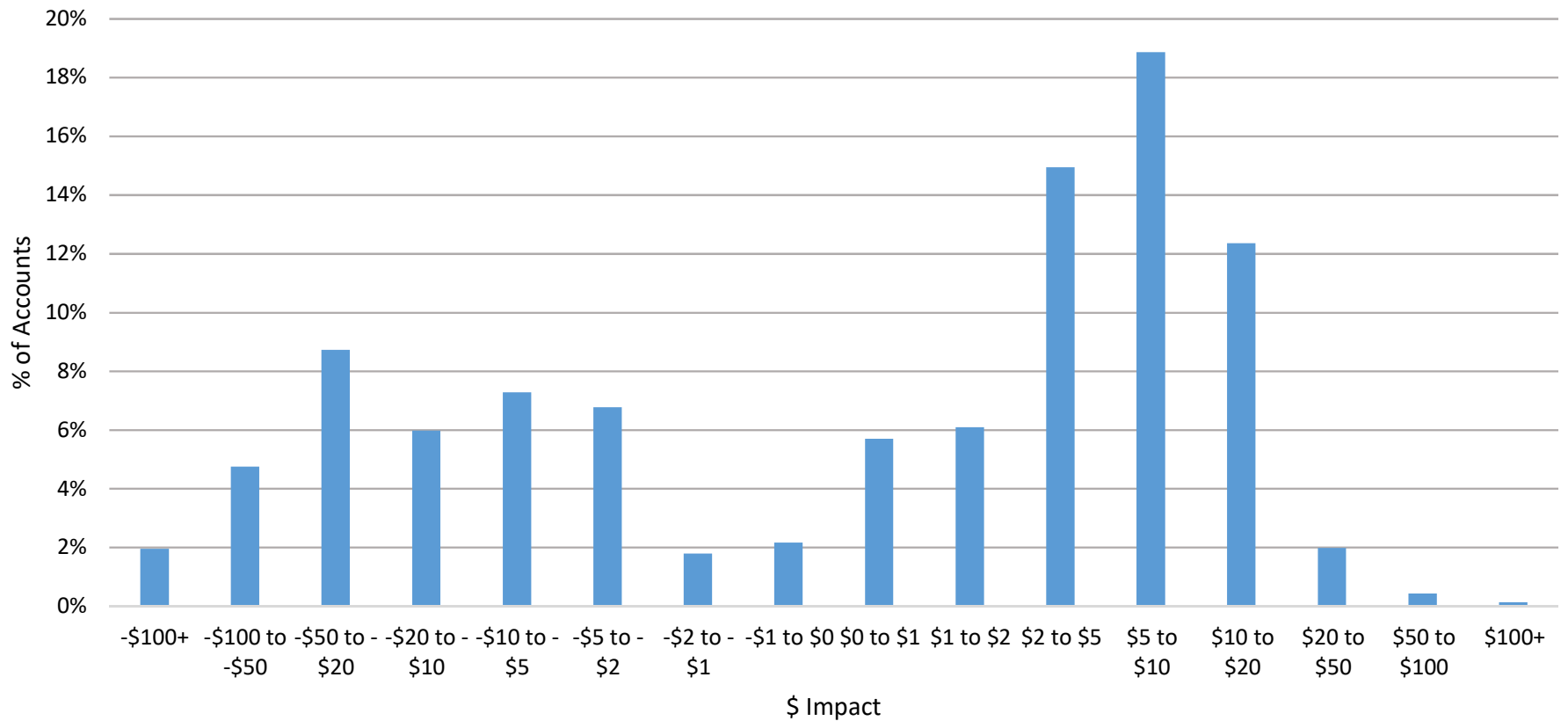
**All Customers non-NEM, All Climate Zones
 Summer Average Monthly Bill Gain/Loss
 Percentage of Customers
 2018 Tiered Rates vs 2 Period Default TOU**



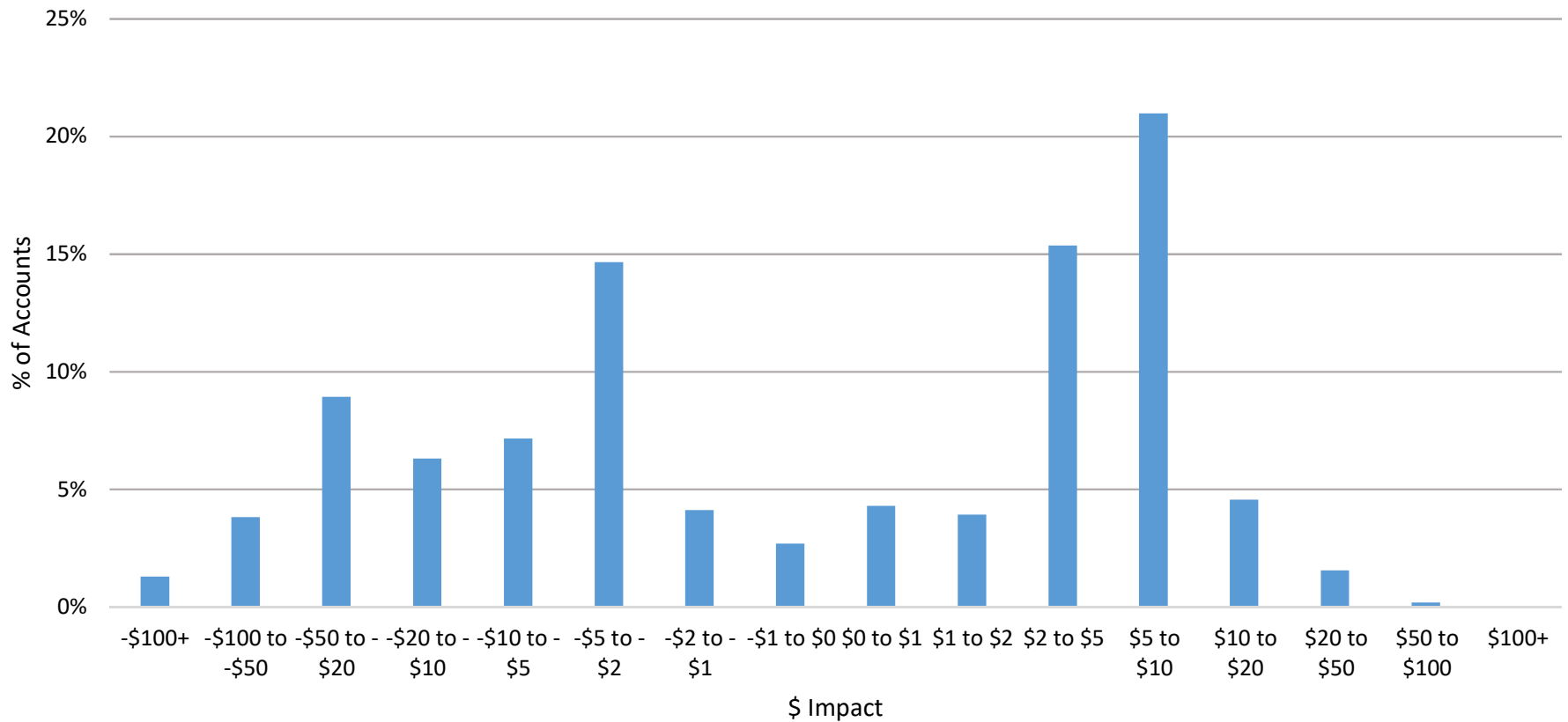
All Customers non-NEM, Cool Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU



All Customers non-NEM, Hot Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU



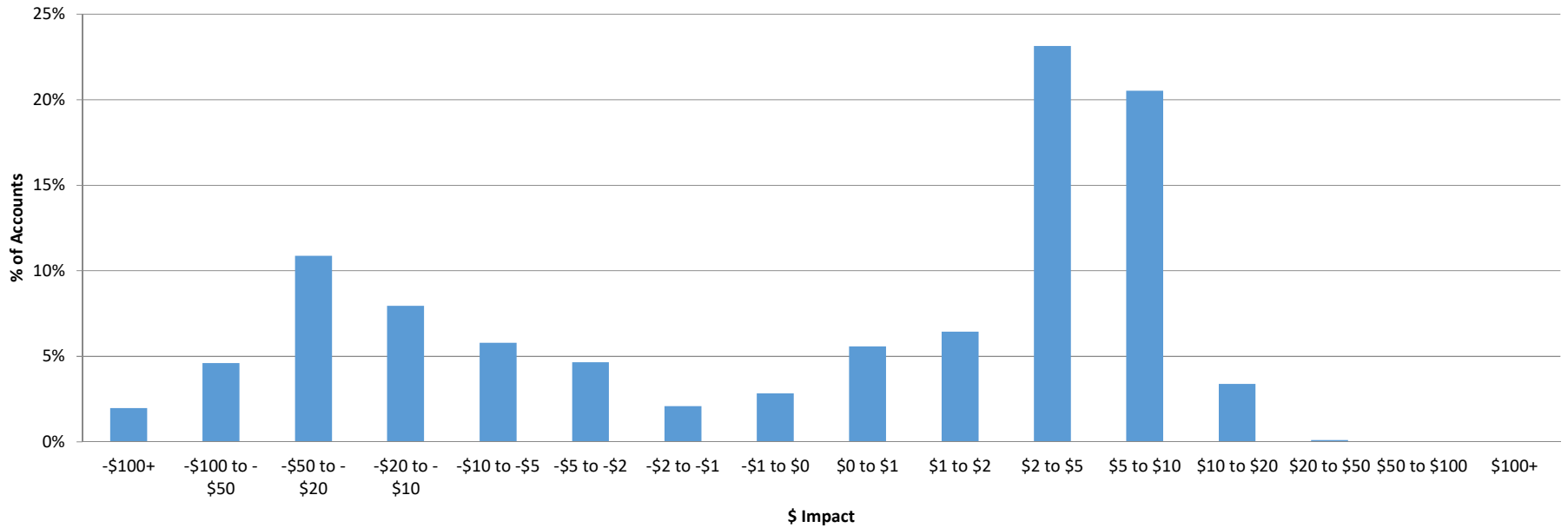
**All Customers non-NEM, Moderate Climate Zone
 Summer Average Monthly Bill Gain/Loss
 Percentage of Customers
 2018 Tiered Rates vs 2 Period Default TOU**



CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, All Climate Zones Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

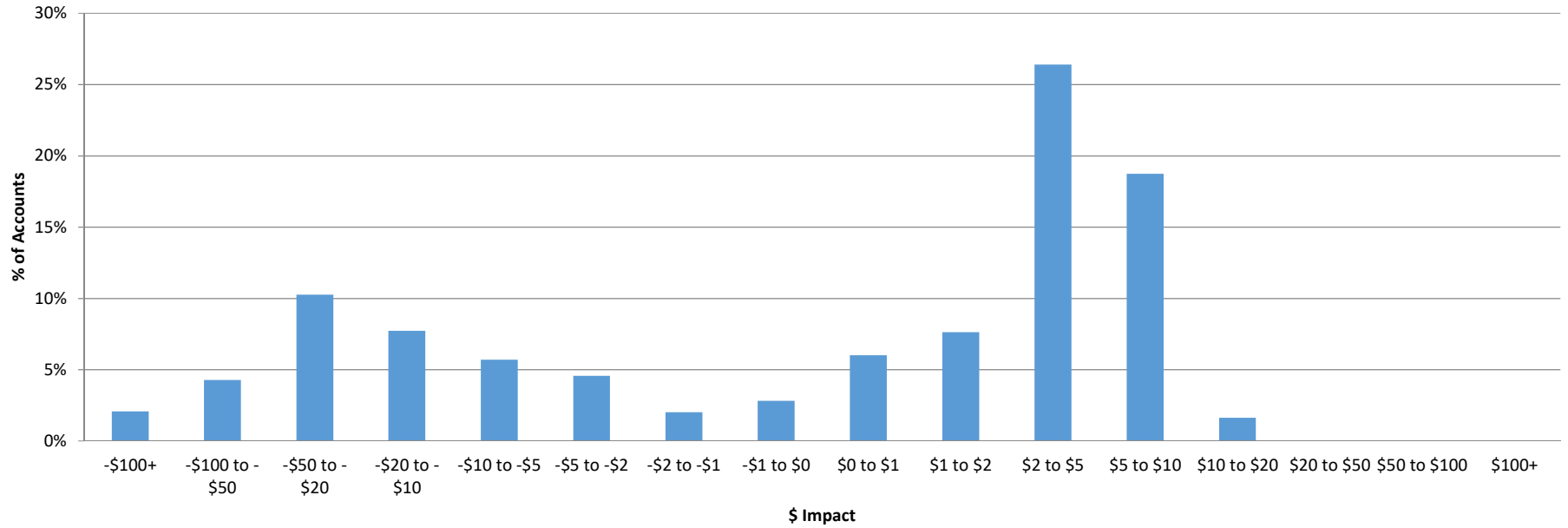


T to 3 \$ Summer Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, Cool Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

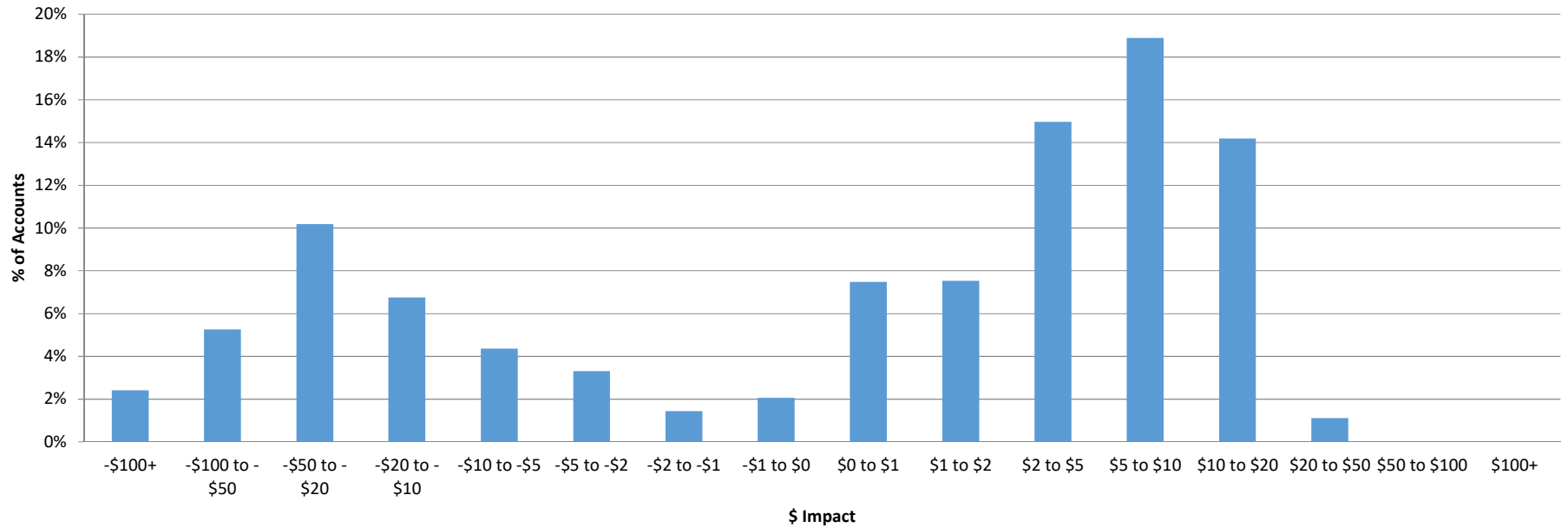


T to 3 \$ Summer Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, Hot Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

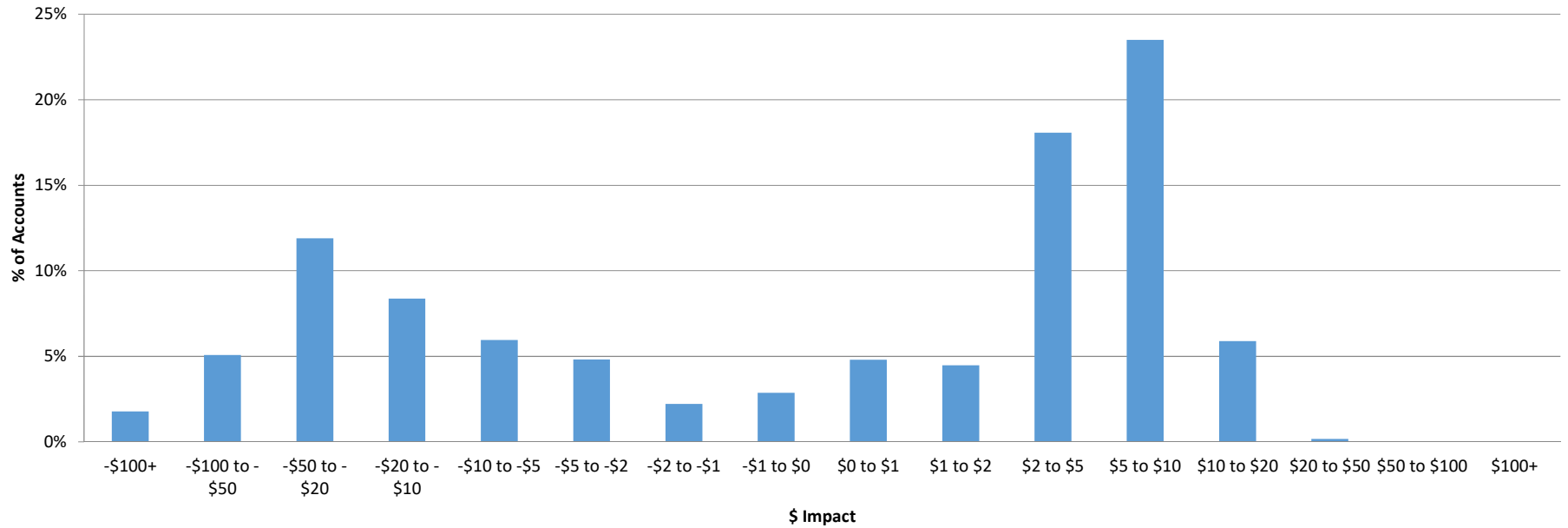


T to 3 \$ Summer Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, Moderate Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

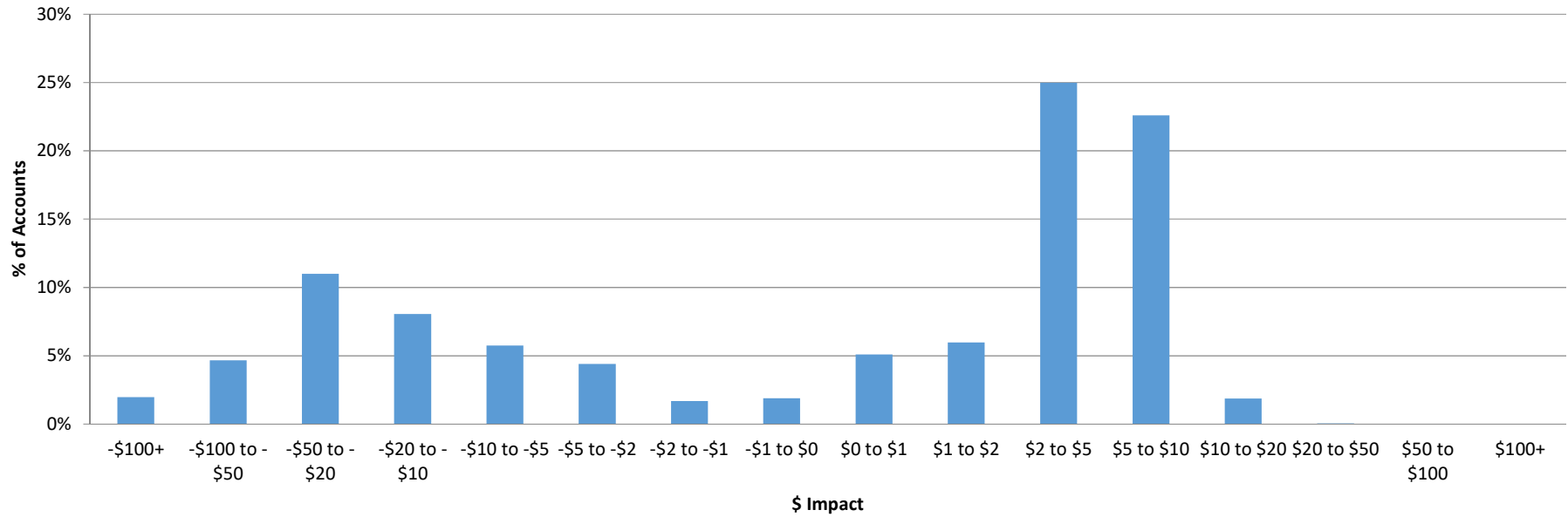


T to 3 \$ Summer Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, All Climate Zones Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

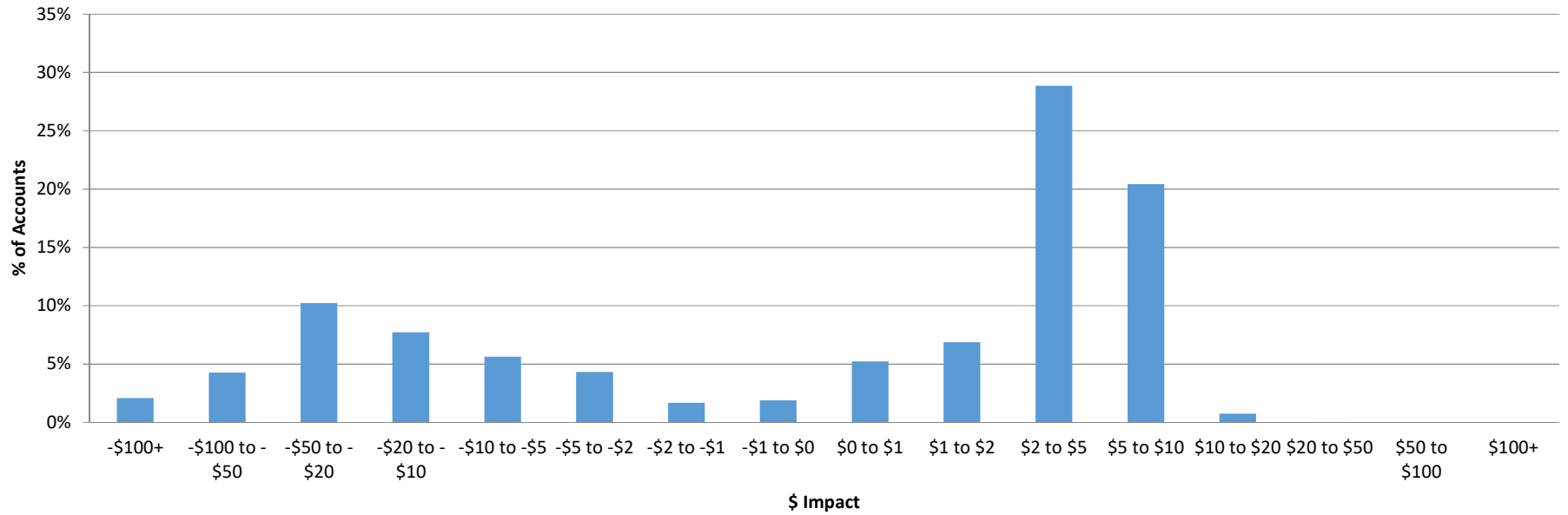


T to 2 \$ Summer Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, Cool Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

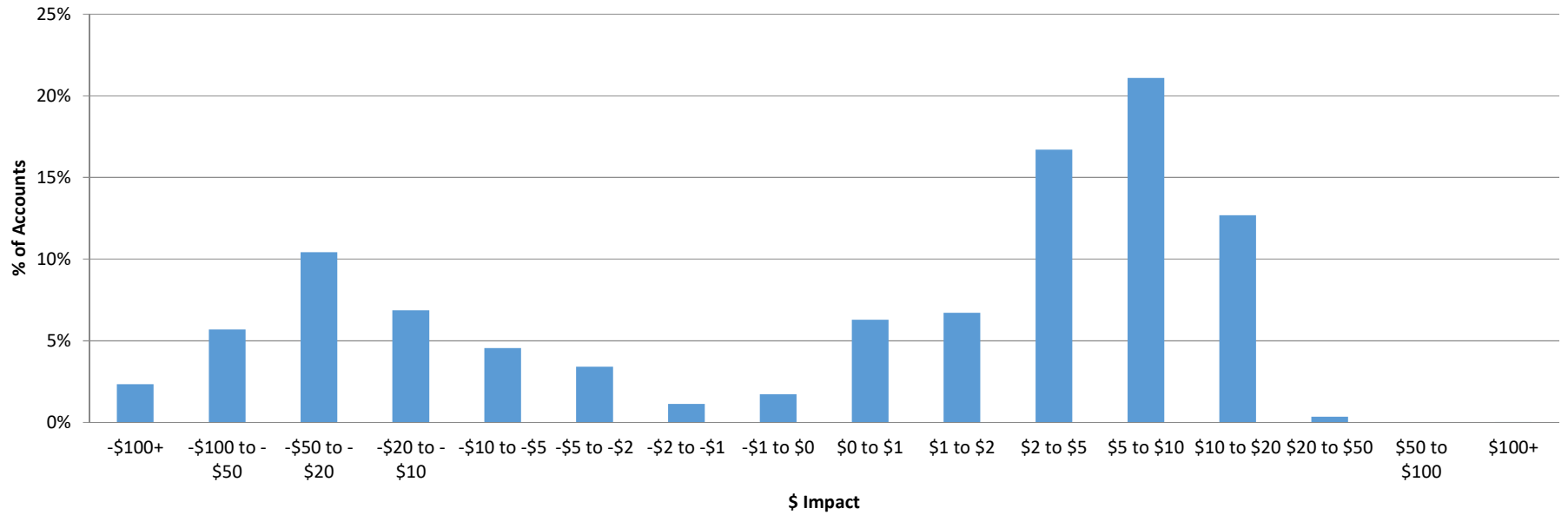


T to 2 \$ Summer Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, Hot Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

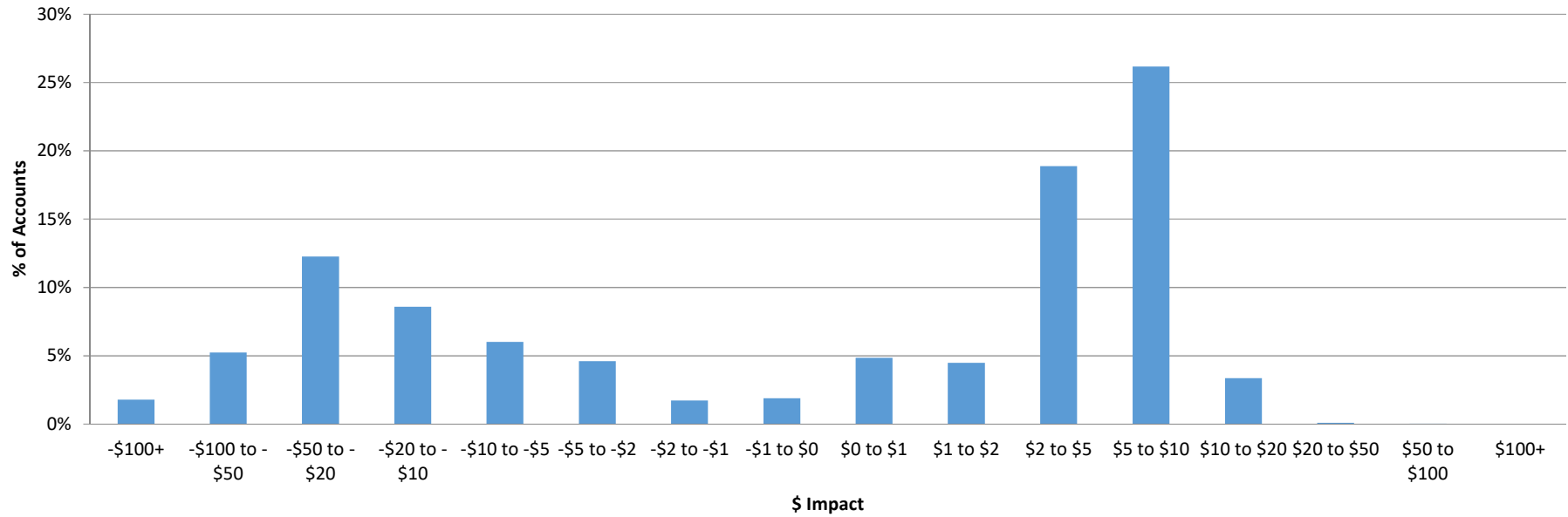


T to 2 \$ Summer Group

CLIMATE_ZONE FL_NEM CARE FERA BASIC_AE

Count of PREM_ID

Non-CARE non-NEM, Moderate Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

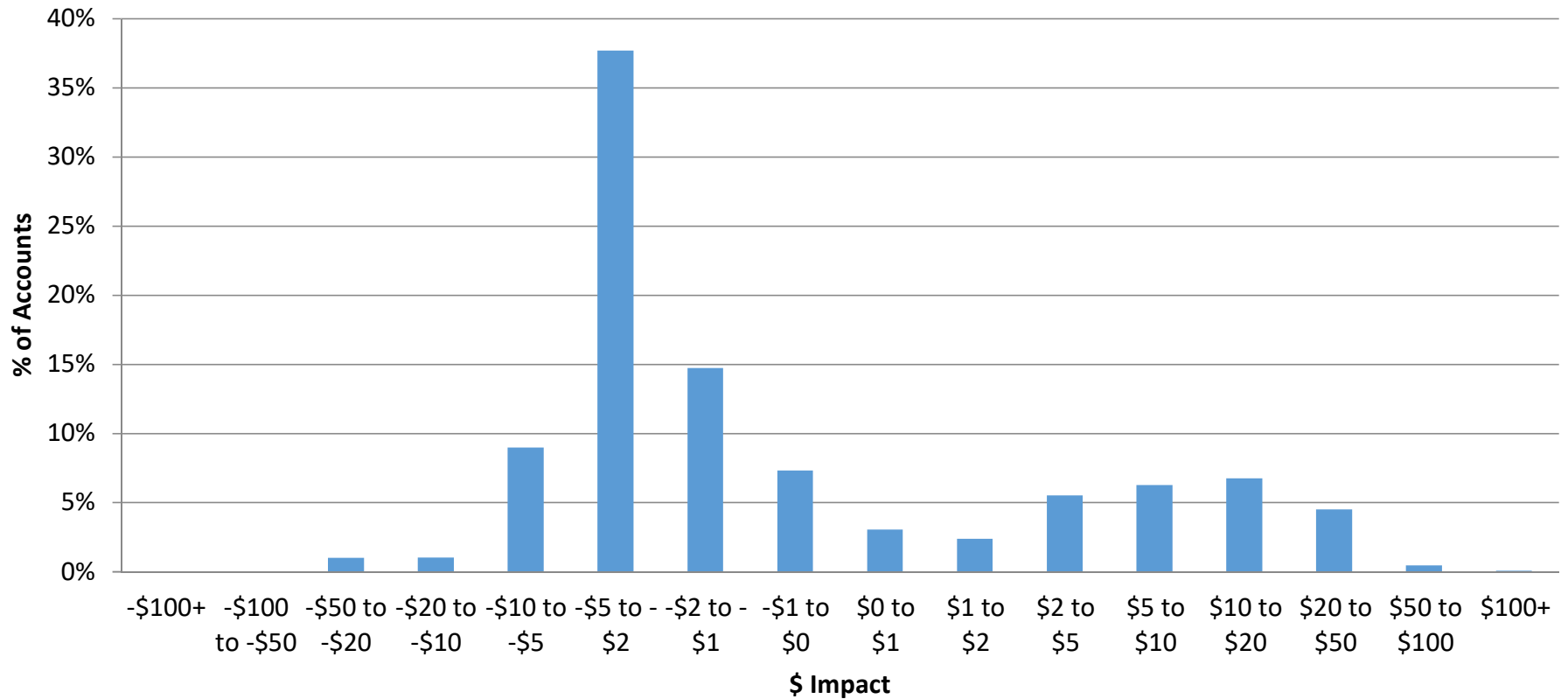


T to 2 \$ Summer Group

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, All Climate Zones Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

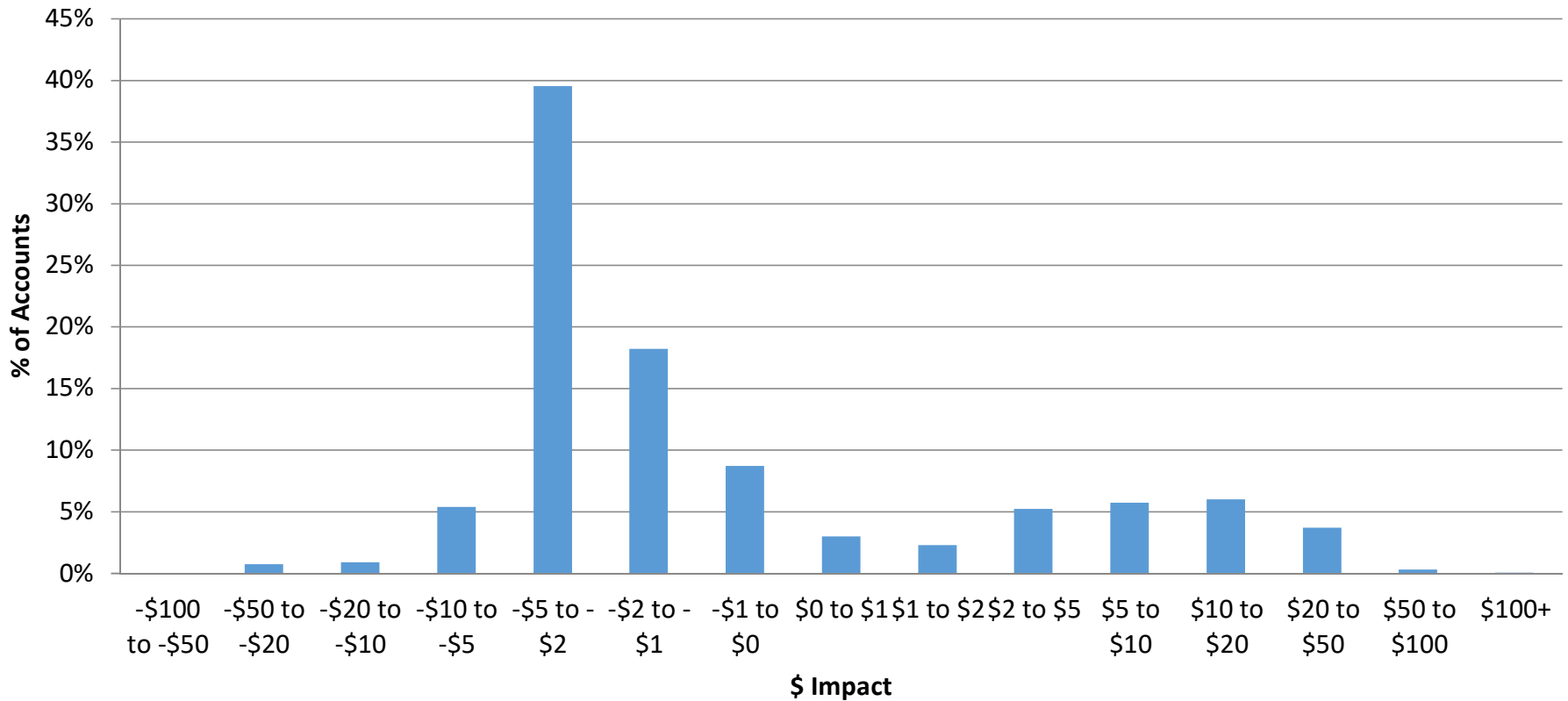


T -> 3P Summer Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, Cool Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

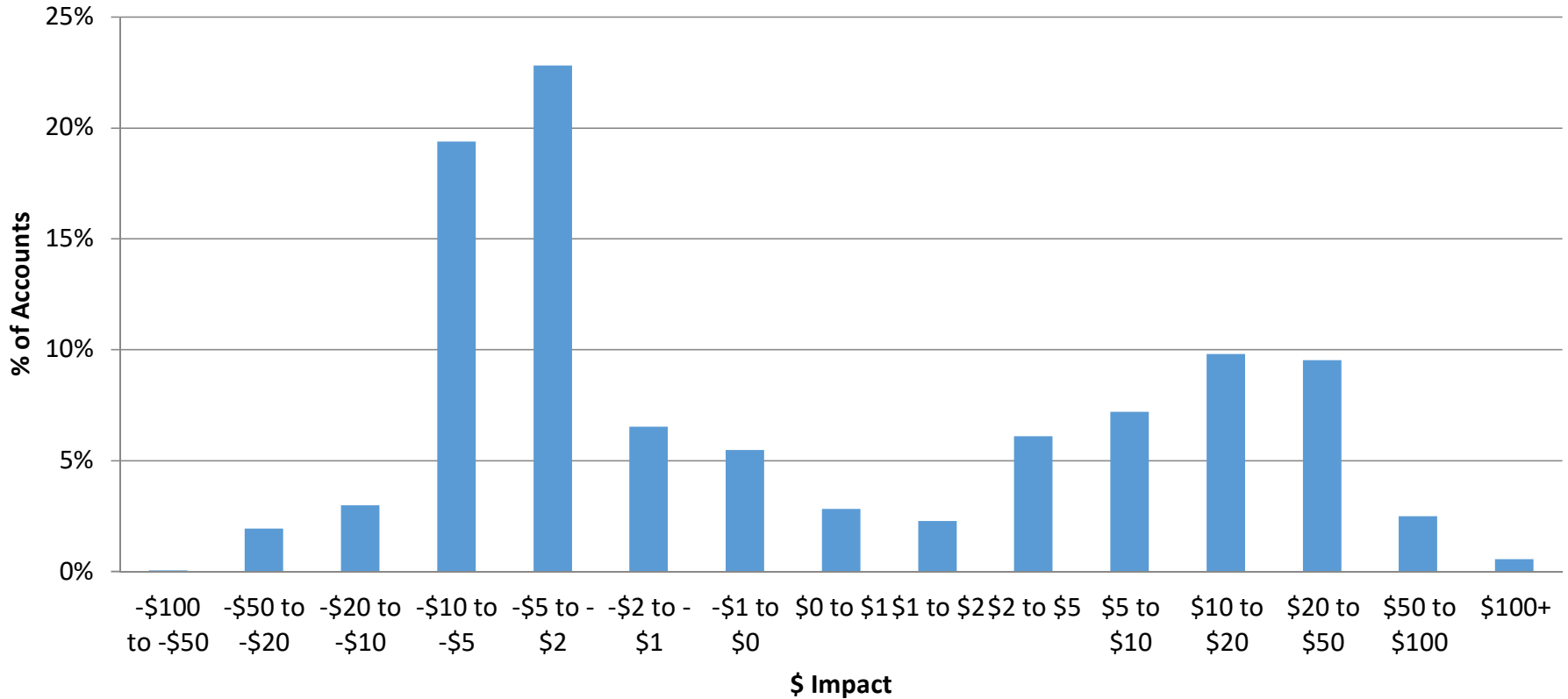


T -> 3P Summer Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, Hot Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

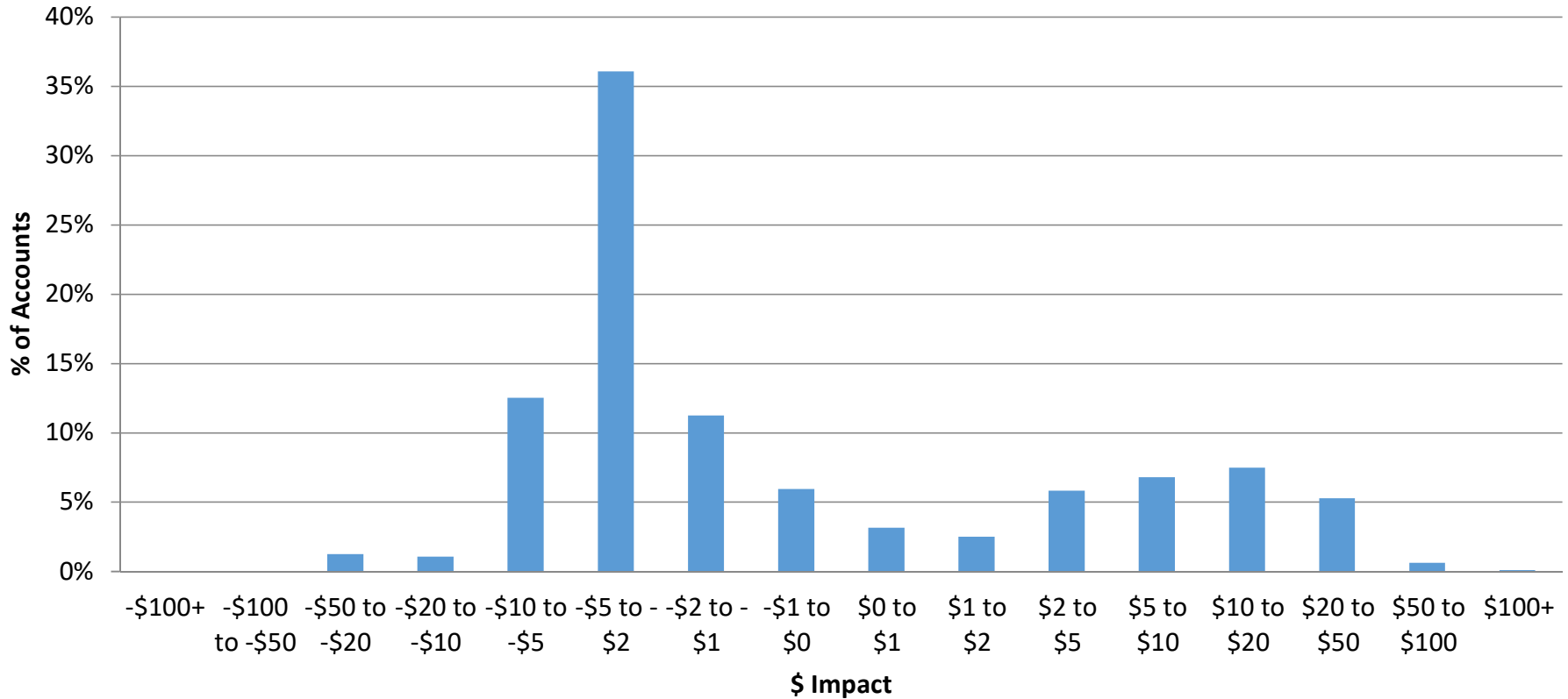


T -> 3P Summer Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, Moderate Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

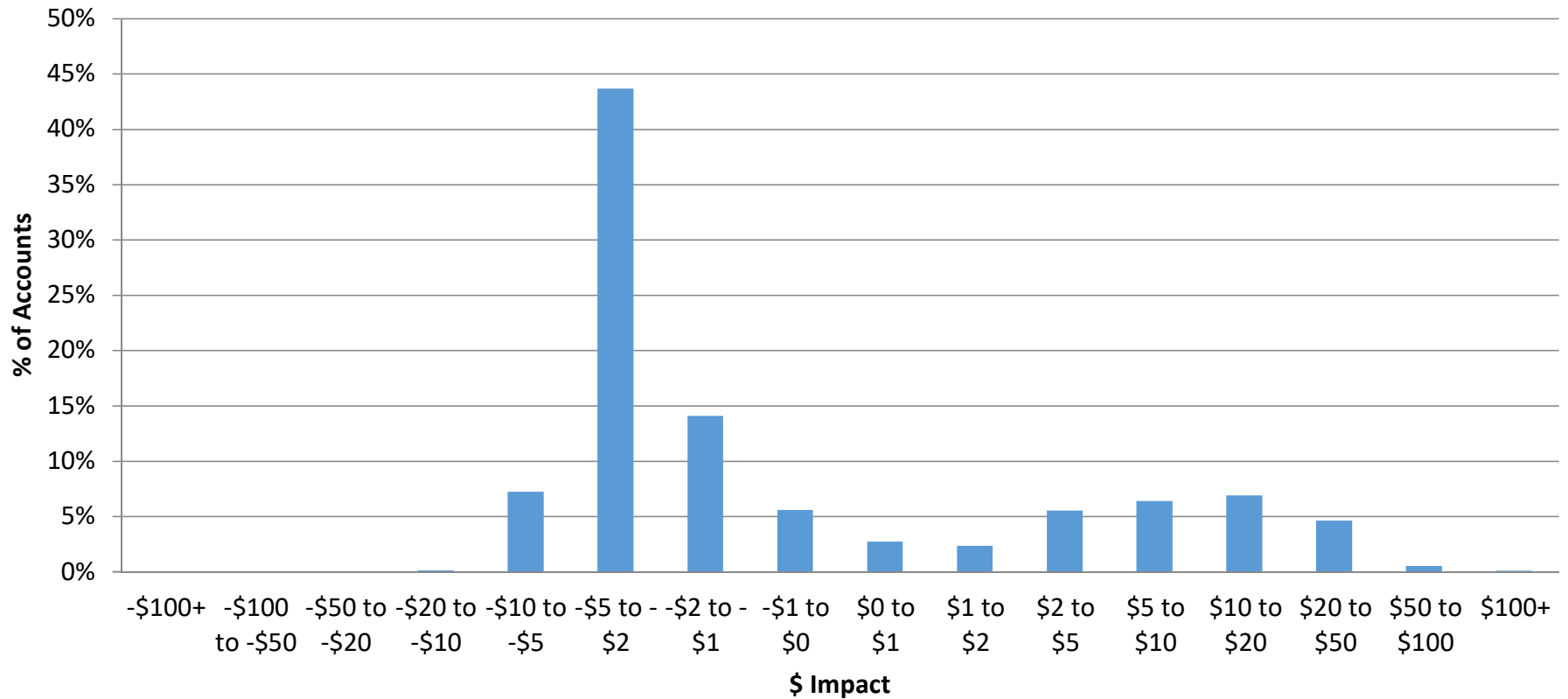


T -> 3P Summer Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, All Climate Zones Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

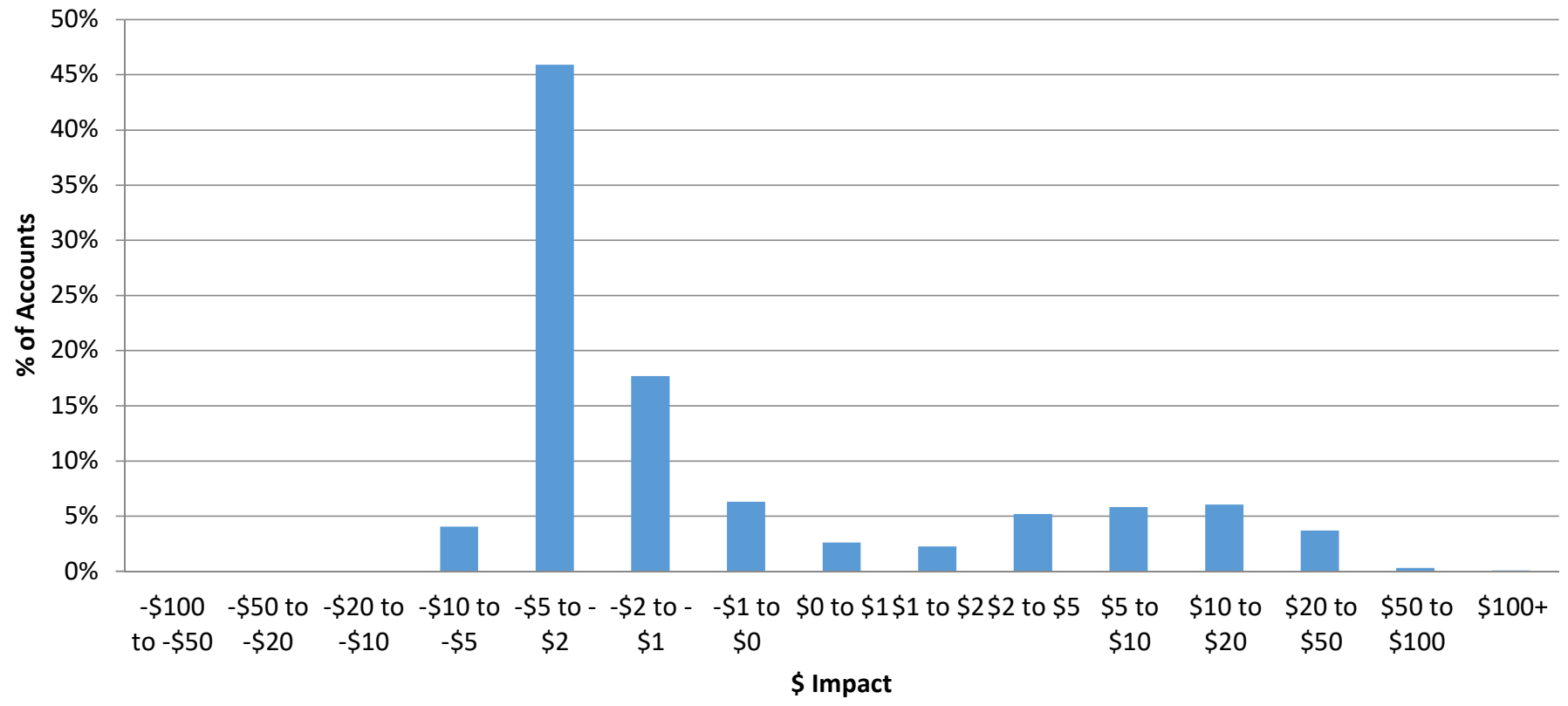


T-> 2P Summer Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, Cool Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

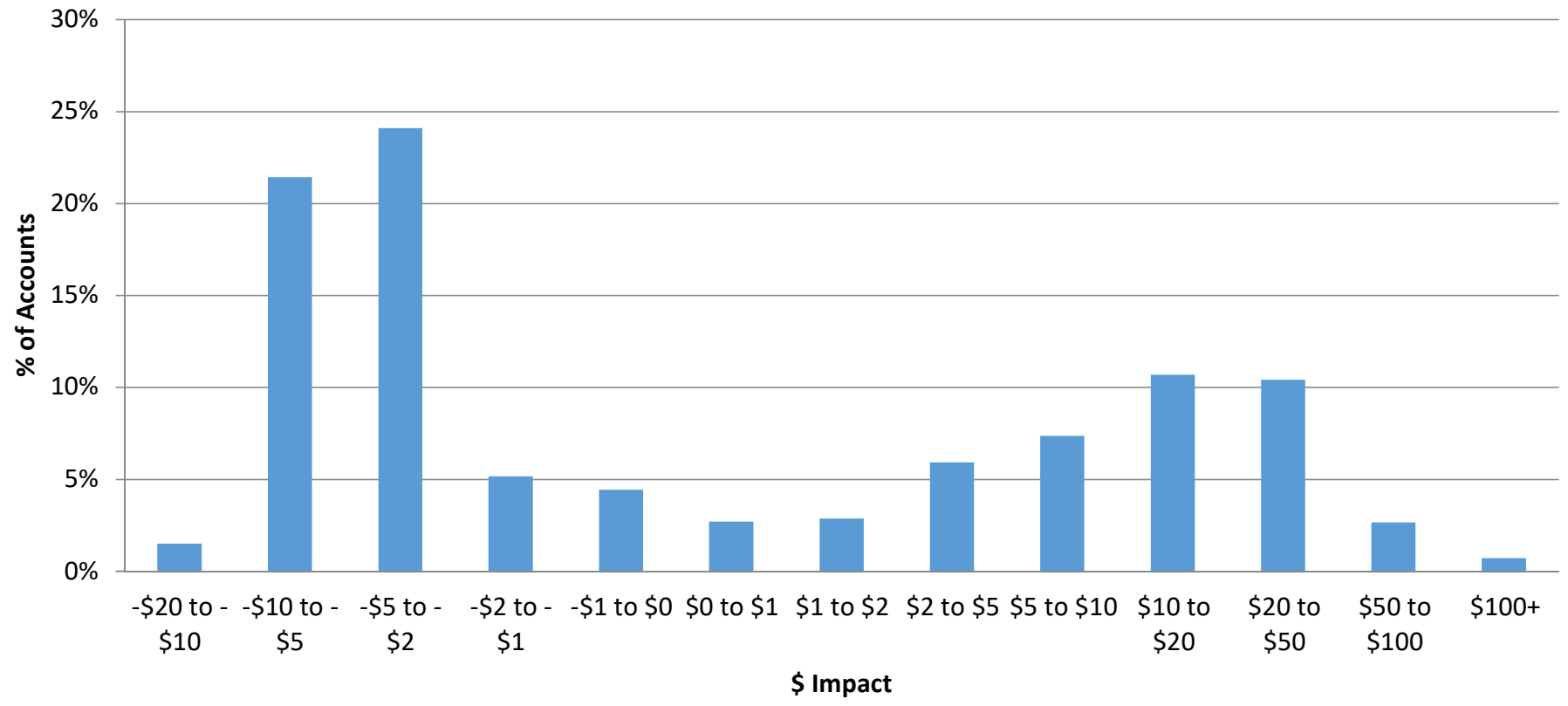


T-> 2P Summer Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, Hot Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

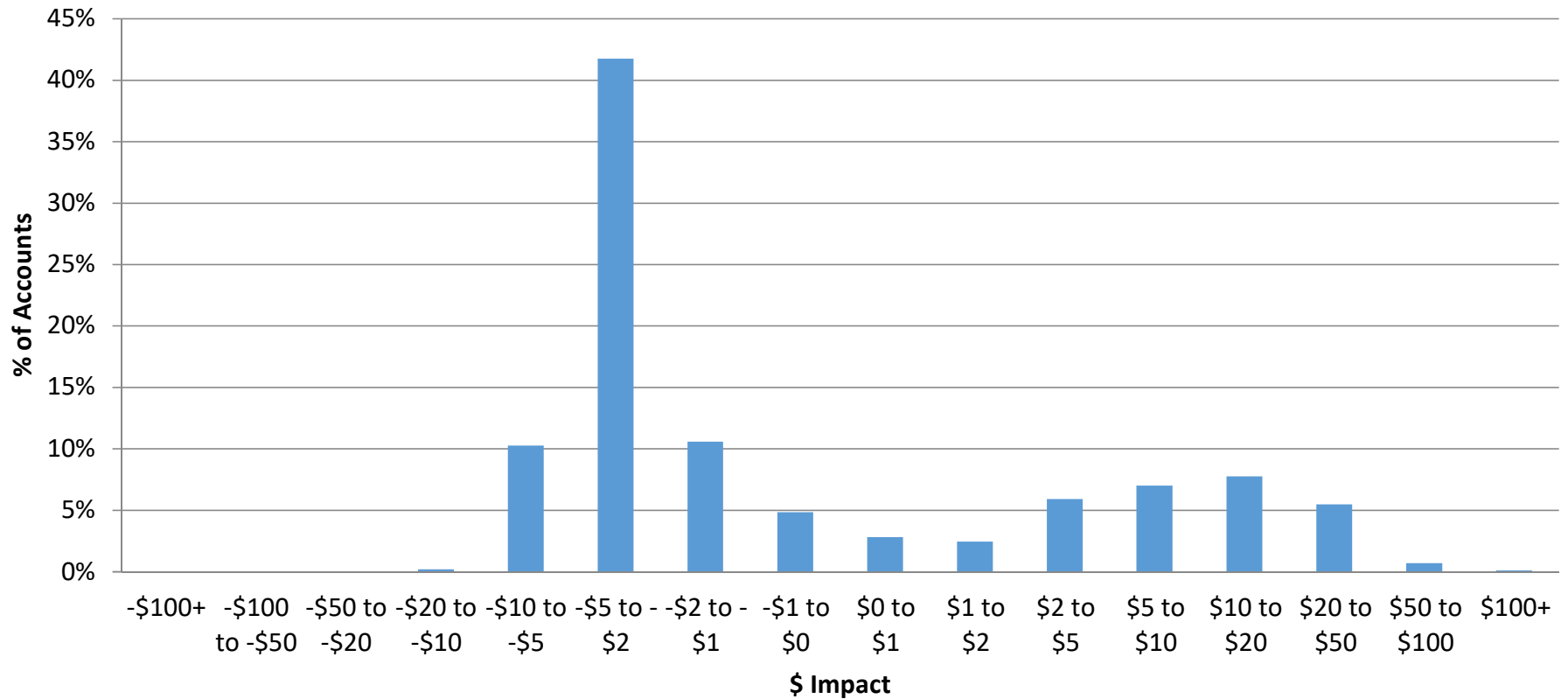


T-> 2P Summer Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE FERA CARE

Count of PREM_ID

CARE/FERA non-NEM, Moderate Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU

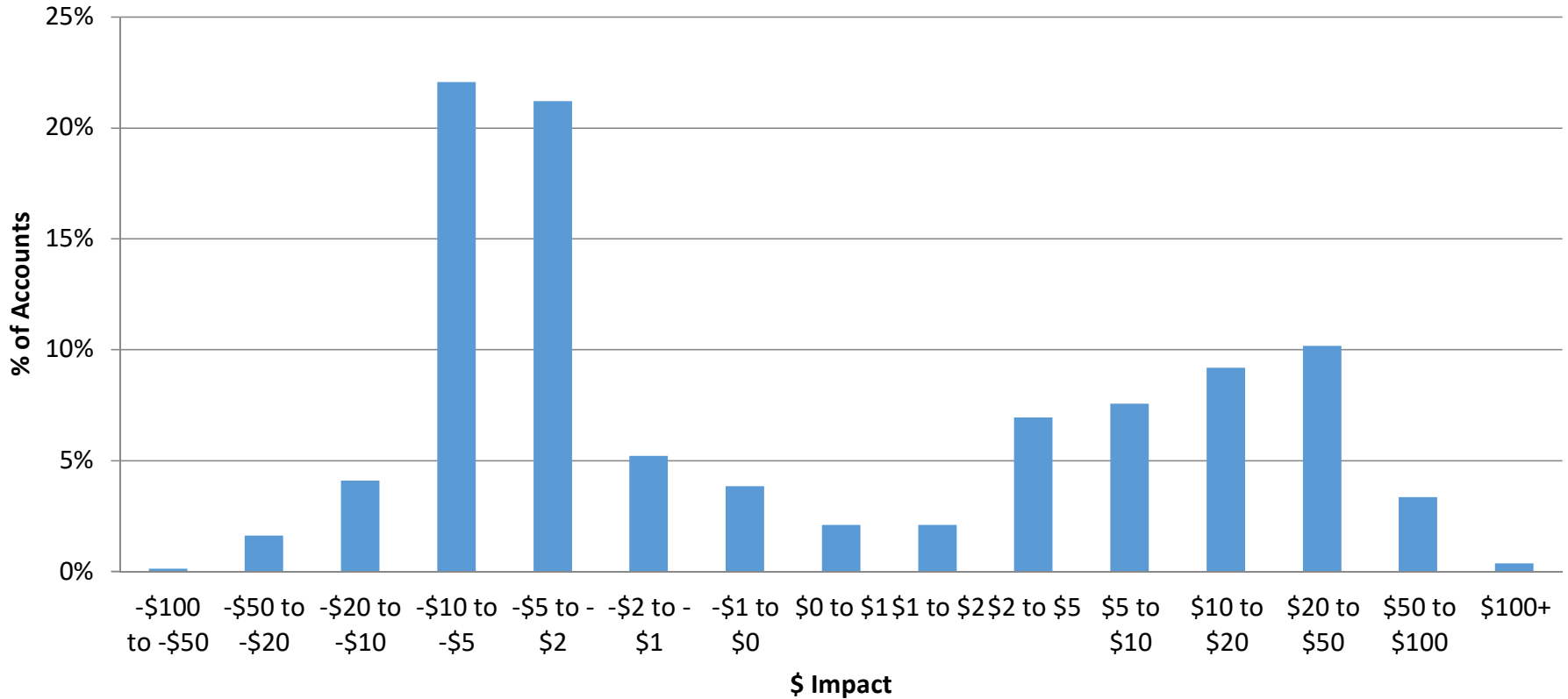


T-> 2P Summer Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE CARE

Count of PREM_ID

CARE non-NEM All Electric, Hot Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 3 Period Default TOU

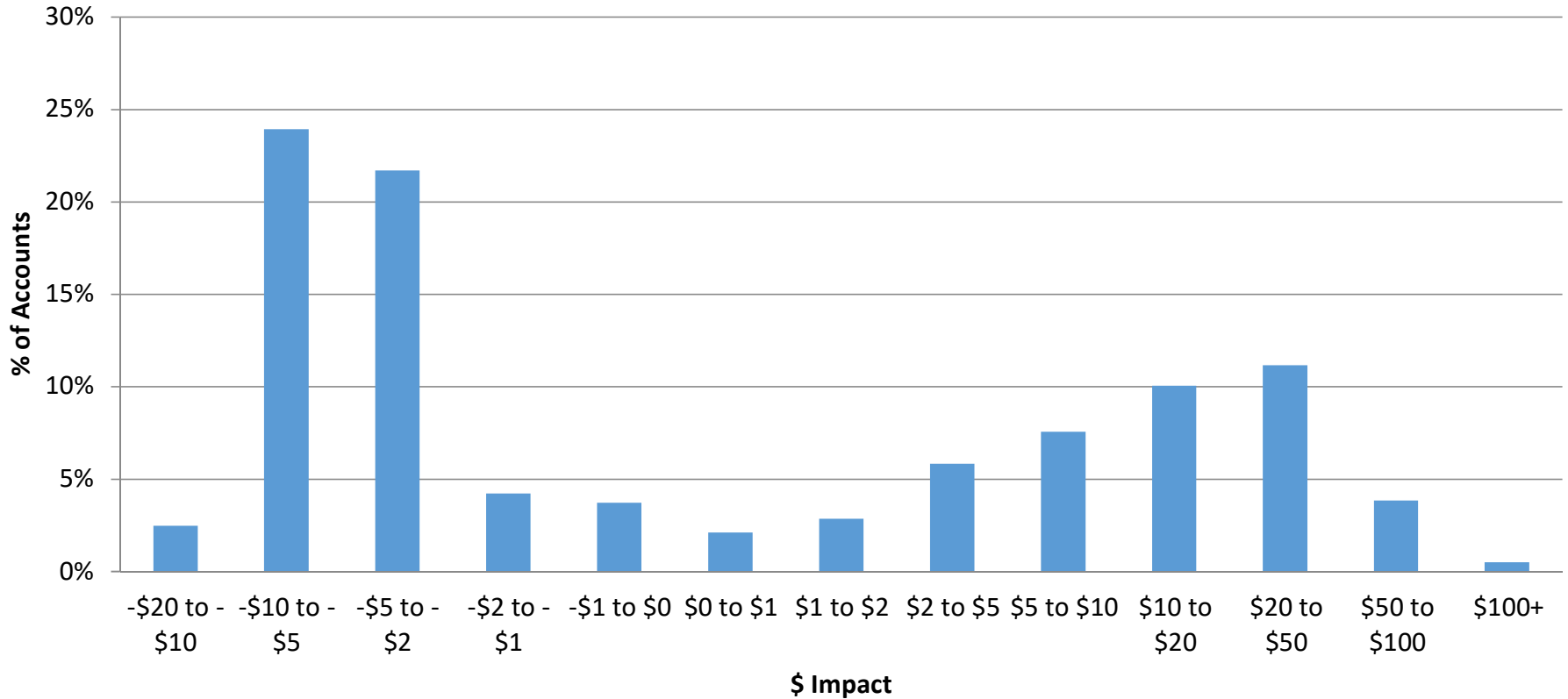


T -> 3P Summer Bill Impact

CLIMATE_ZONE FL_NEM BASIC_AE CARE

Count of PREM_ID

CARE non-NEM All Electric, Hot Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU



T-> 2P Summer Bill Impact

Bill Impact Analysis

Average Annual Impact

% of Baseline

2016

Rate	Customers	Climate Region	Annual//Summer	0-100%	100-130%	130-200%	200-300%	300-350%	350-400%	400%+
2018 Tiered to 2-Period TOU	All non-NEM	All Climate Zones	Annual	19.0%	36.0%	28.0%	12.1%	1.9%	1.0%	2.0%
2018 Tiered to 2-Period TOU	All non-NEM	Cool Zone	Annual	21.4%	35.8%	26.2%	11.3%	1.9%	1.1%	2.3%
2018 Tiered to 2-Period TOU	All non-NEM	Hot Zone	Annual	20.7%	34.6%	30.8%	10.7%	1.4%	0.5%	1.2%
2018 Tiered to 2-Period TOU	All non-NEM	Moderate Zone	Annual	15.5%	36.5%	30.5%	13.2%	2.0%	1.0%	1.5%
2018 Tiered to 2-Period TOU	All non-NEM	All Climate Zones	Summer	24.5%	27.2%	27.8%	14.1%	2.5%	1.4%	2.5%
2018 Tiered to 2-Period TOU	All non-NEM	Cool Zone	Summer	27.3%	27.0%	26.0%	13.0%	2.4%	1.4%	2.9%
2018 Tiered to 2-Period TOU	All non-NEM	Hot Zone	Summer	27.3%	24.4%	29.2%	14.4%	2.3%	0.9%	1.6%
2018 Tiered to 2-Period TOU	All non-NEM	Moderate Zone	Summer	20.2%	27.6%	30.4%	15.7%	2.6%	1.4%	2.1%

Rate	Customers	Climate Region	Annual//Summer	0-100%	100-130%	130-200%	200-300%	300-350%	350-400%	400%+
2018 Tiered to 2-Period TOU	All non-NEM, non-CARE/FERA	All Climate Zones	Annual	17.7%	34.3%	28.5%	13.4%	2.3%	1.3%	2.4%
2018 Tiered to 2-Period TOU	All non-NEM, non-CARE/FERA	Cool Zone	Annual	19.9%	34.5%	26.8%	12.4%	2.3%	1.3%	2.8%
2018 Tiered to 2-Period TOU	All non-NEM, non-CARE/FERA	Hot Zone	Annual	22.2%	34.4%	29.3%	10.7%	1.5%	0.6%	1.3%
2018 Tiered to 2-Period TOU	All non-NEM, non-CARE/FERA	Moderate Zone	Annual	14.0%	34.0%	31.3%	15.1%	2.4%	1.2%	2.0%
2018 Tiered to 2-Period TOU	All non-NEM, non-CARE/FERA	All Climate Zones	Summer	23.0%	26.1%	28.0%	15.2%	3.0%	1.6%	3.2%
2018 Tiered to 2-Period TOU	All non-NEM, non-CARE/FERA	Cool Zone	Summer	25.6%	26.1%	26.3%	14.0%	2.8%	1.6%	3.5%
2018 Tiered to 2-Period TOU	All non-NEM, non-CARE/FERA	Hot Zone	Summer	28.5%	23.8%	28.2%	14.2%	2.4%	1.0%	1.8%
2018 Tiered to 2-Period TOU	All non-NEM, non-CARE/FERA	Moderate Zone	Summer	18.5%	26.0%	30.6%	17.2%	3.2%	1.7%	2.7%

Rate	Customers	Climate Region	Annual//Summer	0-100%	100-130%	130-200%	200-300%	300-350%	350-400%	400%+
2018 Tiered to 2-Period TOU	All non-NEM, CARE/FERA	All Climate Zones	Annual	23.3%	42.2%	26.1%	7.4%	0.6%	0.2%	0.2%
2018 Tiered to 2-Period TOU	All non-NEM, CARE/FERA	Cool Zone	Annual	27.4%	41.2%	23.8%	6.7%	0.5%	0.2%	0.2%
2018 Tiered to 2-Period TOU	All non-NEM, CARE/FERA	Hot Zone	Annual	12.4%	35.4%	39.0%	11.3%	1.0%	0.3%	0.5%
2018 Tiered to 2-Period TOU	All non-NEM, CARE/FERA	Moderate Zone	Annual	19.3%	43.3%	28.3%	8.1%	0.6%	0.3%	0.2%
2018 Tiered to 2-Period TOU	All non-NEM, CARE/FERA	All Climate Zones	Summer	29.6%	31.3%	27.2%	10.2%	0.9%	0.4%	0.3%
2018 Tiered to 2-Period TOU	All non-NEM, CARE/FERA	Cool Zone	Summer	34.4%	30.6%	24.6%	8.9%	0.9%	0.3%	0.3%
2018 Tiered to 2-Period TOU	All non-NEM, CARE/FERA	Hot Zone	Summer	19.9%	27.4%	34.2%	15.9%	1.6%	0.3%	0.8%
2018 Tiered to 2-Period TOU	All non-NEM, CARE/FERA	Moderate Zone	Summer	24.7%	32.1%	29.9%	11.5%	1.0%	0.4%	0.4%

Rate	Customers	Climate Region	Annual//Summer	0-100%	100-130%	130-200%	200-300%	300-350%	350-400%	400%+
2018 Tiered to 2-Period TOU	Non-NEM, all electric, CARE	Hot Zone	Annual	14.1%	41.0%	35.8%	8.4%	0.6%	0.1%	0.0%
2018 Tiered to 2-Period TOU	Non-NEM, all electric, CARE	Hot Zone	Summer	19.3%	28.9%	34.5%	14.6%	2.2%	0.1%	0.4%

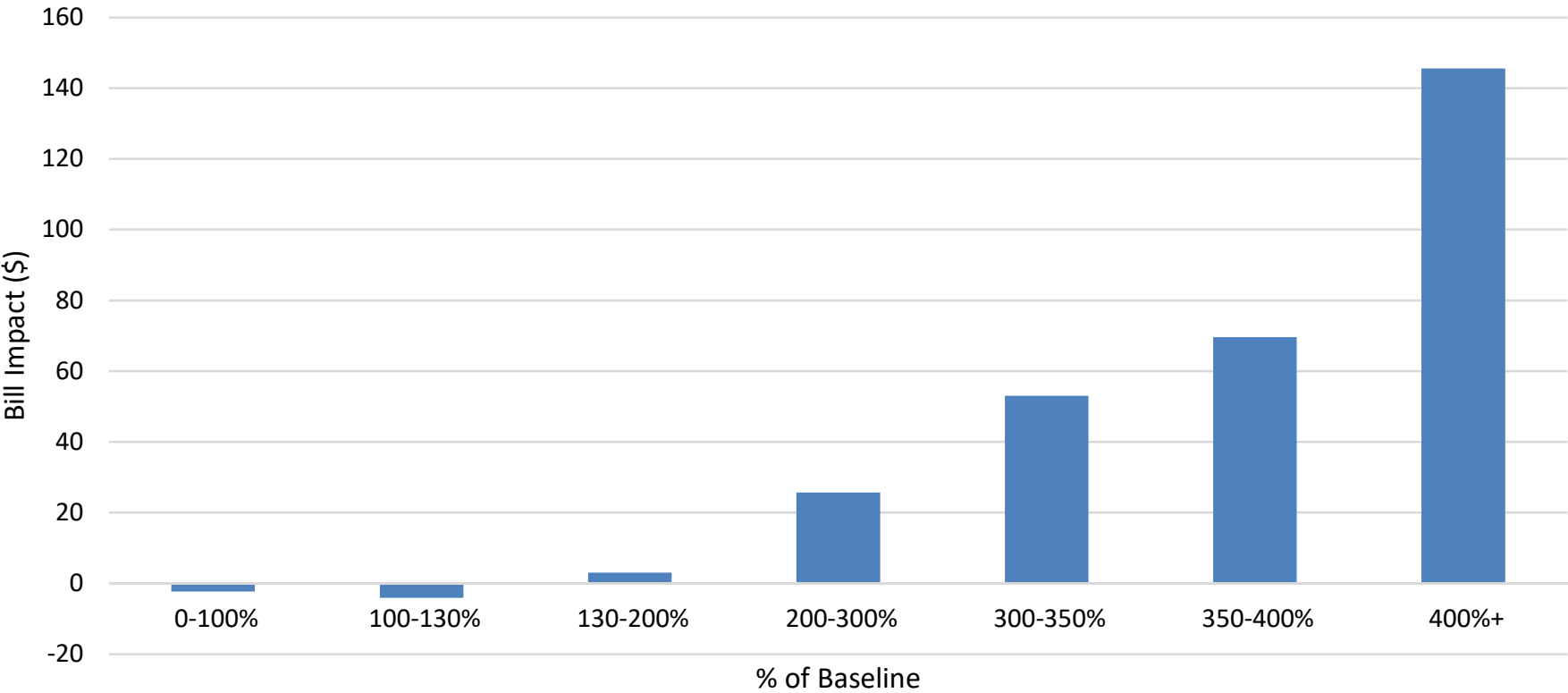
Rate	Customers	Climate Region	Annual//Summer	0-100%	100-130%	130-200%	200-300%	300-350%	350-400%	400%+
2018 Tiered to 3-Period TOU	All non-NEM	All Climate Zones	Annual	19.0%	36.0%	28.0%	12.1%	1.9%	1.0%	2.0%
2018 Tiered to 3-Period TOU	All non-NEM	Cool Zone	Annual	21.4%	35.8%	26.2%	11.3%	1.9%	1.1%	2.3%
2018 Tiered to 3-Period TOU	All non-NEM	Hot Zone	Annual	20.7%	34.6%	30.8%	10.7%	1.4%	0.5%	1.2%
2018 Tiered to 3-Period TOU	All non-NEM	Moderate Zone	Annual	15.5%	36.5%	30.5%	13.2%	2.0%	1.0%	1.5%
2018 Tiered to 3-Period TOU	All non-NEM	All Climate Zones	Summer	24.5%	27.2%	27.8%	14.1%	2.5%	1.4%	2.5%
2018 Tiered to 3-Period TOU	All non-NEM	Cool Zone	Summer	27.3%	27.0%	26.0%	13.0%	2.4%	1.4%	2.9%
2018 Tiered to 3-Period TOU	All non-NEM	Hot Zone	Summer	27.3%	24.4%	29.2%	14.4%	2.3%	0.9%	1.6%
2018 Tiered to 3-Period TOU	All non-NEM	Moderate Zone	Summer	20.2%	27.6%	30.4%	15.7%	2.6%	1.4%	2.1%

Rate	Customers	Climate Region	Annual//Summer	0-100%	100-130%	130-200%	200-300%	300-350%	350-400%	400%+
2018 Tiered to 3-Period TOU	All non-NEM, non-CARE/FERA	All Climate Zones	Annual	17.7%	34.3%	28.5%	13.4%	2.3%	1.3%	2.4%
2018 Tiered to 3-Period TOU	All non-NEM, non-CARE/FERA	Cool Zone	Annual	19.9%	34.5%	26.8%	12.4%	2.3%	1.3%	2.8%
2018 Tiered to 3-Period TOU	All non-NEM, non-CARE/FERA	Hot Zone	Annual	22.2%	34.4%	29.3%	10.7%	1.5%	0.6%	1.3%
2018 Tiered to 3-Period TOU	All non-NEM, non-CARE/FERA	Moderate Zone	Annual	14.0%	34.0%	31.3%	15.1%	2.4%	1.2%	2.0%
2018 Tiered to 3-Period TOU	All non-NEM, non-CARE/FERA	All Climate Zones	Summer	23.0%	26.1%	28.0%	15.2%	3.0%	1.6%	3.2%
2018 Tiered to 3-Period TOU	All non-NEM, non-CARE/FERA	Cool Zone	Summer	25.6%	26.1%	26.3%	14.0%	2.8%	1.6%	3.5%
2018 Tiered to 3-Period TOU	All non-NEM, non-CARE/FERA	Hot Zone	Summer	28.5%	23.8%	28.2%	14.2%	2.4%	1.0%	1.8%
2018 Tiered to 3-Period TOU	All non-NEM, non-CARE/FERA	Moderate Zone	Summer	18.5%	26.0%	30.6%	17.2%	3.2%	1.7%	2.7%

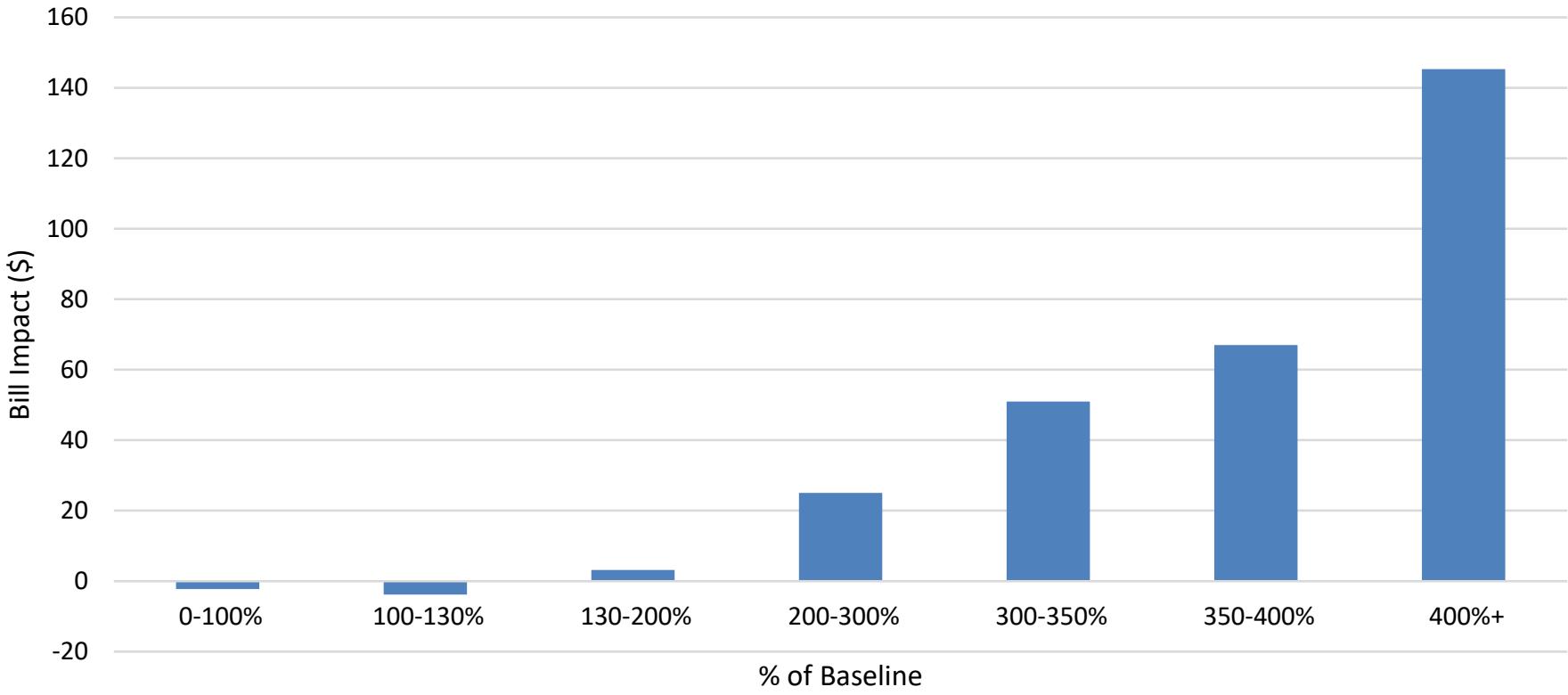
Rate	Customers	Climate Region	Annual//Summer	0-100%	100-130%	130-200%	200-300%	300-350%	350-400%	400%+
2018 Tiered to 3-Period TOU	All non-NEM, CARE/FERA	All Climate Zones	Annual	23.3%	42.2%	26.1%	7.4%	0.6%	0.2%	0.2%
2018 Tiered to 3-Period TOU	All non-NEM, CARE/FERA	Cool Zone	Annual	27.4%	41.2%	23.8%	6.7%	0.5%	0.2%	0.2%
2018 Tiered to 3-Period TOU	All non-NEM, CARE/FERA	Hot Zone	Annual	12.4%	35.4%	39.0%	11.3%	1.0%	0.3%	0.5%
2018 Tiered to 3-Period TOU	All non-NEM, CARE/FERA	Moderate Zone	Annual	19.3%	43.3%	28.3%	8.1%	0.6%	0.3%	0.2%
2018 Tiered to 3-Period TOU	All non-NEM, CARE/FERA	All Climate Zones	Summer	29.6%	31.3%	27.2%	10.2%	0.9%	0.4%	0.3%
2018 Tiered to 3-Period TOU	All non-NEM, CARE/FERA	Cool Zone	Summer	34.4%	30.6%	24.6%	8.9%	0.9%	0.3%	0.3%
2018 Tiered to 3-Period TOU	All non-NEM, CARE/FERA	Hot Zone	Summer	19.9%	27.4%	34.2%	15.9%	1.6%	0.3%	0.8%
2018 Tiered to 3-Period TOU	All non-NEM, CARE/FERA	Moderate Zone	Summer	24.7%	32.1%	29.9%	11.5%	1.0%	0.4%	0.4%

Rate	Customers	Climate Region	Annual//Summer	0-100%	100-130%	130-200%	200-300%	300-350%	350-400%	400%+
2018 Tiered to 3-Period TOU	Non-NEM, all electric, CARE	Hot Zone	Annual	14.1%	41.0%	35.8%	8.4%	0.6%	0.1%	0.0%
2018 Tiered to 3-Period TOU	Non-NEM, all electric, CARE	Hot Zone	Summer	19.3%	28.9%	34.5%	14.6%	2.2%	0.1%	0.4%

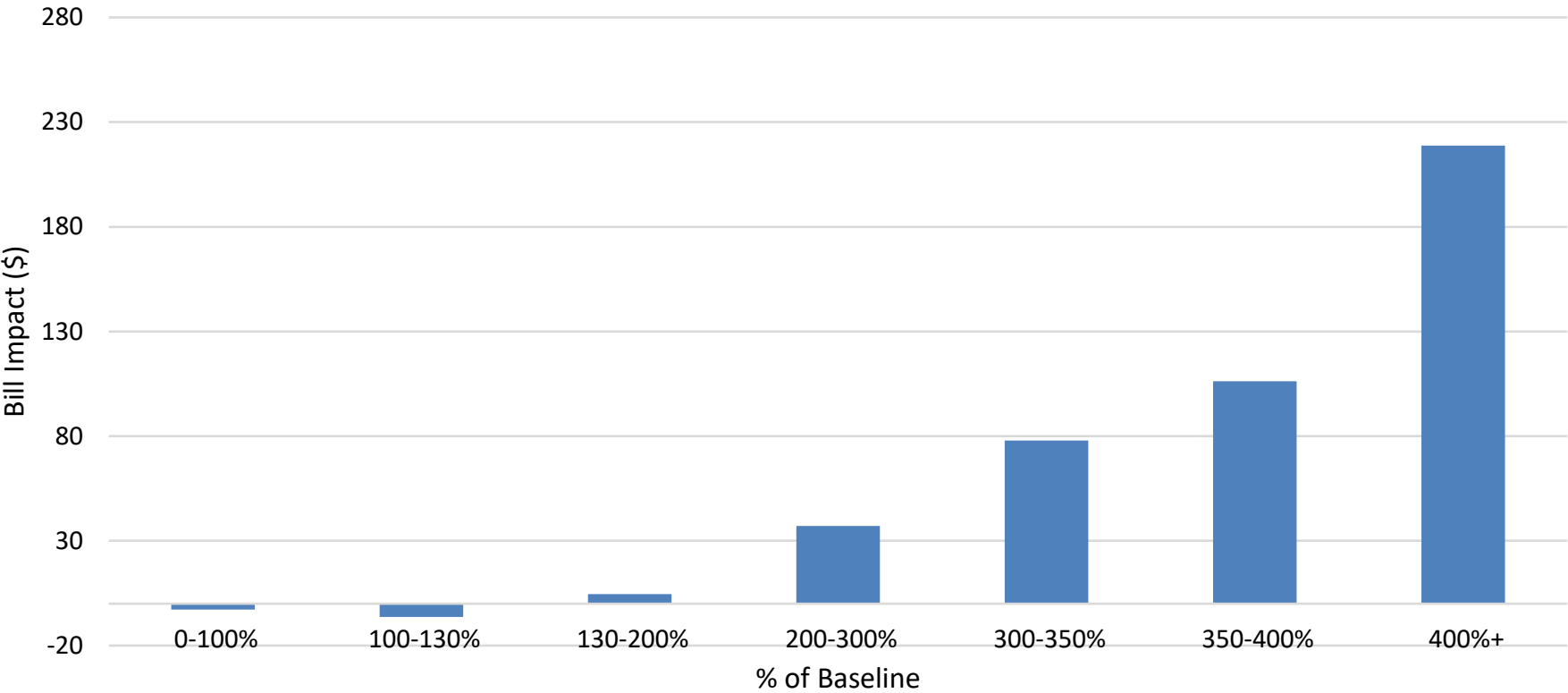
All Non-NEM Customers
All Climate Zones - Annual
2018 Tiered Rates vs 3-Period Default TOU



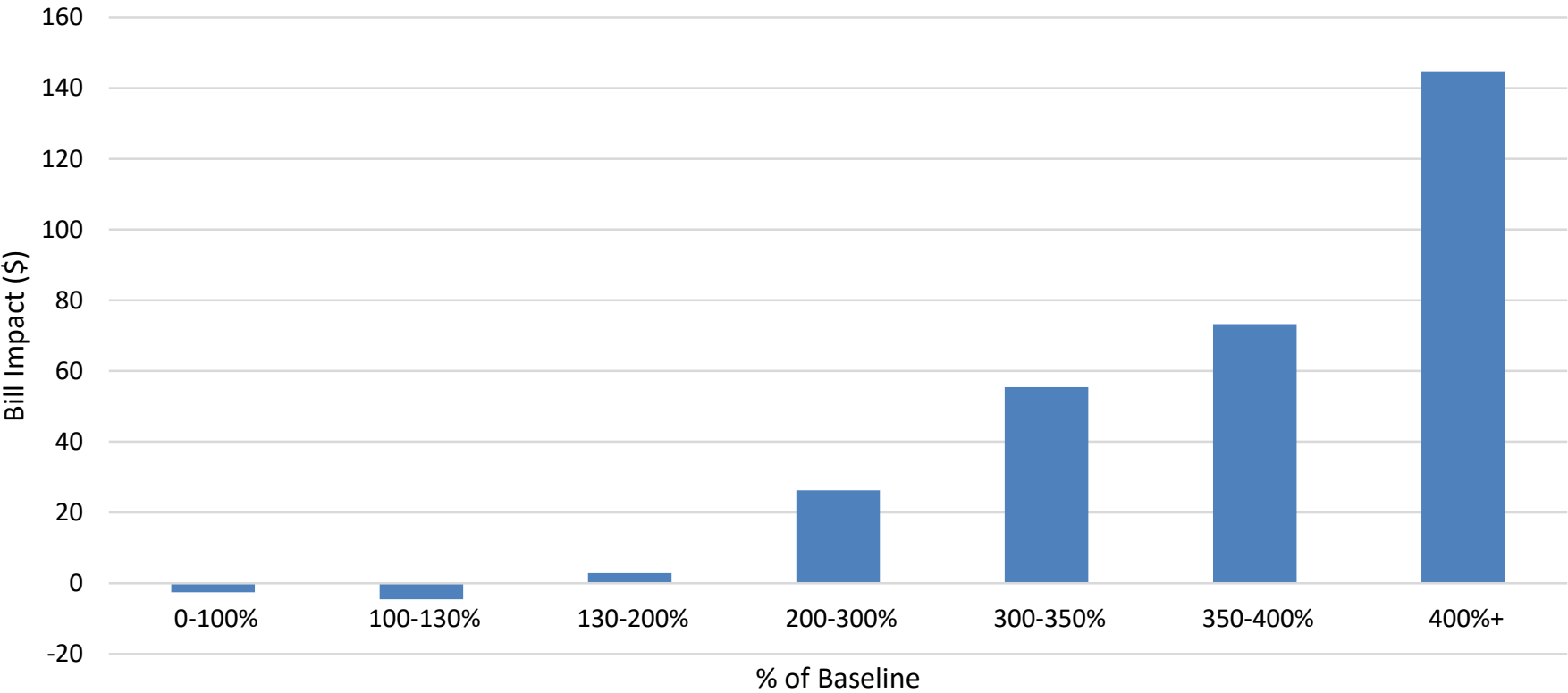
All Non-NEM Customers
Cool Zone - Annual
2018 Tiered Rates vs 3-Period Default TOU



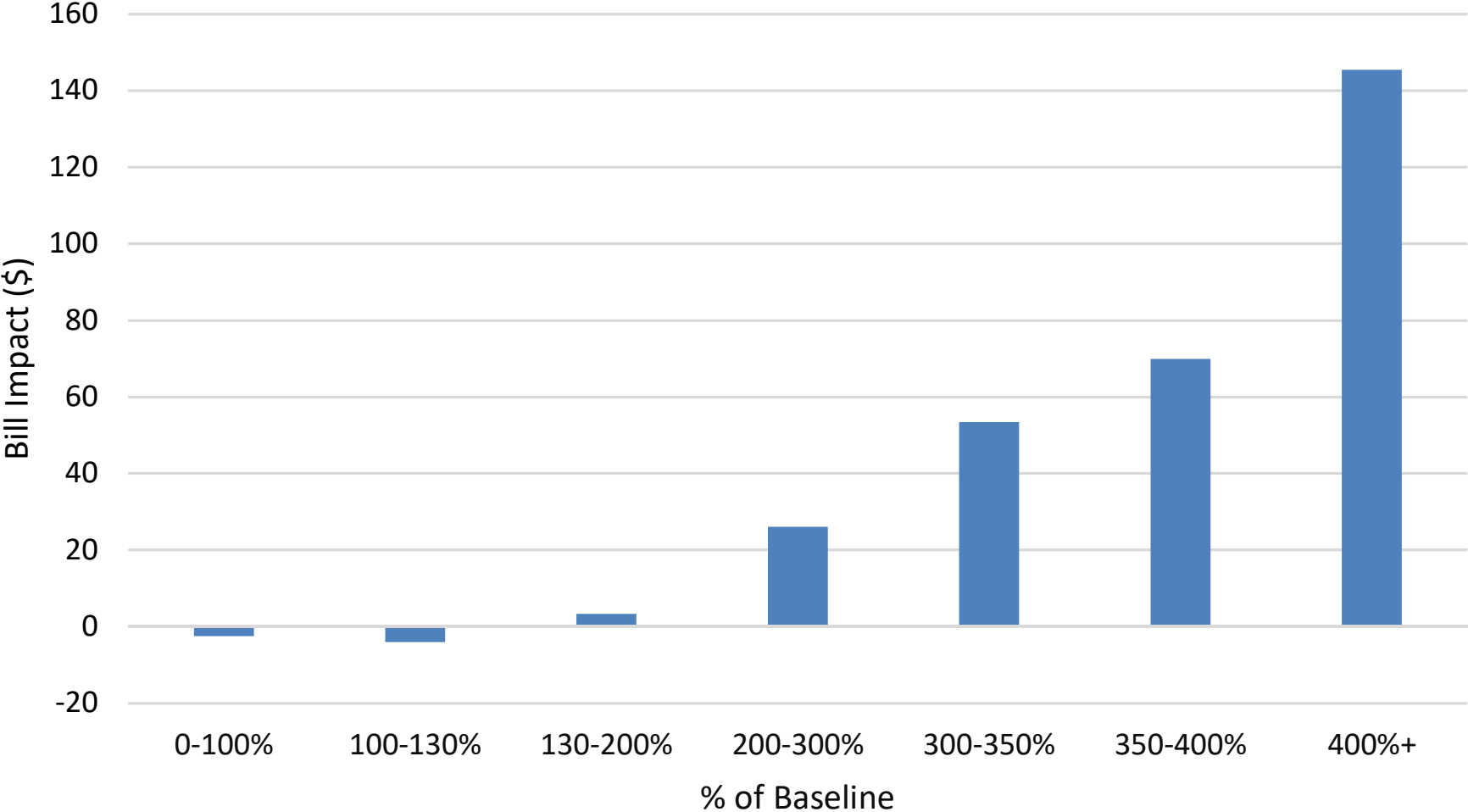
All Non-NEM Customers
Hot Zone - Annual
2018 Tiered Rates vs 3-Period Default TOU



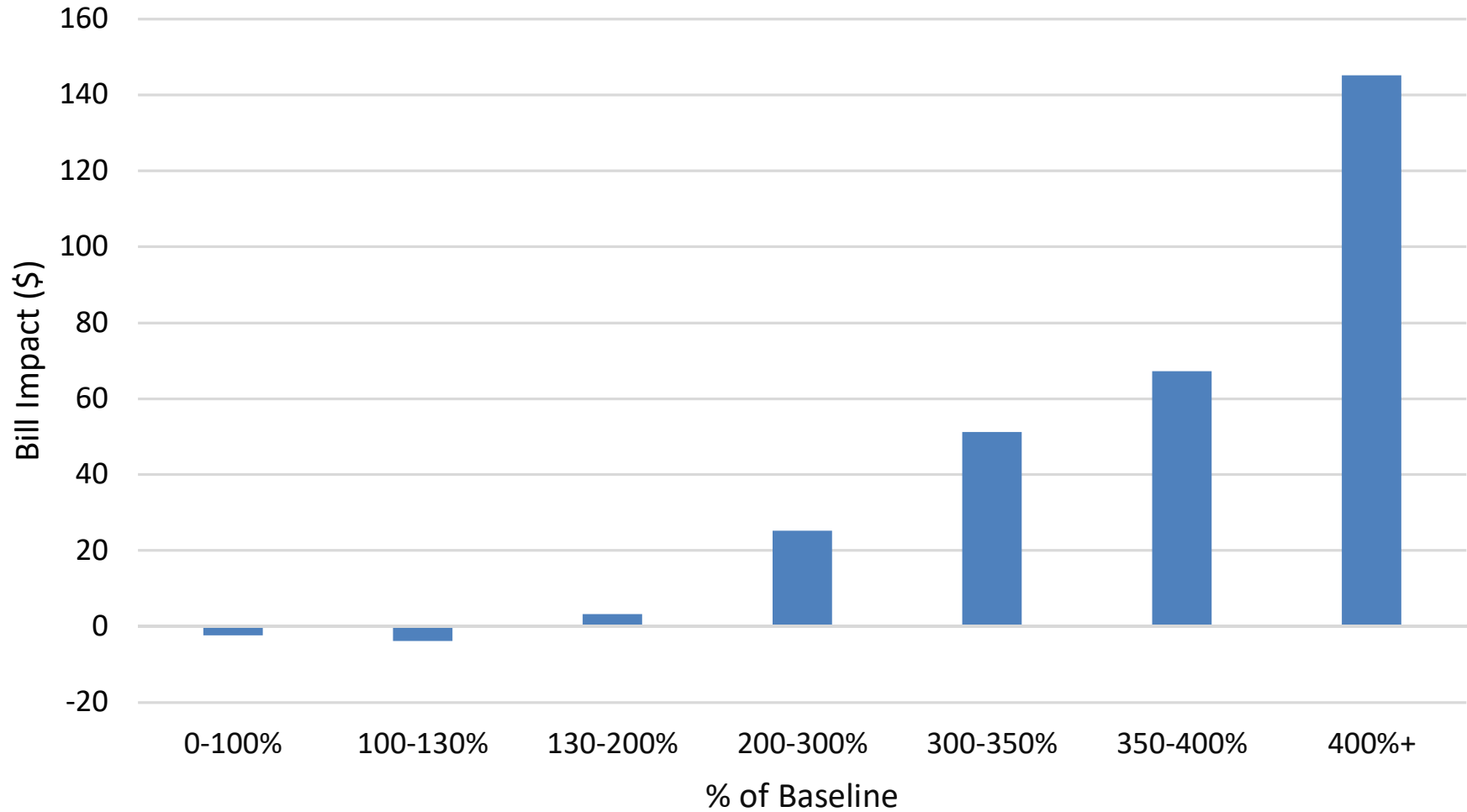
All Non-NEM Customers
Moderate Zone - Annual
2018 Tiered Rates vs 3-Period Default TOU



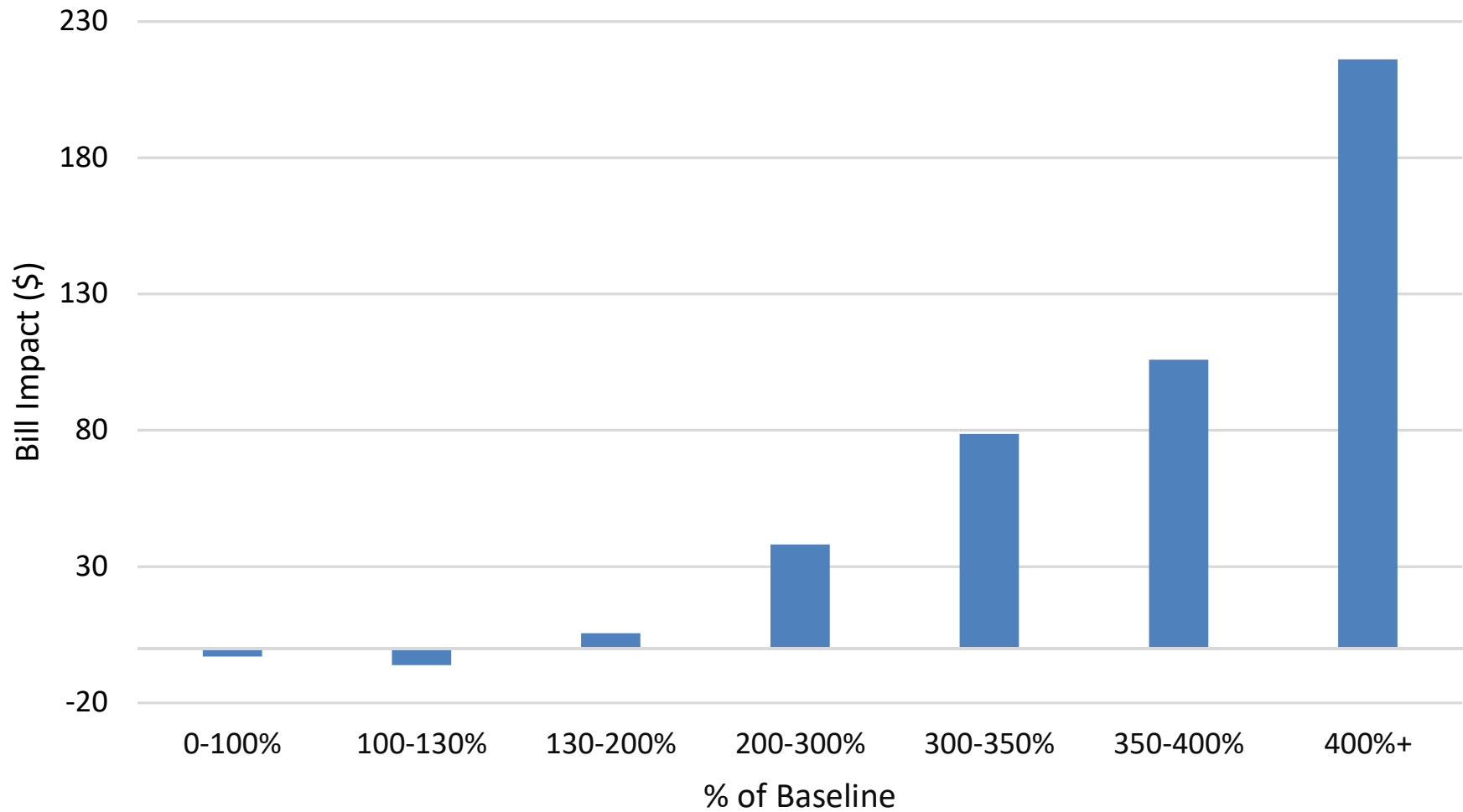
All Non-NEM Customers, All Climate Zones - Annual 2018 Tiered Rates vs 2-Period Default TOU



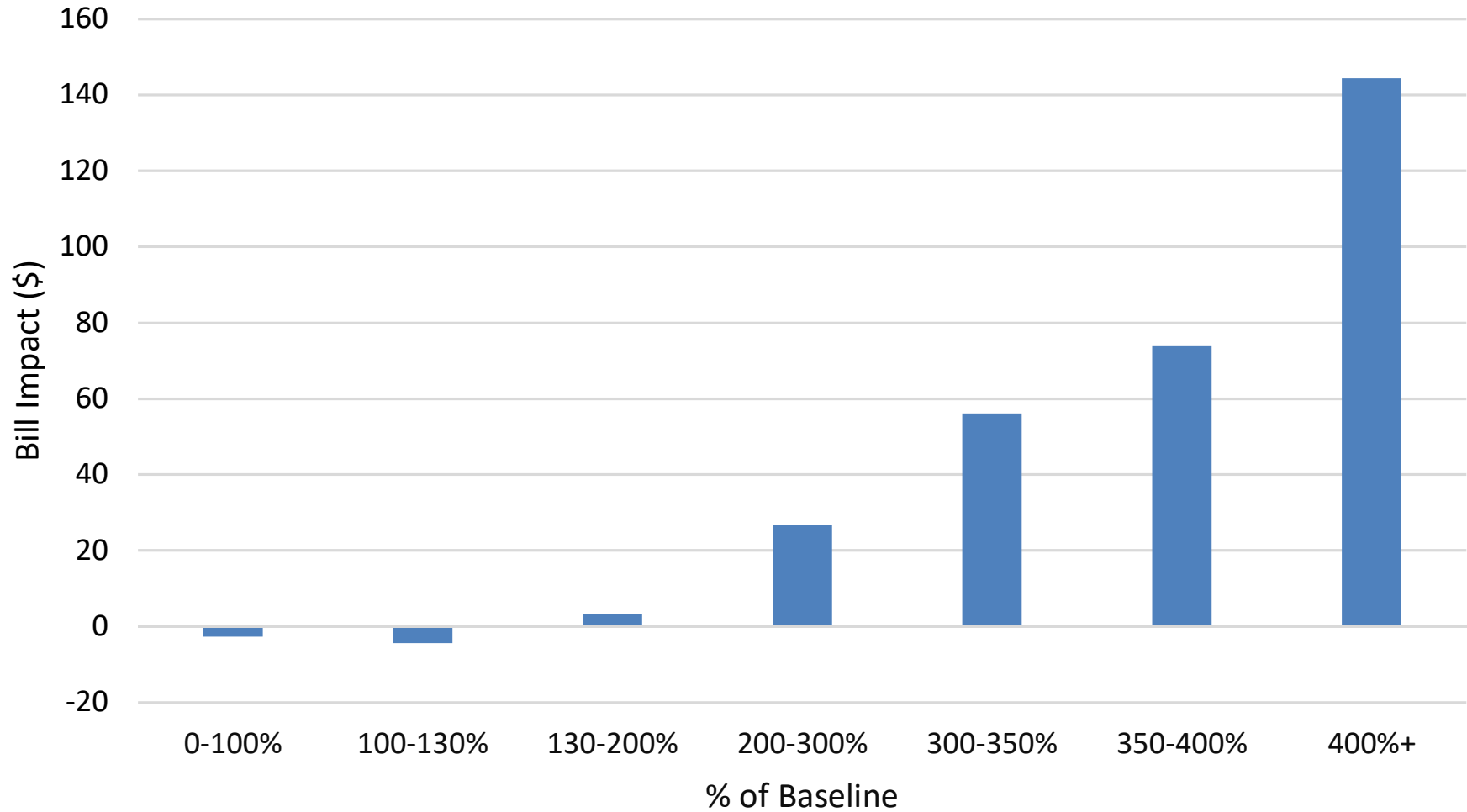
All Non-NEM Customers, Cool Climate Zone - Annual 2018 Tiered Rates vs 2-Period Default TOU



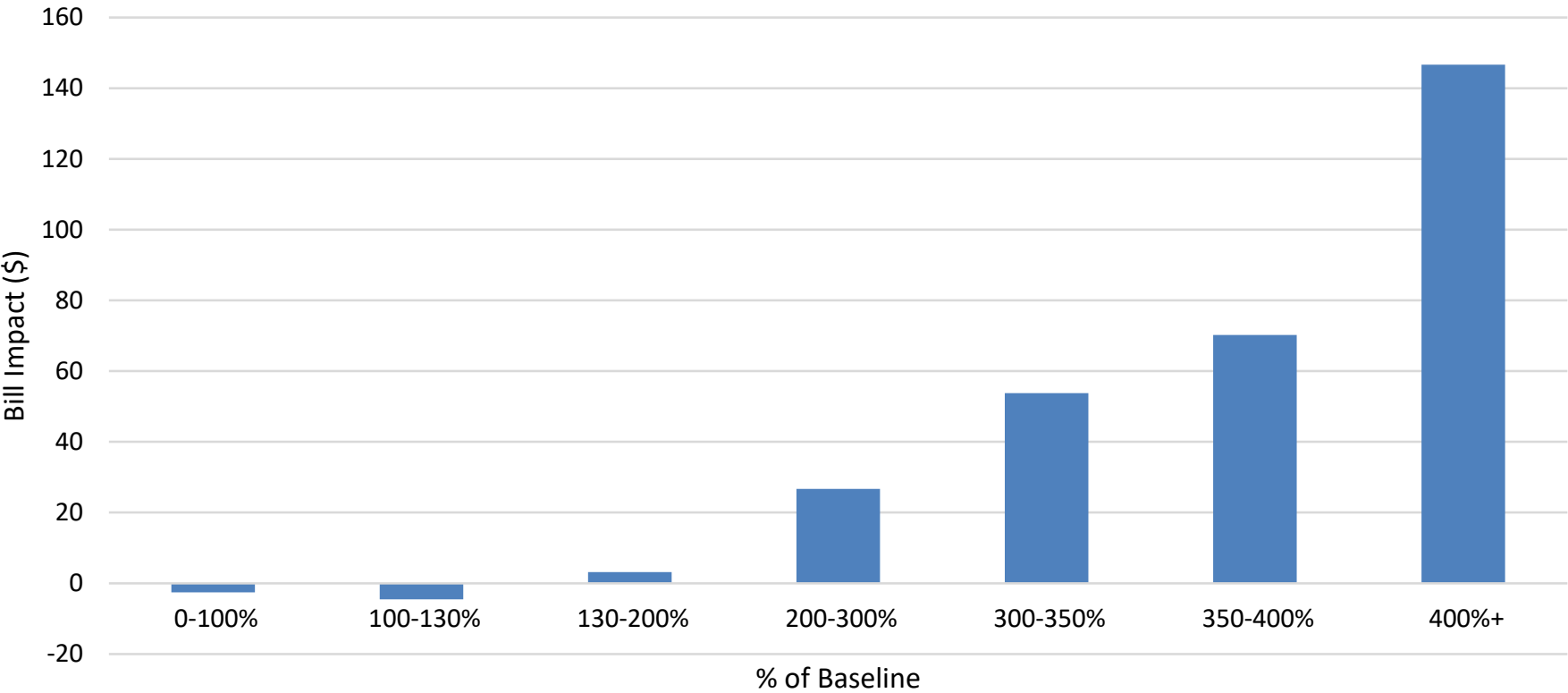
All Non-NEM Customers, Hot Climate Zone - Annual 2018 Tiered Rates vs 2-Period Default TOU



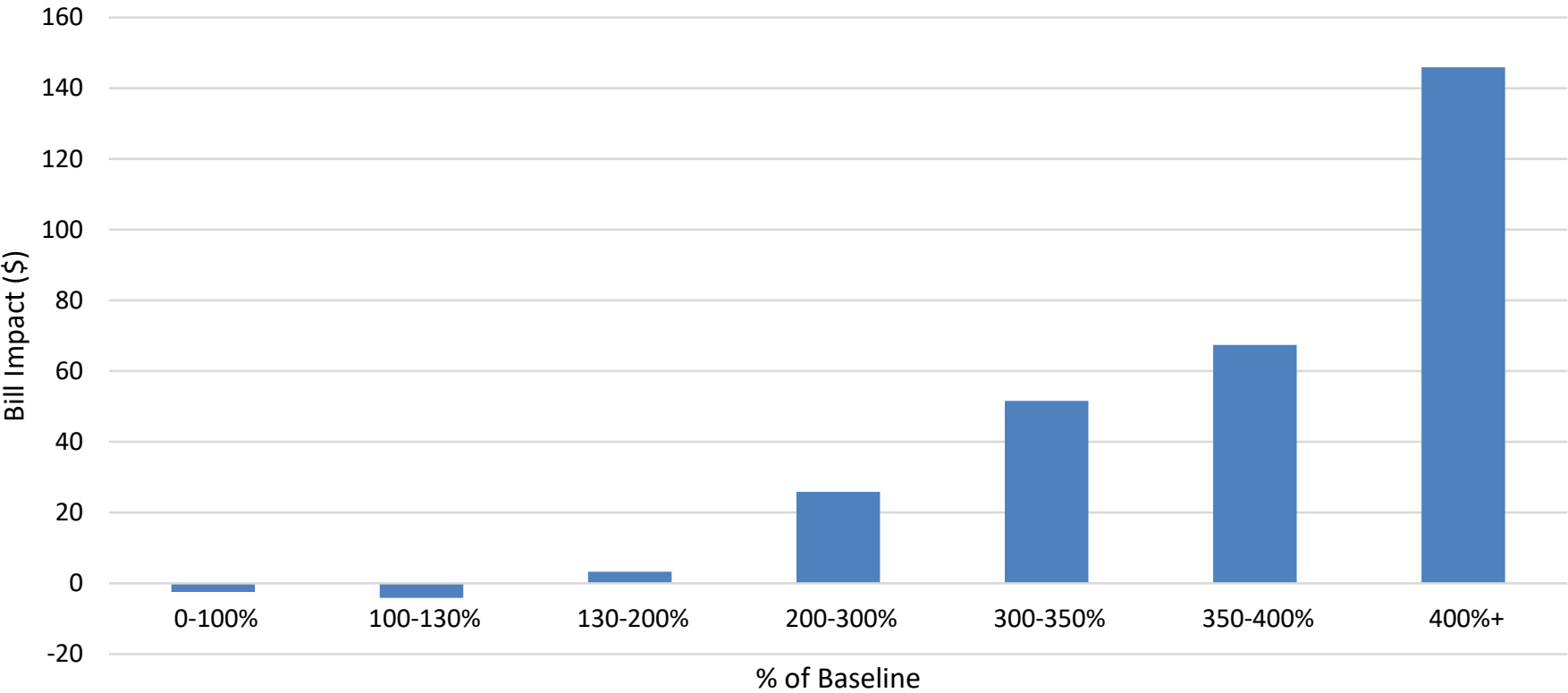
All Non-NEM Customers, Moderate Climate Zone - Annual 2018 Tiered Rates vs 2-Period Default TOU



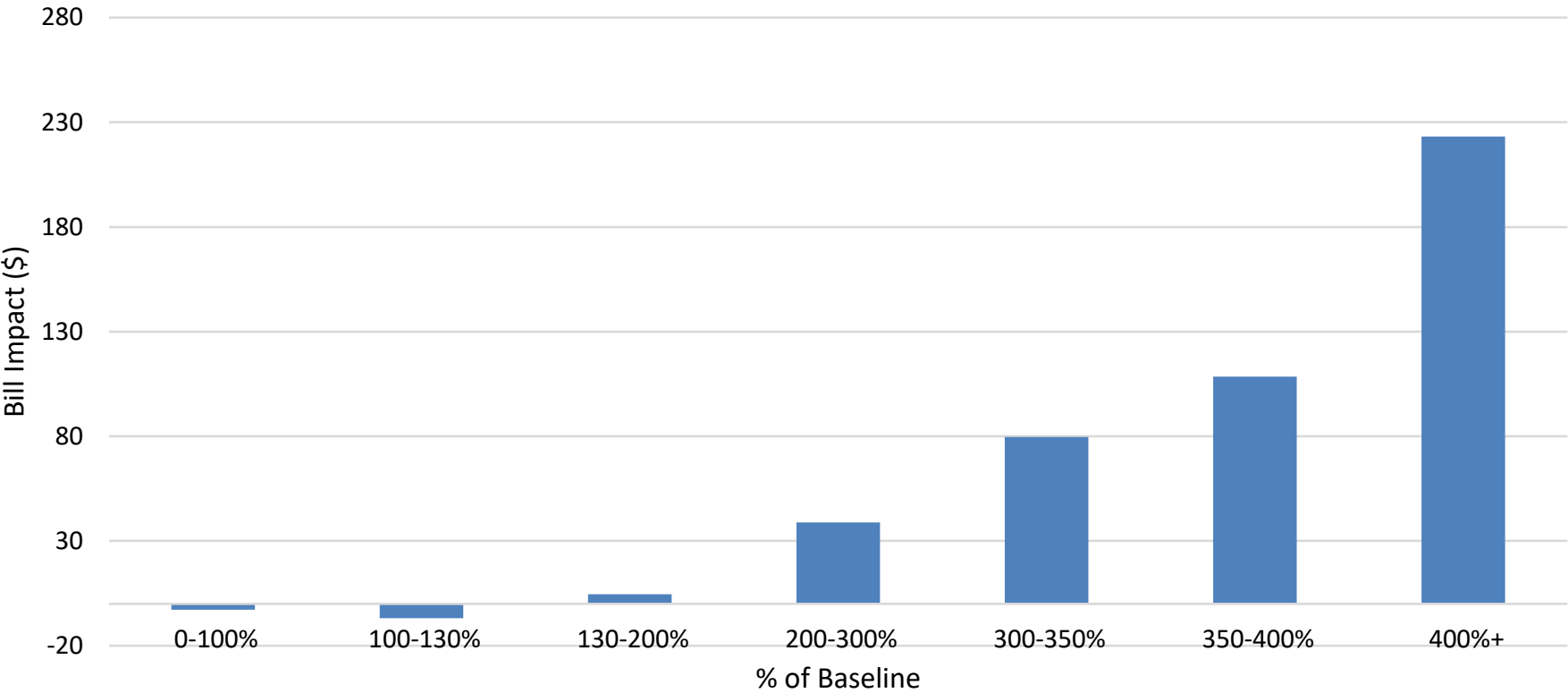
All Non-NEM Customers, Non-CARE
All Climate Zones - Annual
2018 Tiered Rates vs 3-Period Default TOU



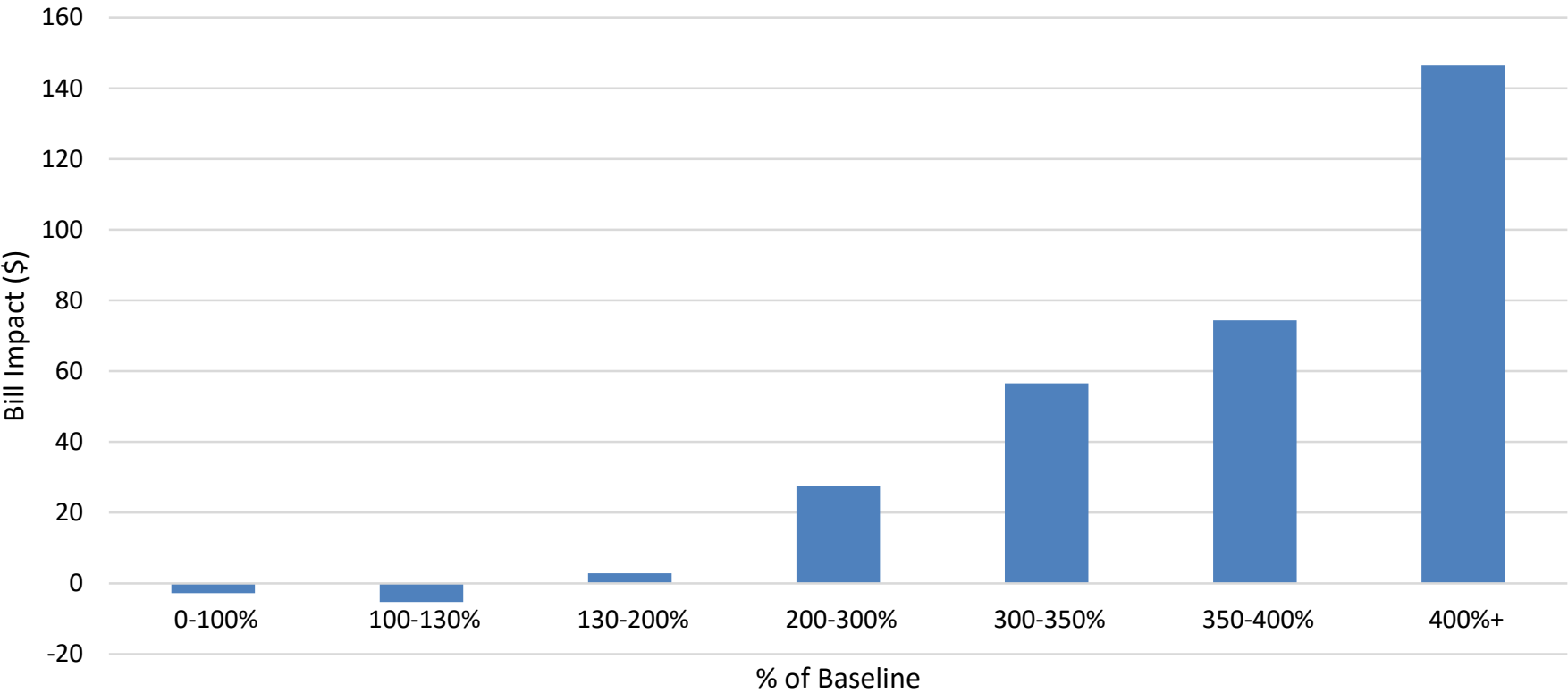
All Non-NEM Customers, Non-CARE
Cool Zone - Annual
2018 Tiered Rates vs 3-Period Default TOU



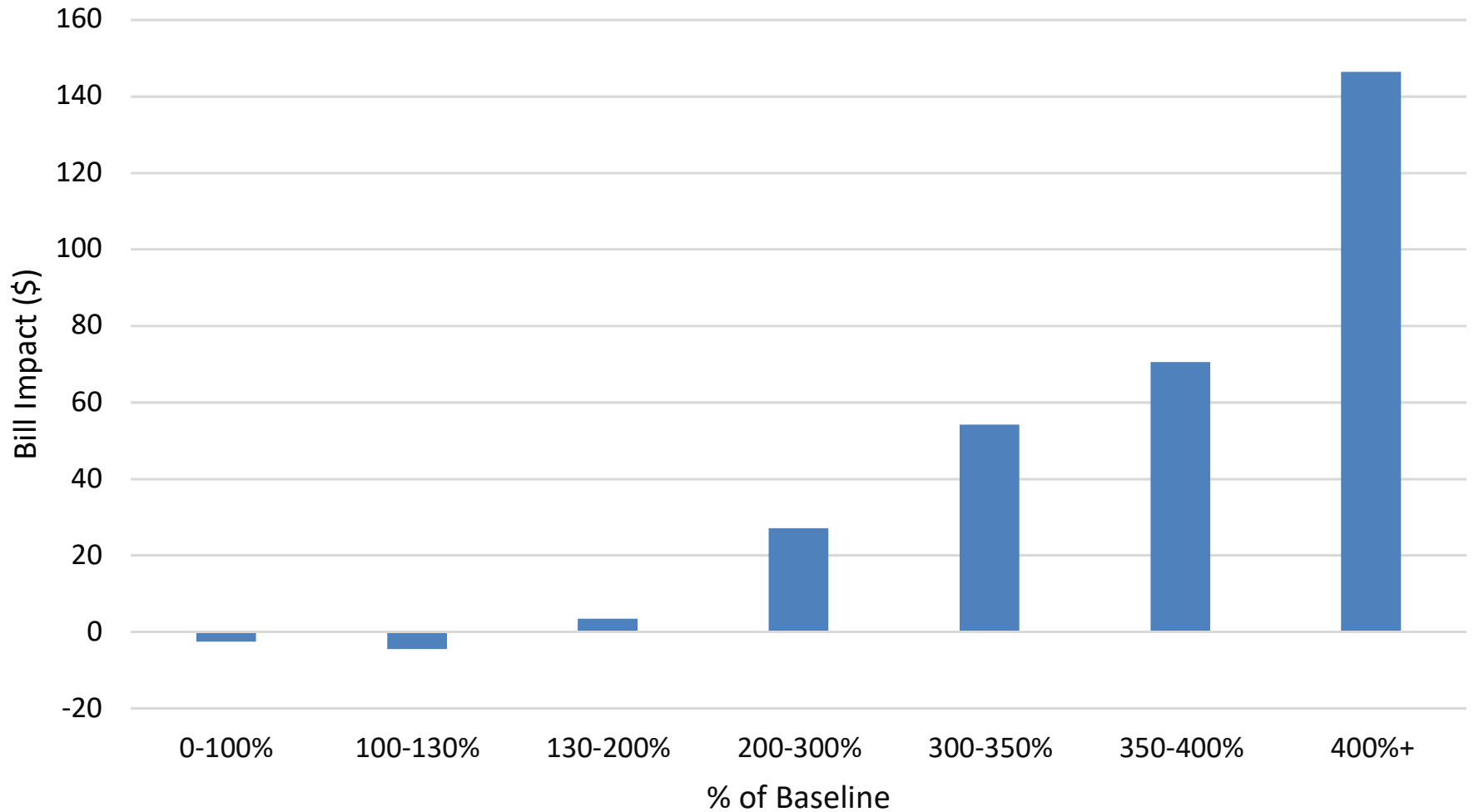
All Non-NEM Customers, Non-CARE
Hot Zone - Annual
2018 Tiered Rates vs 3-Period Default TOU



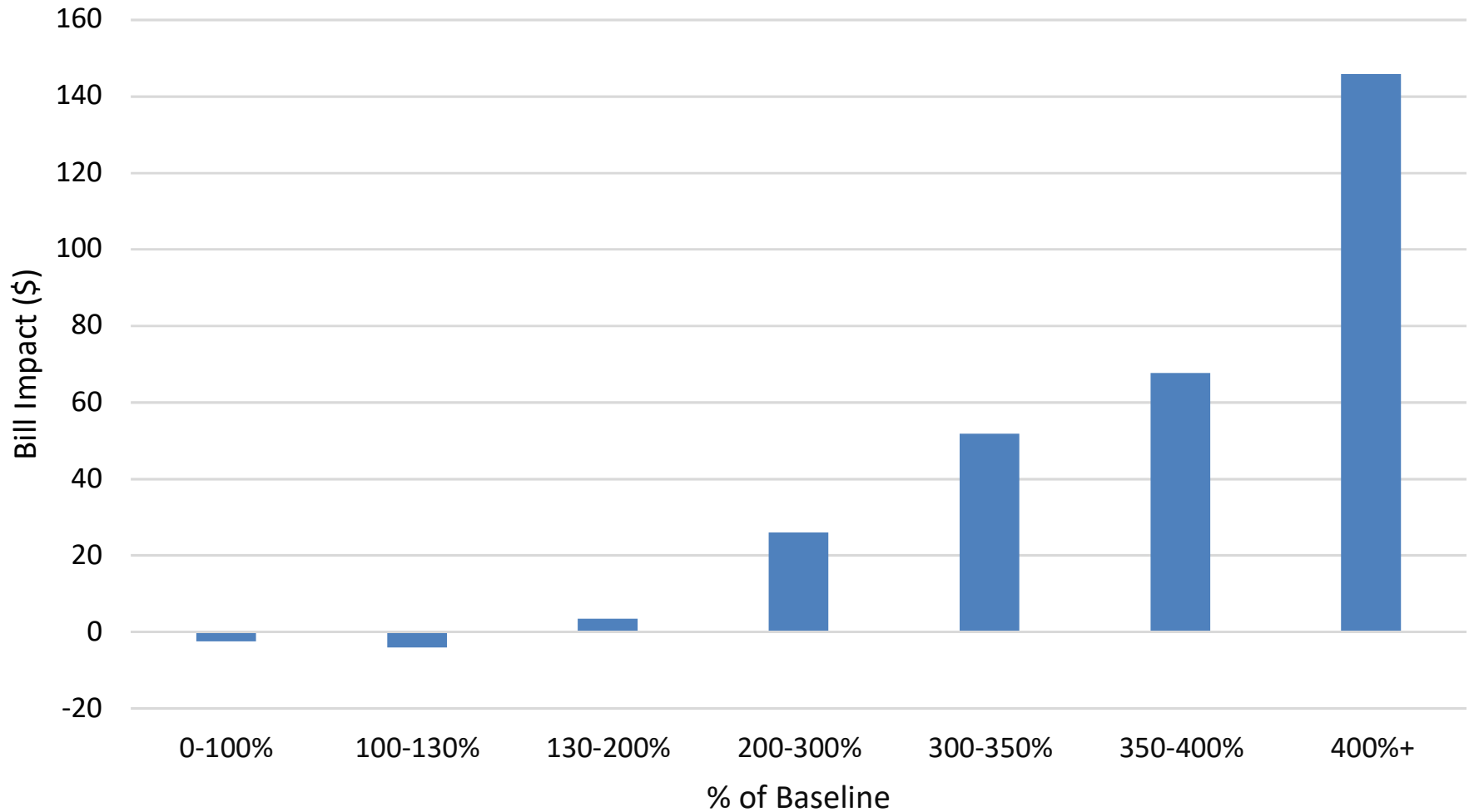
All Non-NEM Customers, Non-CARE
Moderate Zone - Annual
2018 Tiered Rates vs 3-Period Default TOU



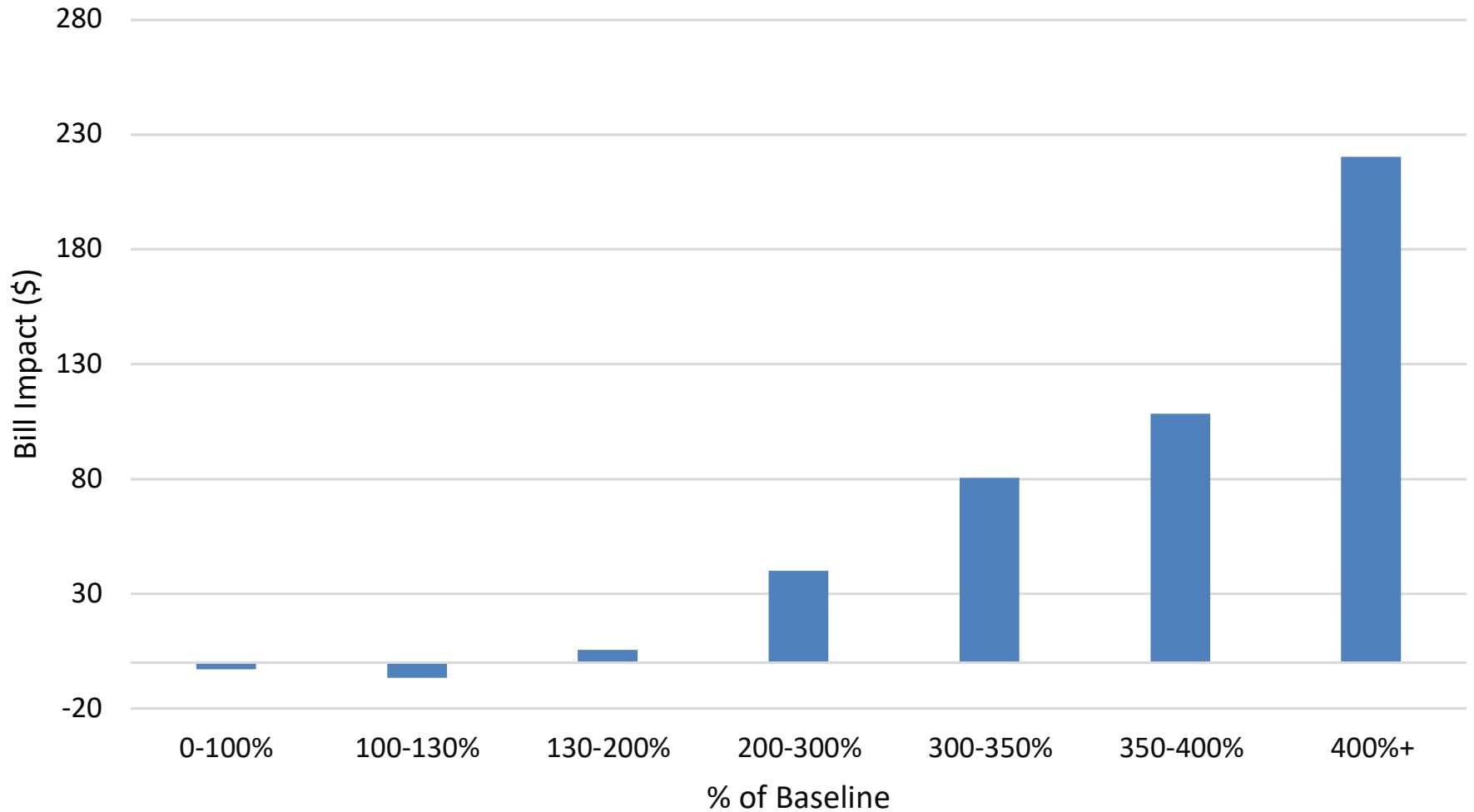
All Non-CARE/FERA, Non-NEM Customers
All Climate Zones - Annual
2018 Tiered Rates vs 2-Period Default TOU



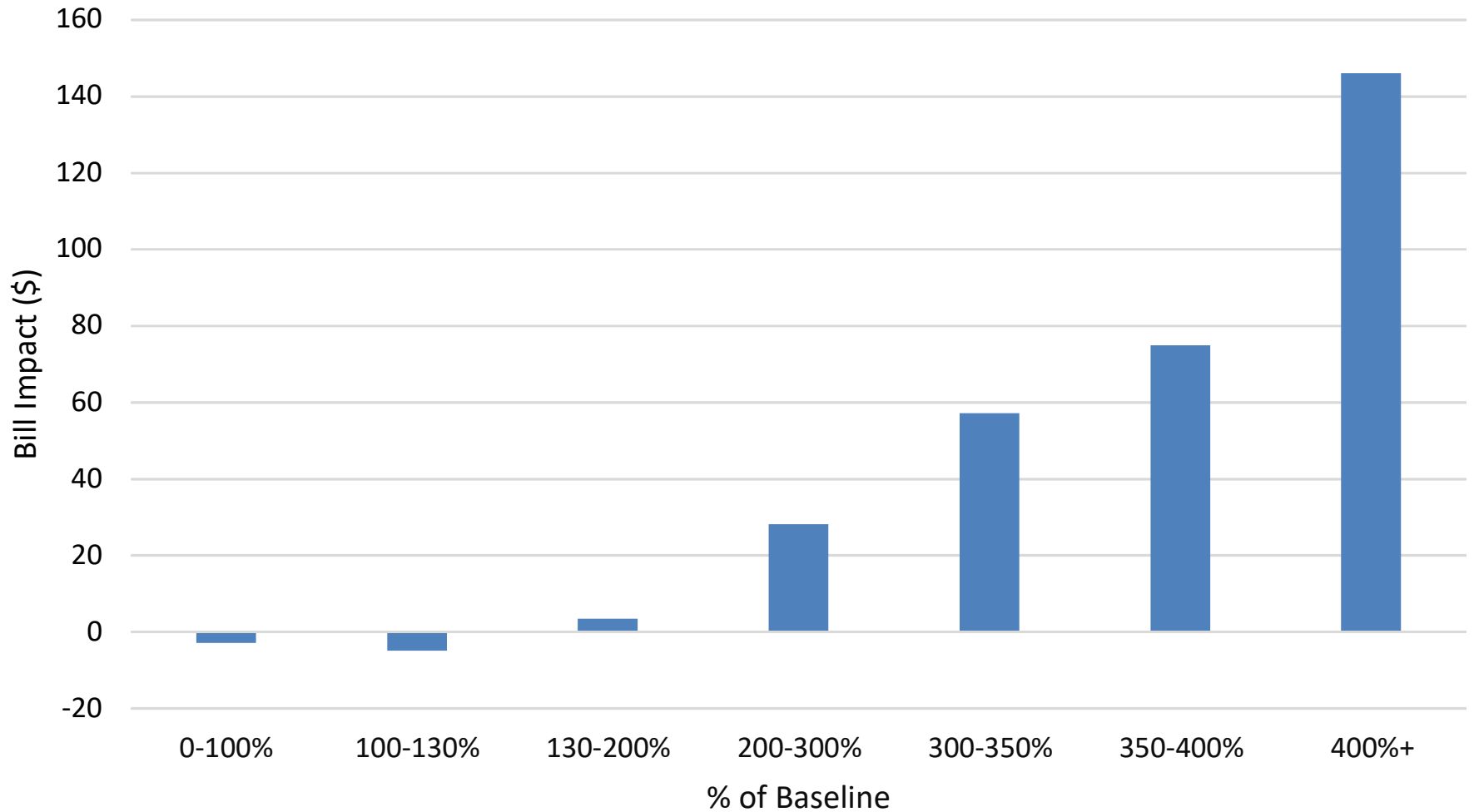
All Non-CARE/FERA, Non-NEM Customers
Cool Climate Zone - Annual
2018 Tiered Rates vs 2-Period Default TOU



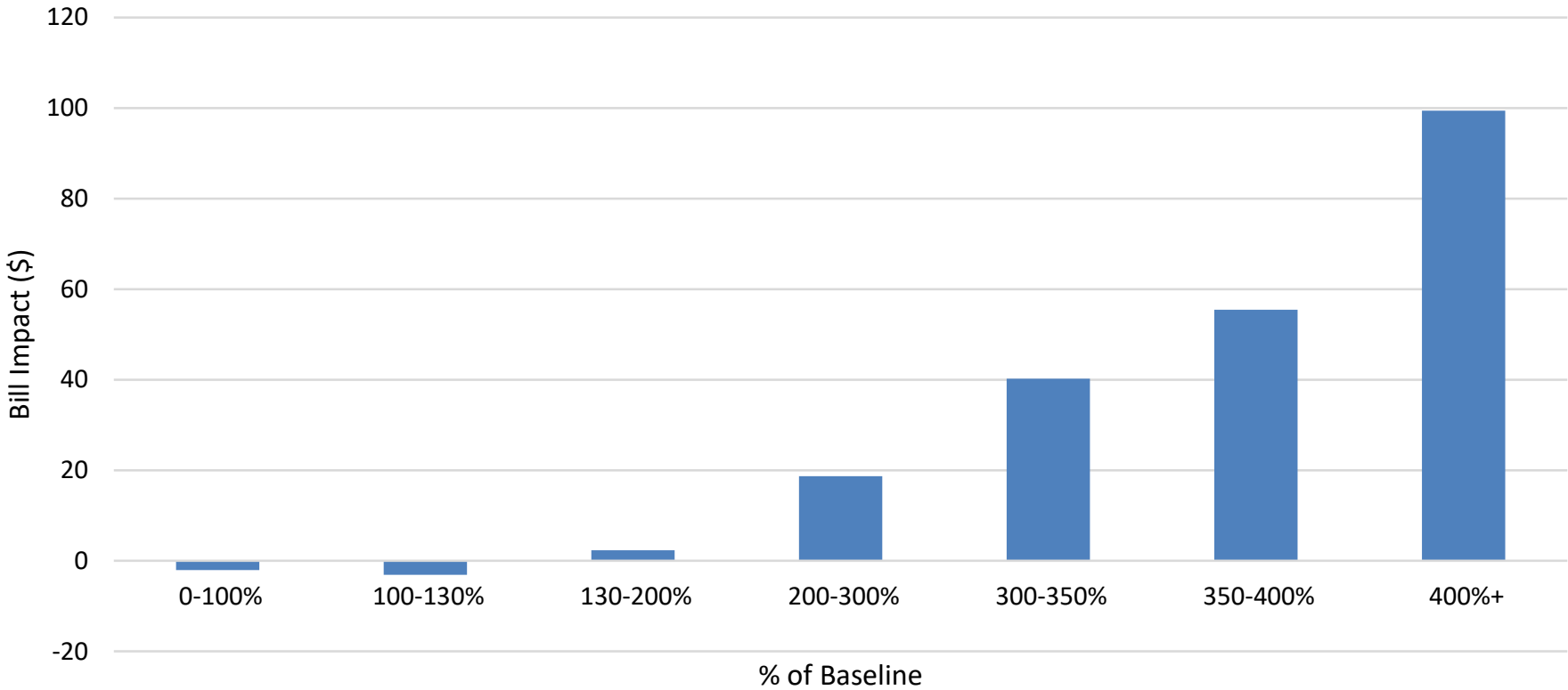
All Non-CARE/FERA, Non-NEM Customers
Hot Climate Zone - Annual
2018 Tiered Rates vs 2-Period Default TOU



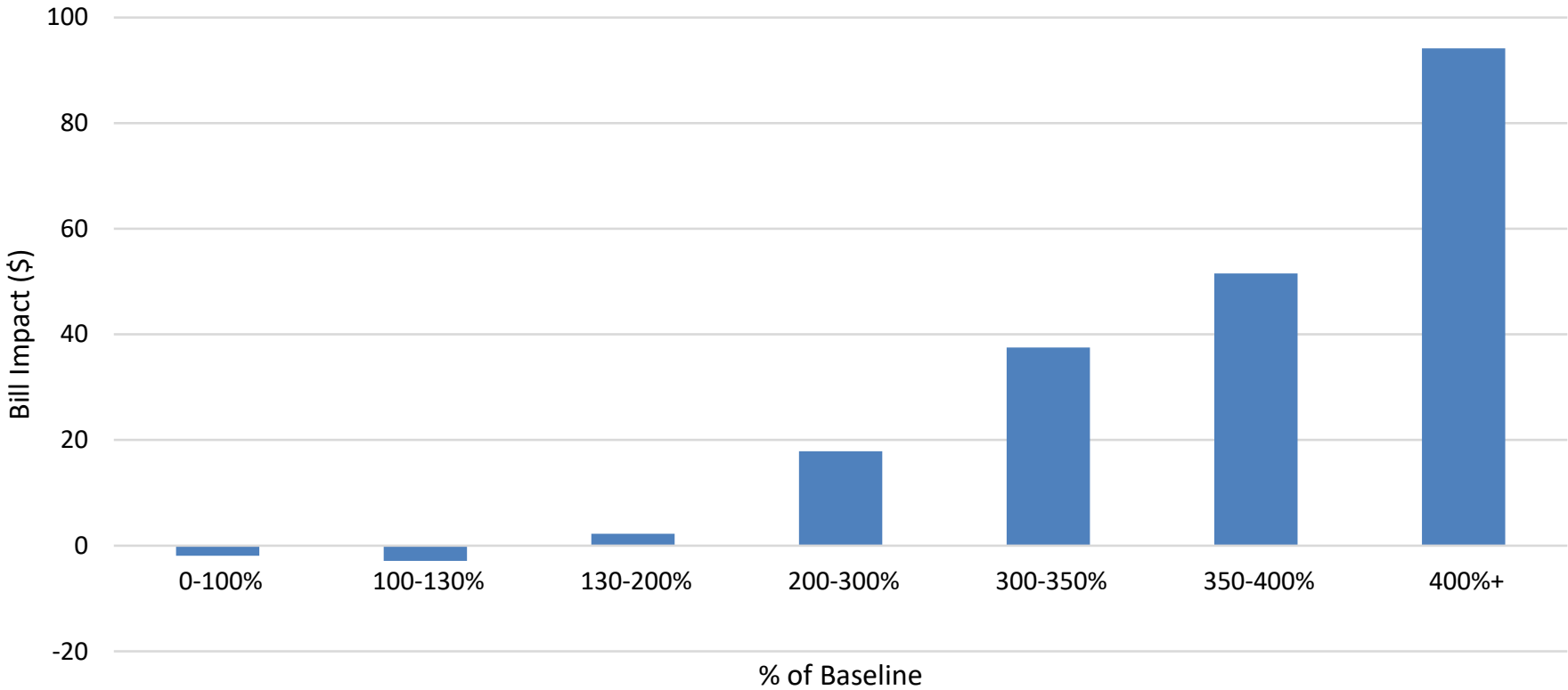
All Non-CARE/FERA, Non-NEM Customers
Moderate Climate Zone - Annual
2018 Tiered Rates vs 2-Period Default TOU



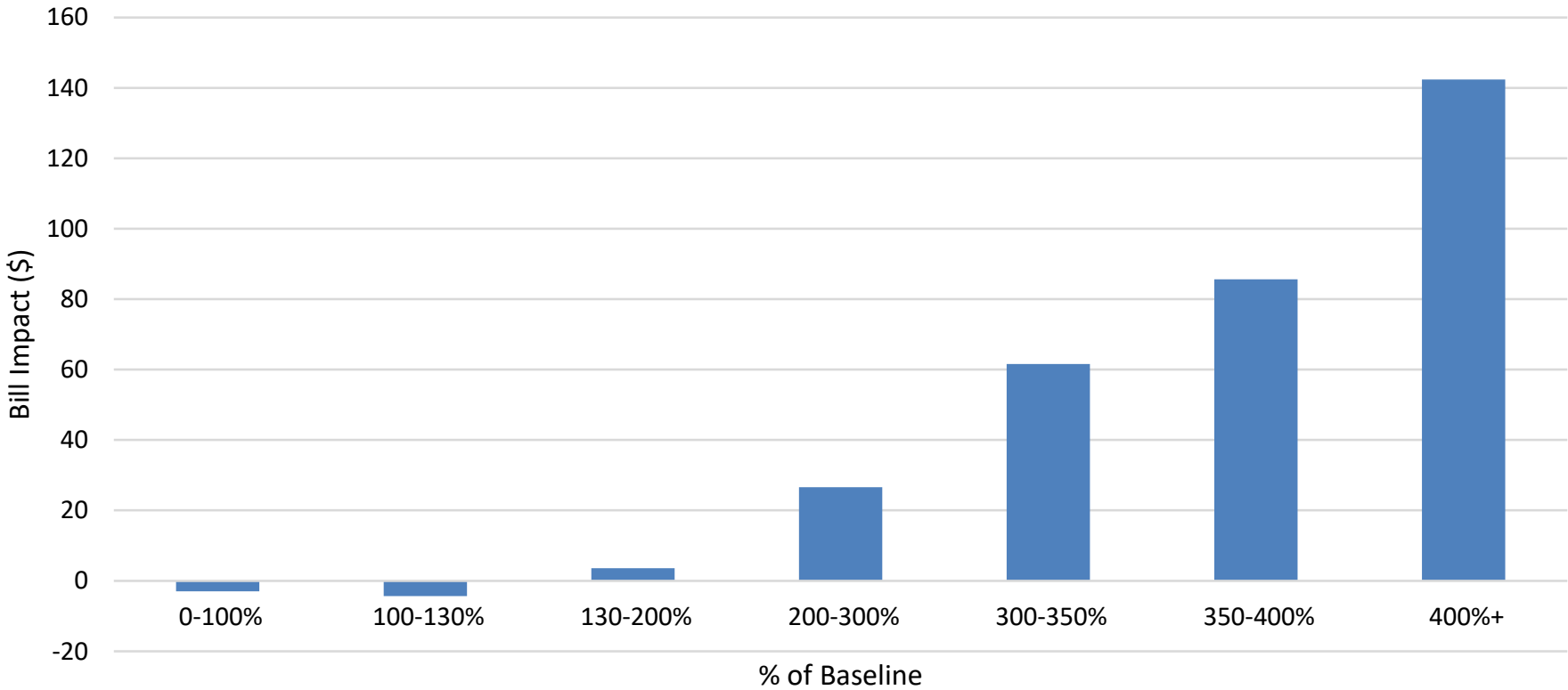
All Non-NEM Customers, CARE/FERA
All Climate Zones - Annual
2018 Tiered Rates vs 3-Period Default TOU



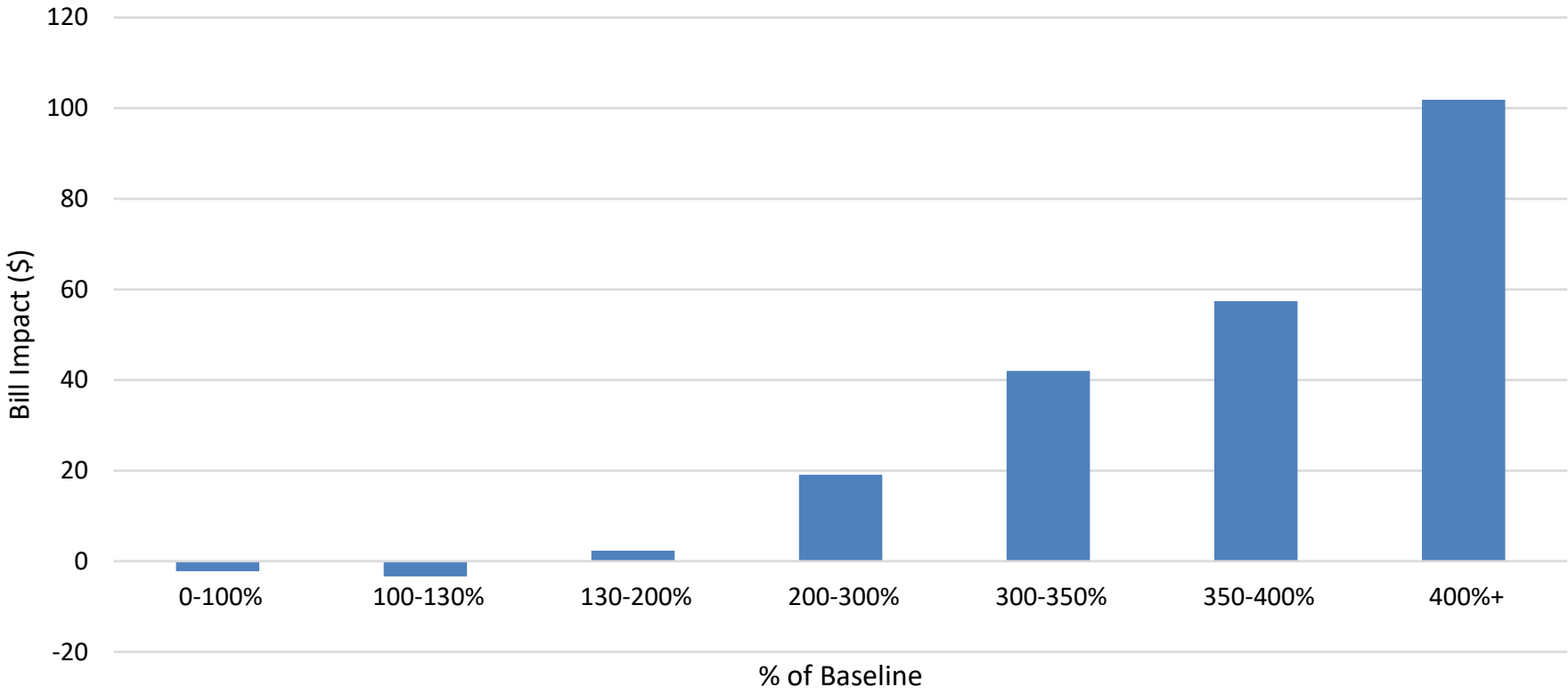
All Non-NEM Customers, CARE/FERA
Cool Zone - Annual
2018 Tiered Rates vs 3-Period Default TOU



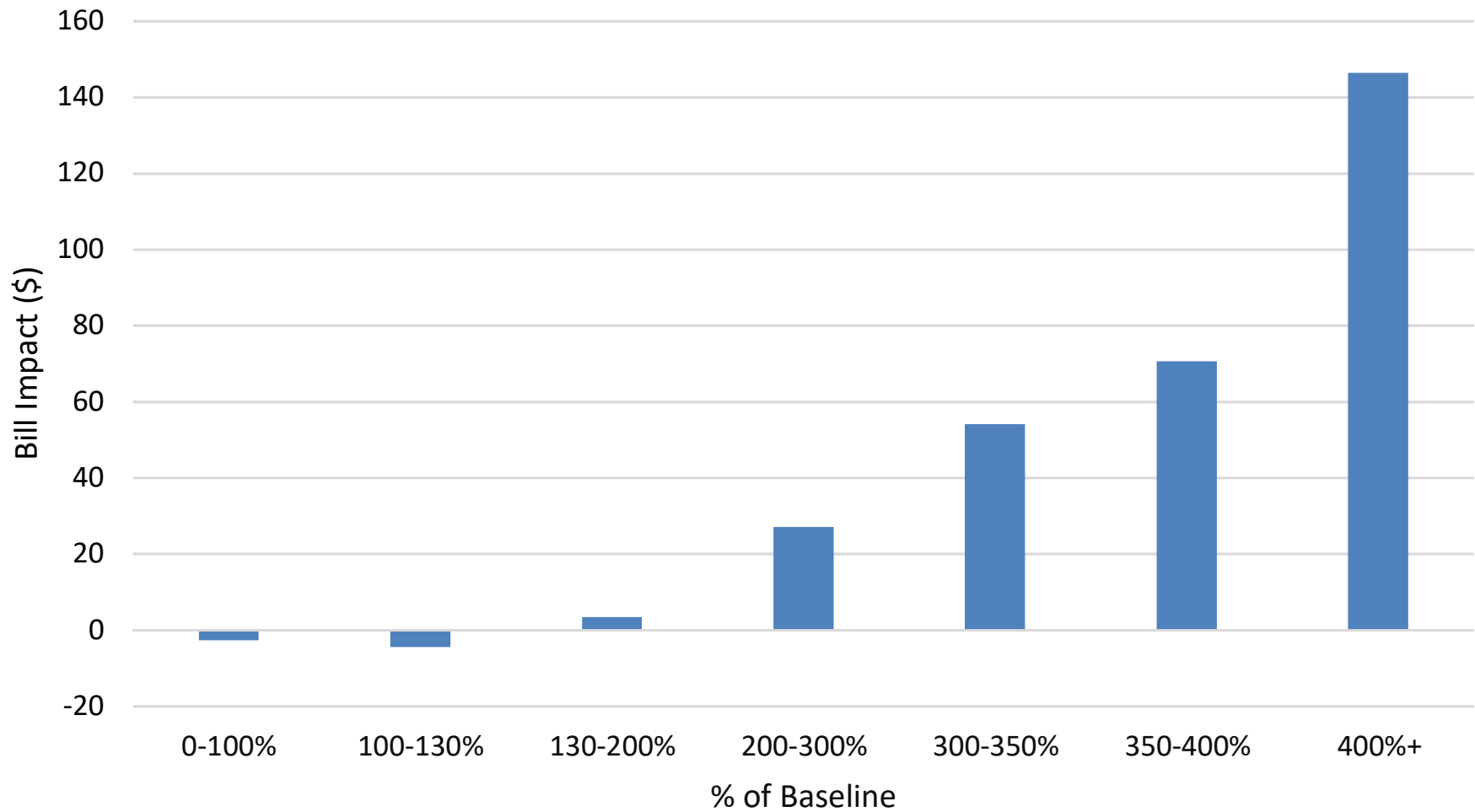
All Non-NEM Customers, CARE/FERA
Hot Zone - Annual
2018 Tiered Rates vs 3-Period Default TOU



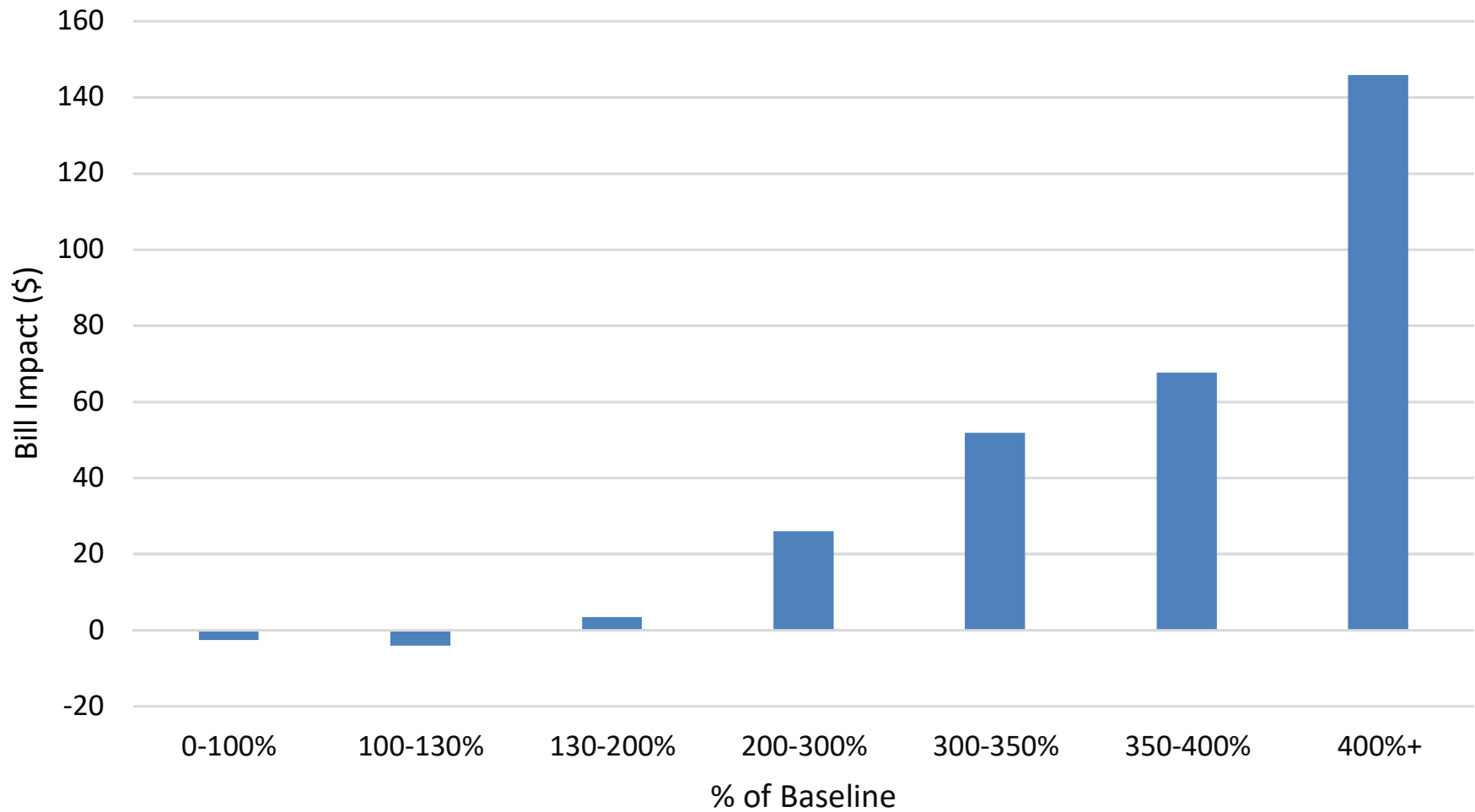
All Non-NEM Customers, CARE/FERA
Moderate Zone - Annual
2018 Tiered Rates vs 3-Period Default TOU



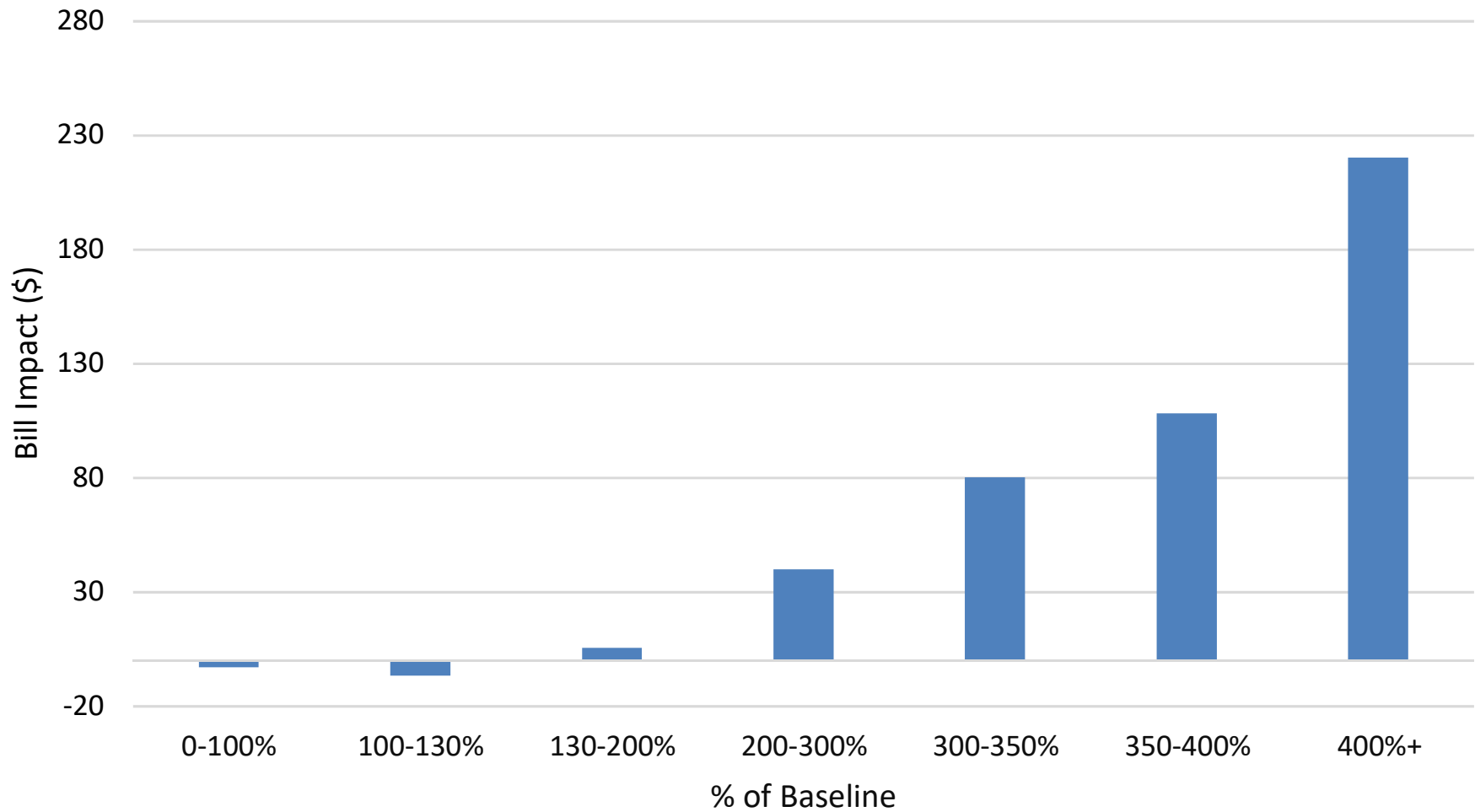
All Non-CARE/FERA, Non-NEM Customers
All Climate Zones - Annual
2018 Tiered Rates vs 2-Period Default TOU



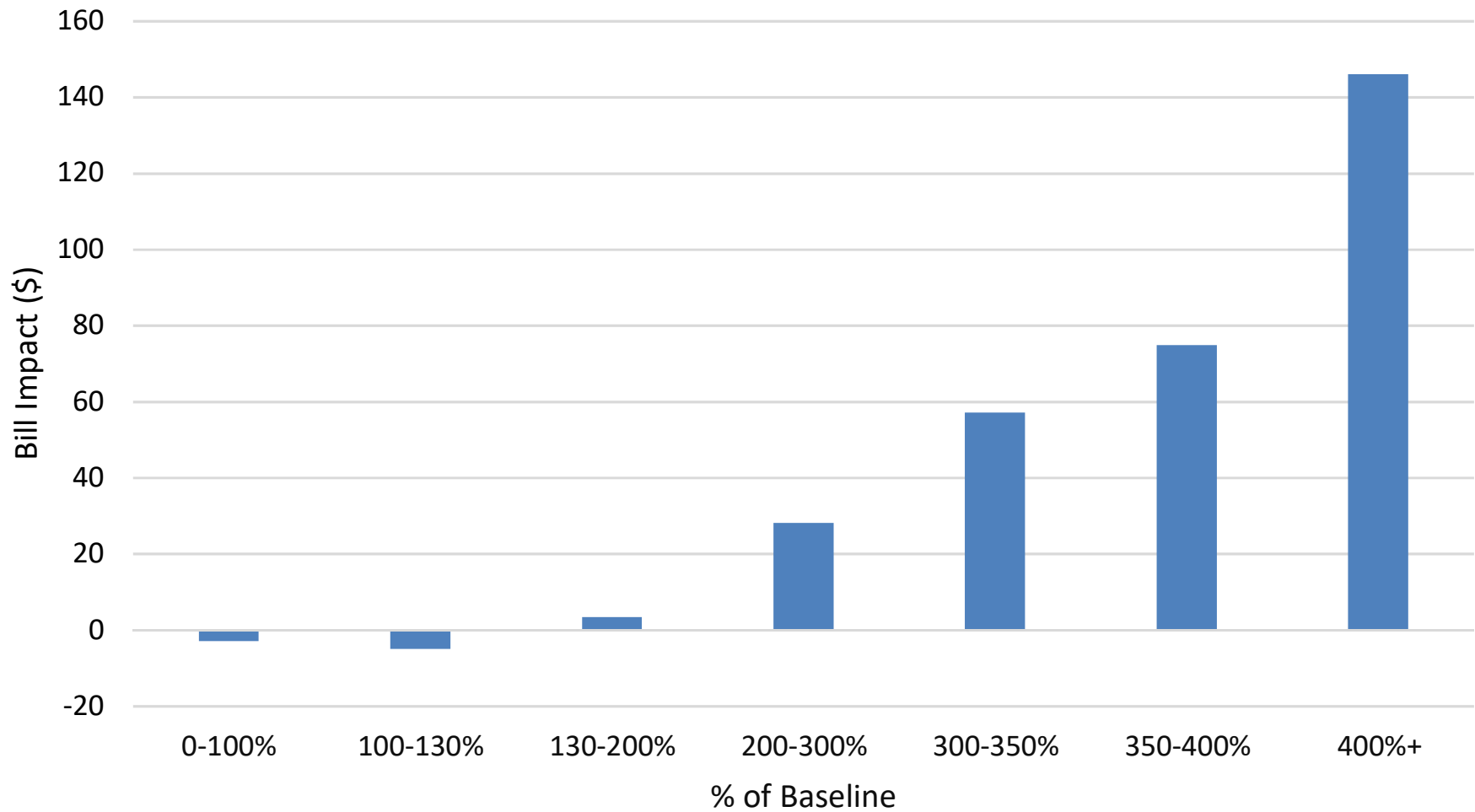
All Non-CARE/FERA, Non-NEM Customers
Cool Climate Zone - Annual
2018 Tiered Rates vs 2-Period Default TOU



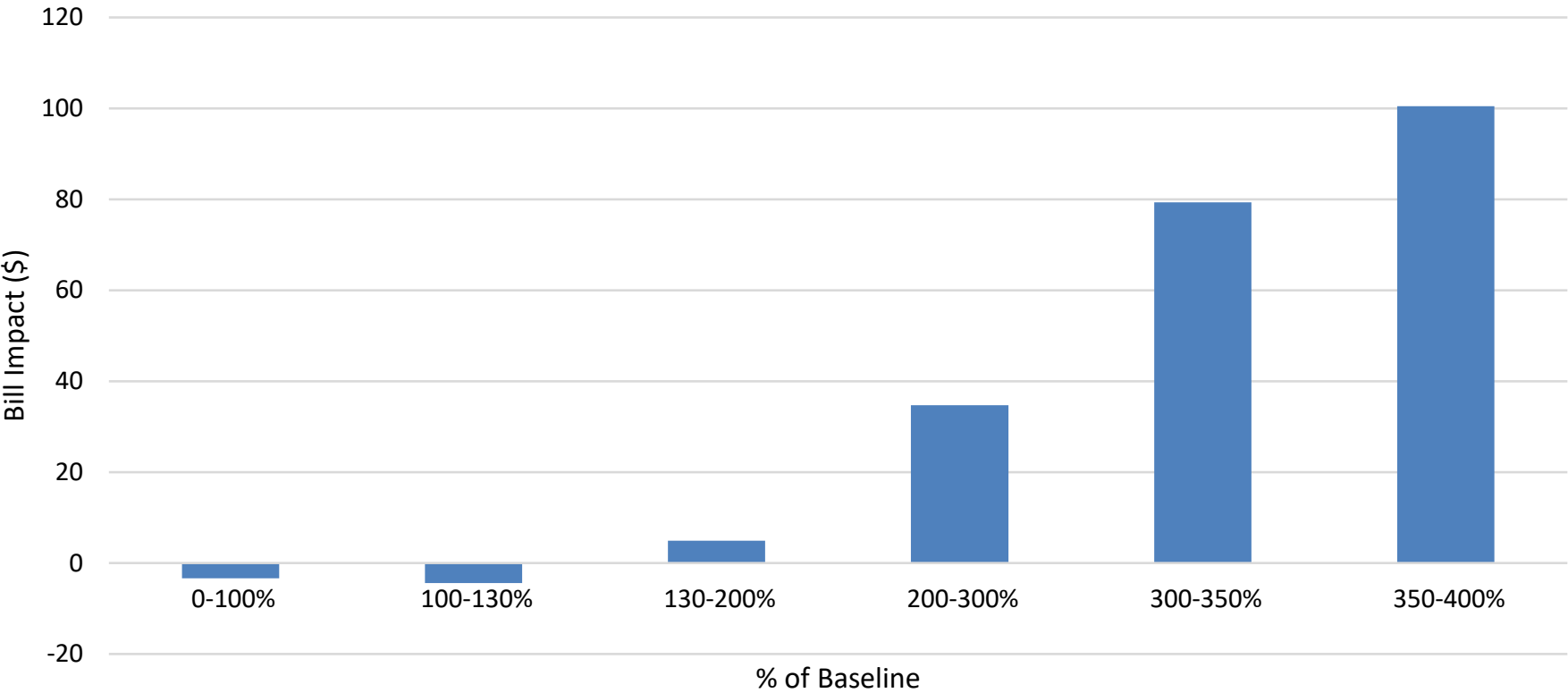
All Non-CARE/FERA, Non-NEM Customers
Hot Climate Zone - Annual
2018 Tiered Rates vs 2-Period Default TOU



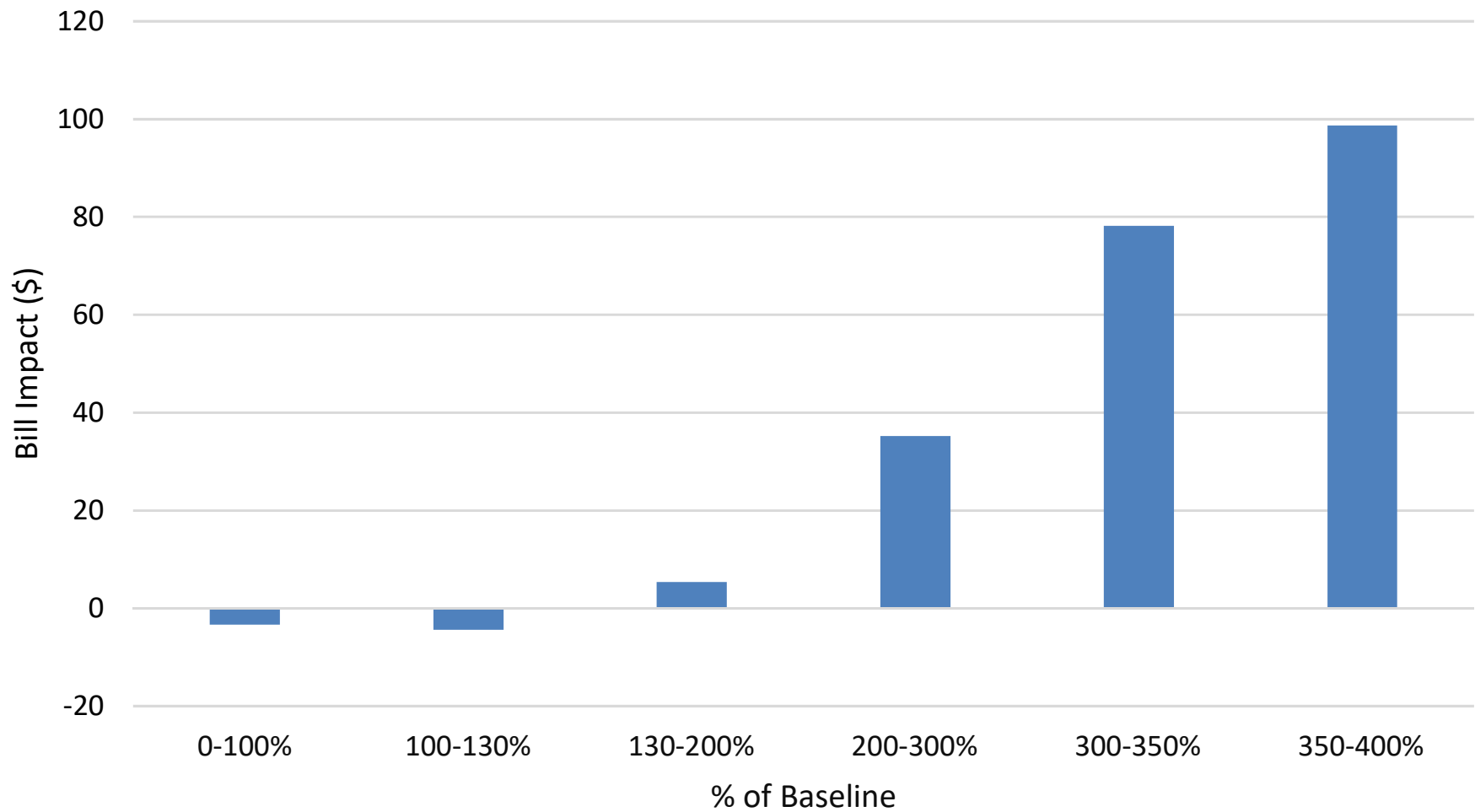
All Non-CARE/FERA, Non-NEM Customers
Moderate Climate Zone - Annual
2018 Tiered Rates vs 2-Period Default TOU



All-Electric CARE, Non-NEM Customers
Hot Climate Zone - Annual
2018 Tiered Rates vs 3-Period Default TOU



All-Electric CARE, Non-NEM Customers Hot Climate Zone - Annual 2018 Tiered Rates vs 2-Period Default TOU



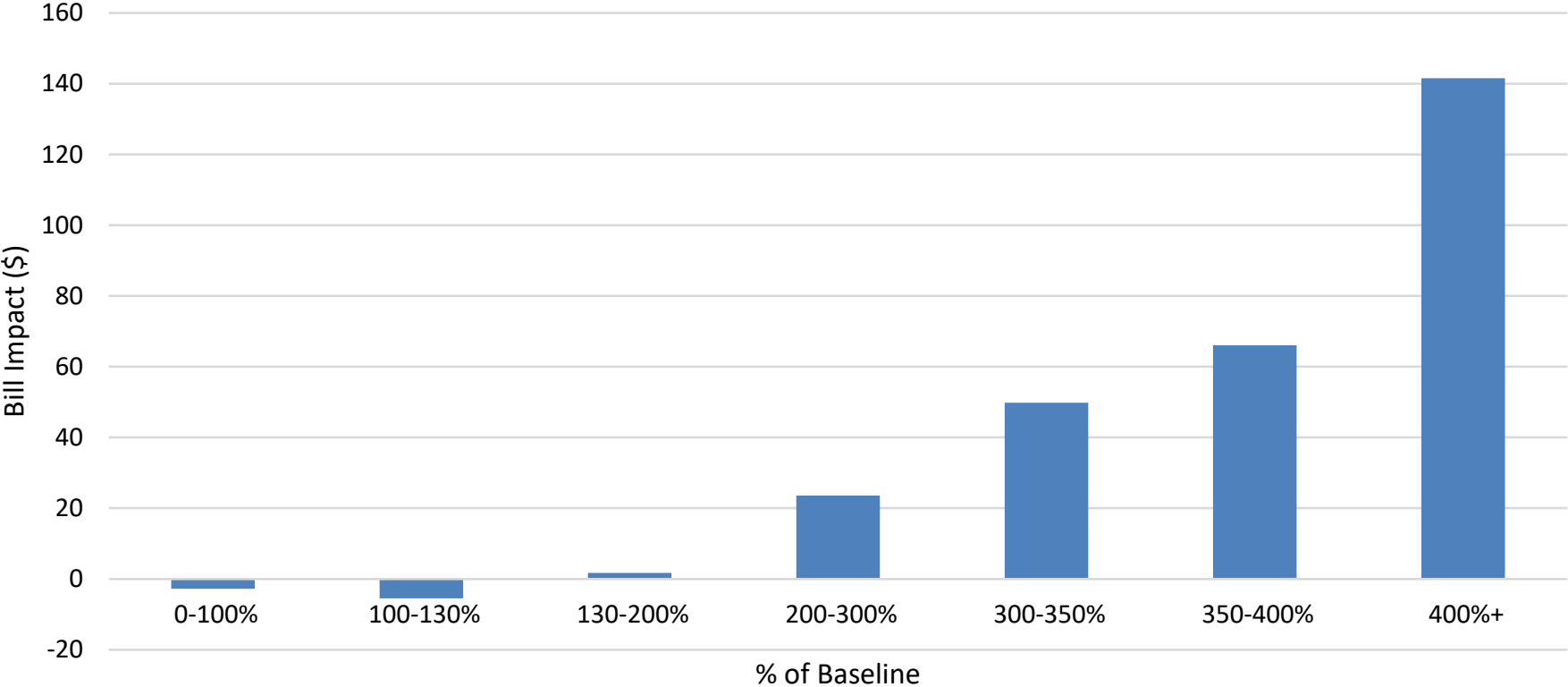
Bill Impact Analysis

Average Summer Impact

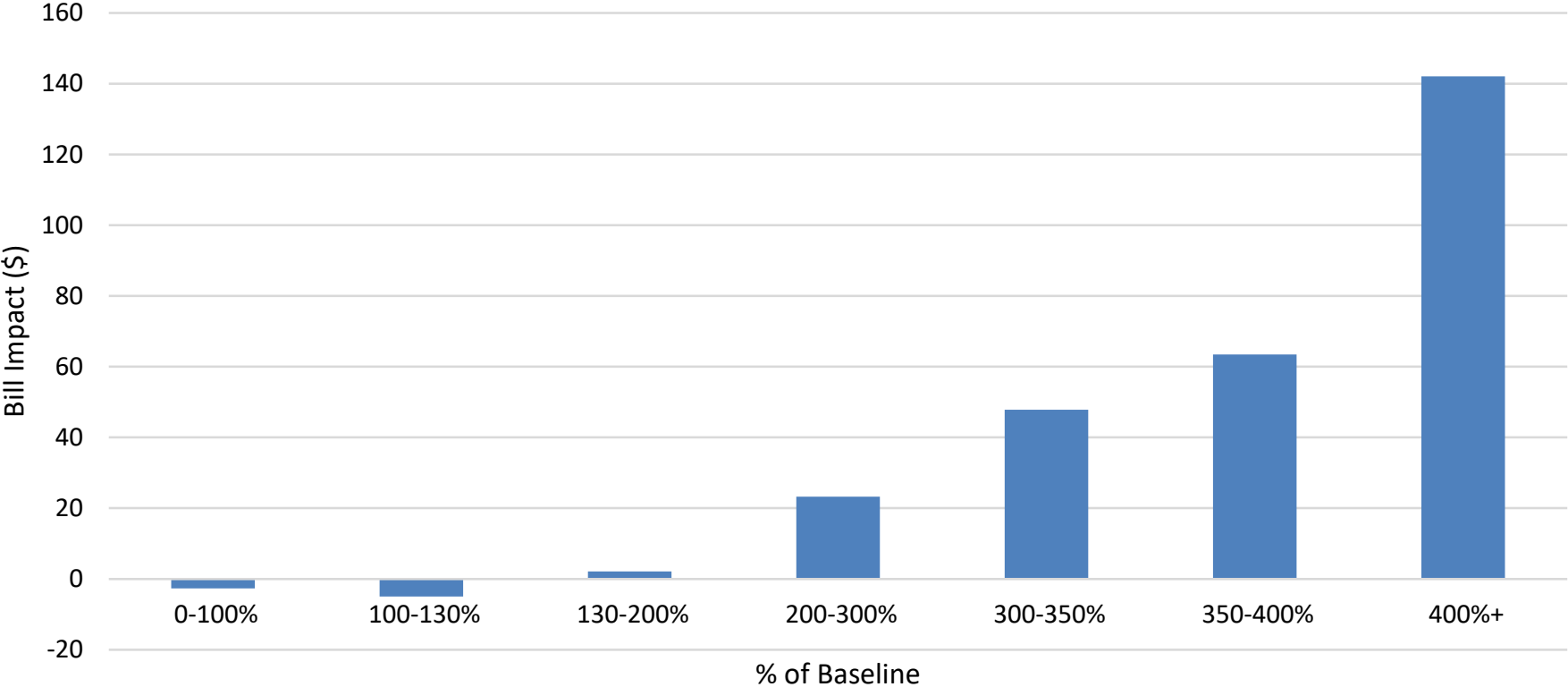
% of Baseline

2016

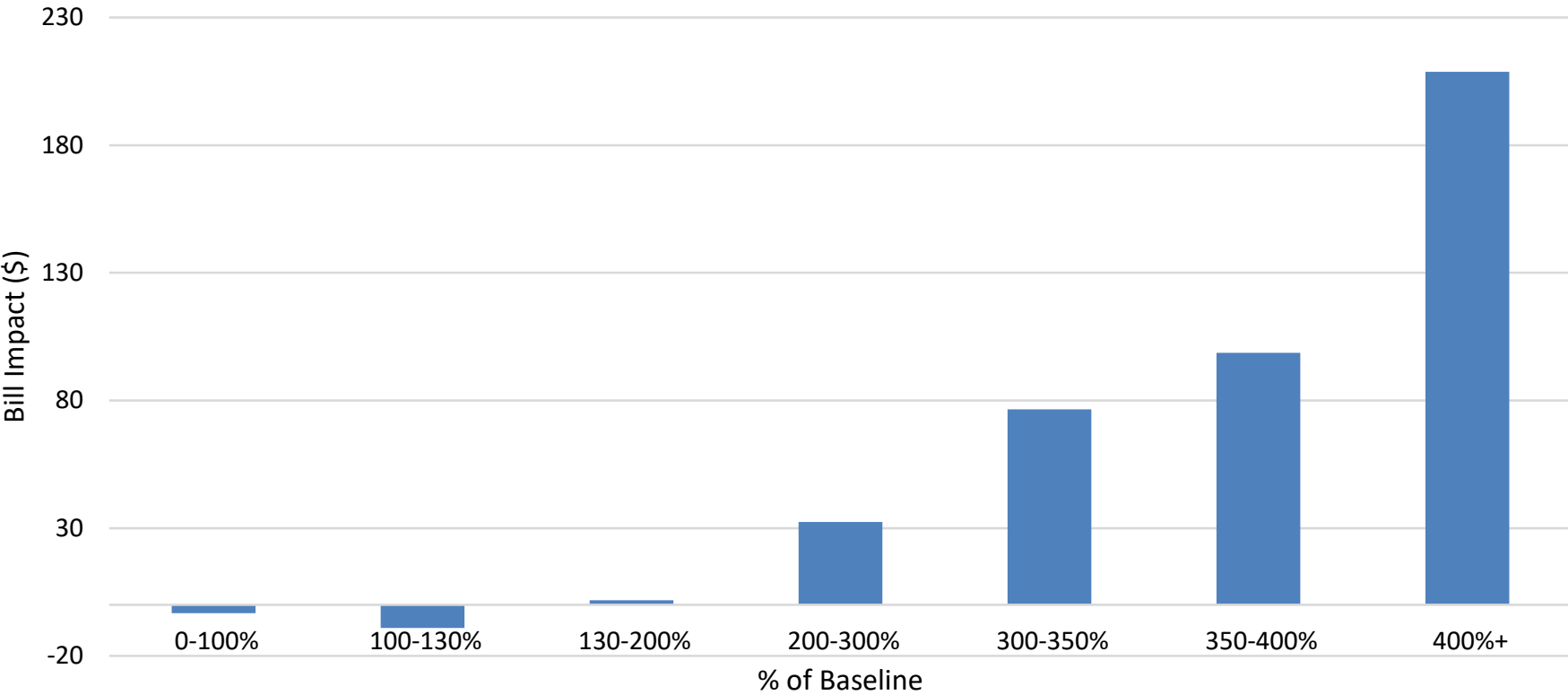
All Non-NEM Customers
All Climate Zones - Summer
2018 Tiered Rates vs 3-Period Default TOU



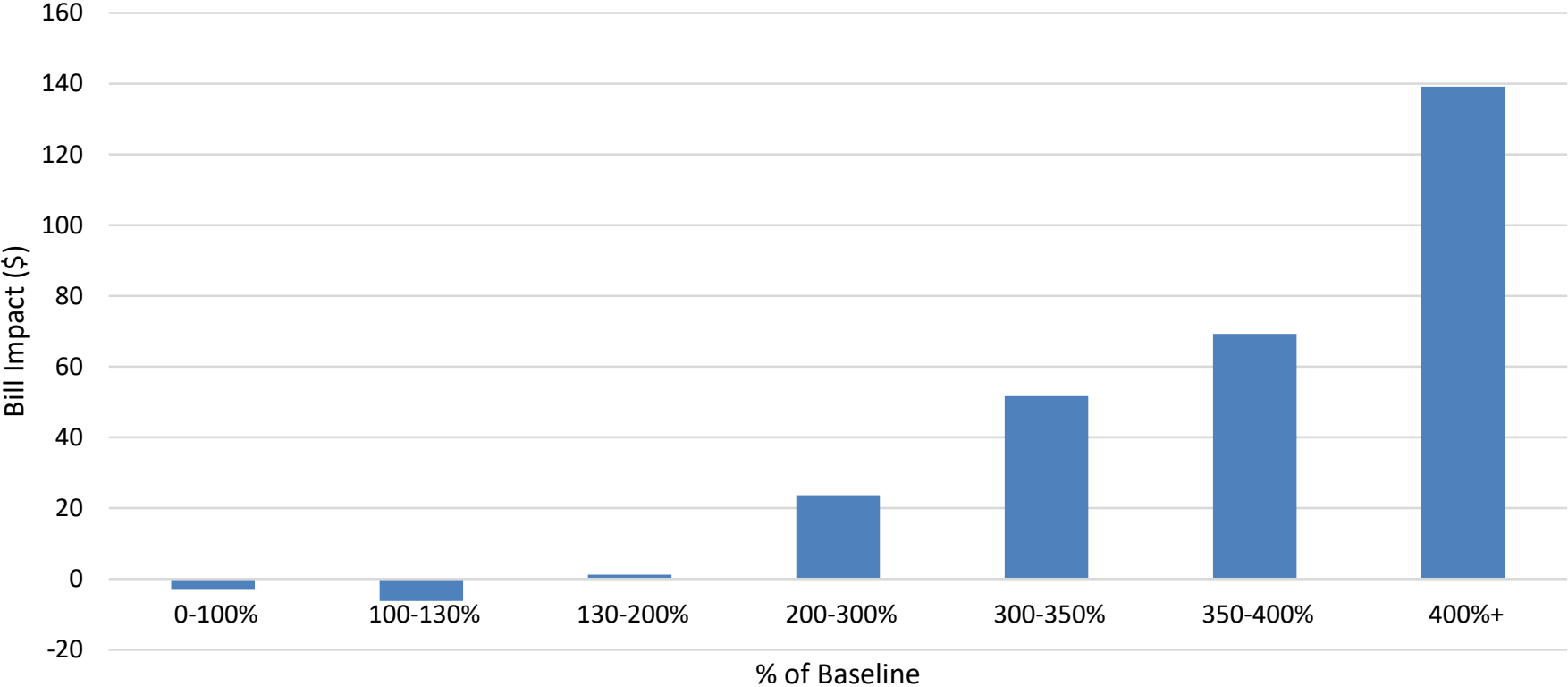
All Non-NEM Customers
Cool Zone - Summer
2018 Tiered Rates vs 3-Period Default TOU



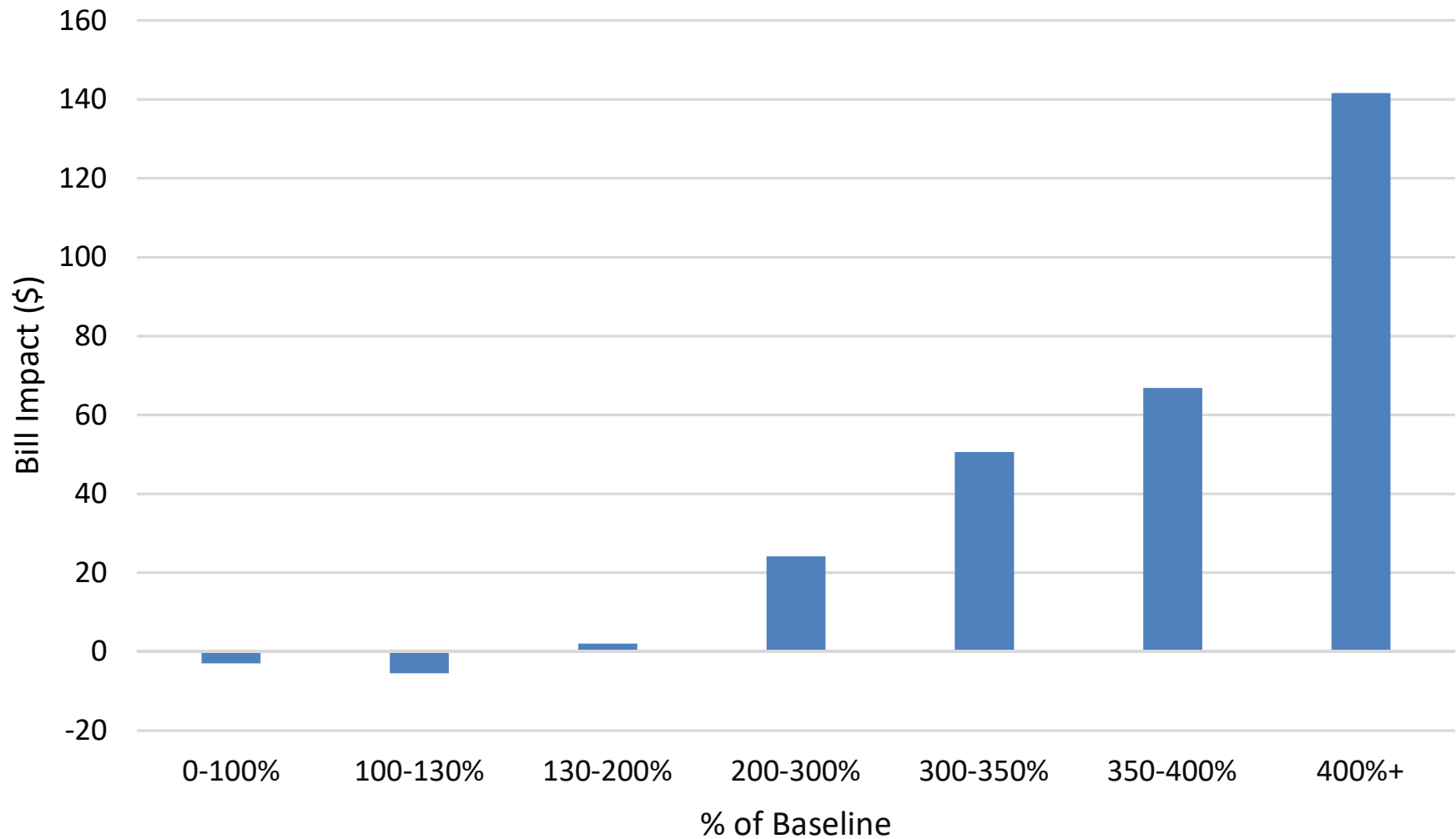
All Non-NEM Customers
Hot Zone - Summer
2018 Tiered Rates vs 3-Period Default TOU



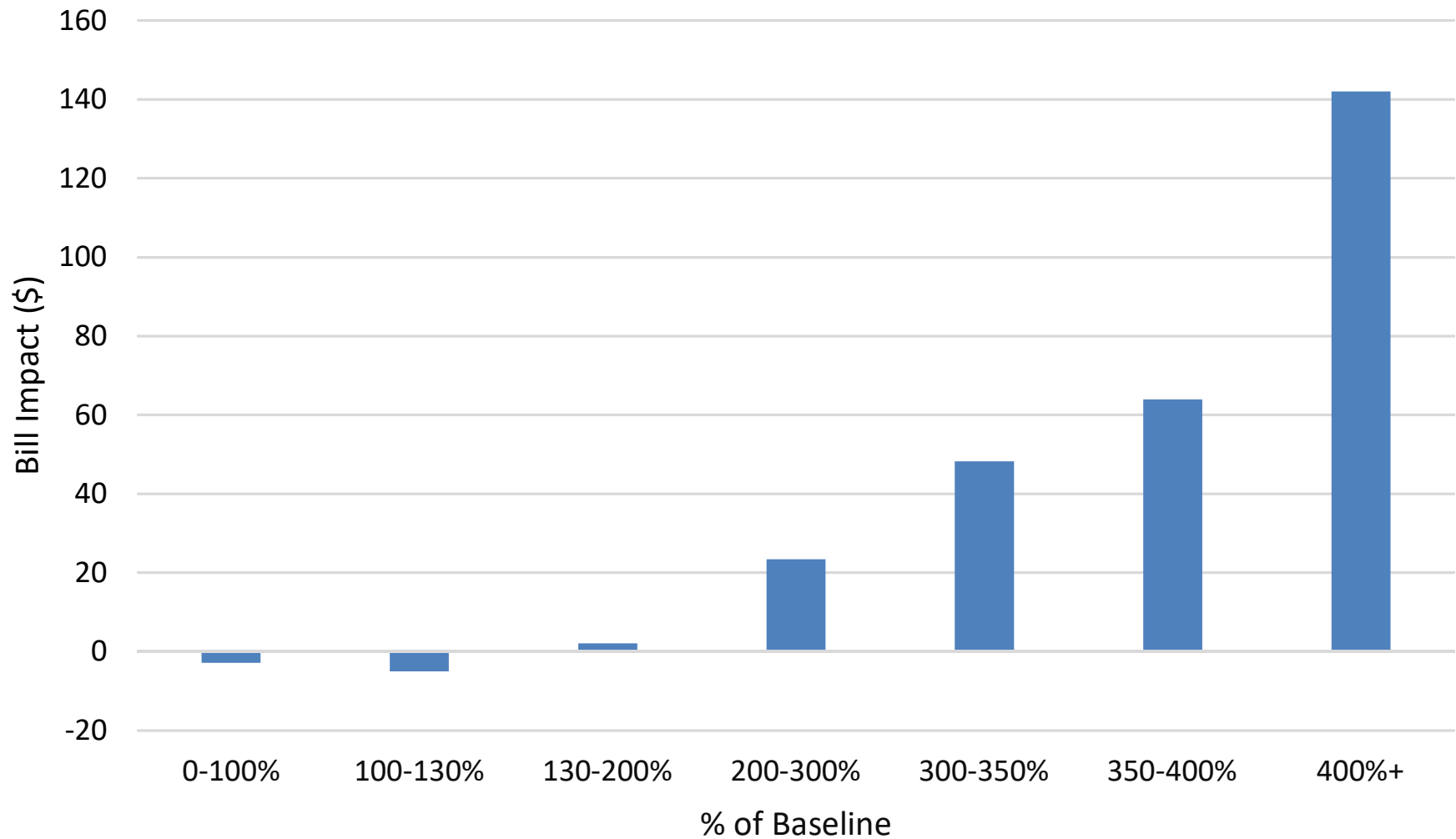
All Non-NEM Customers
Moderate Zone - Summer
2018 Tiered Rates vs 3-Period Default TOU



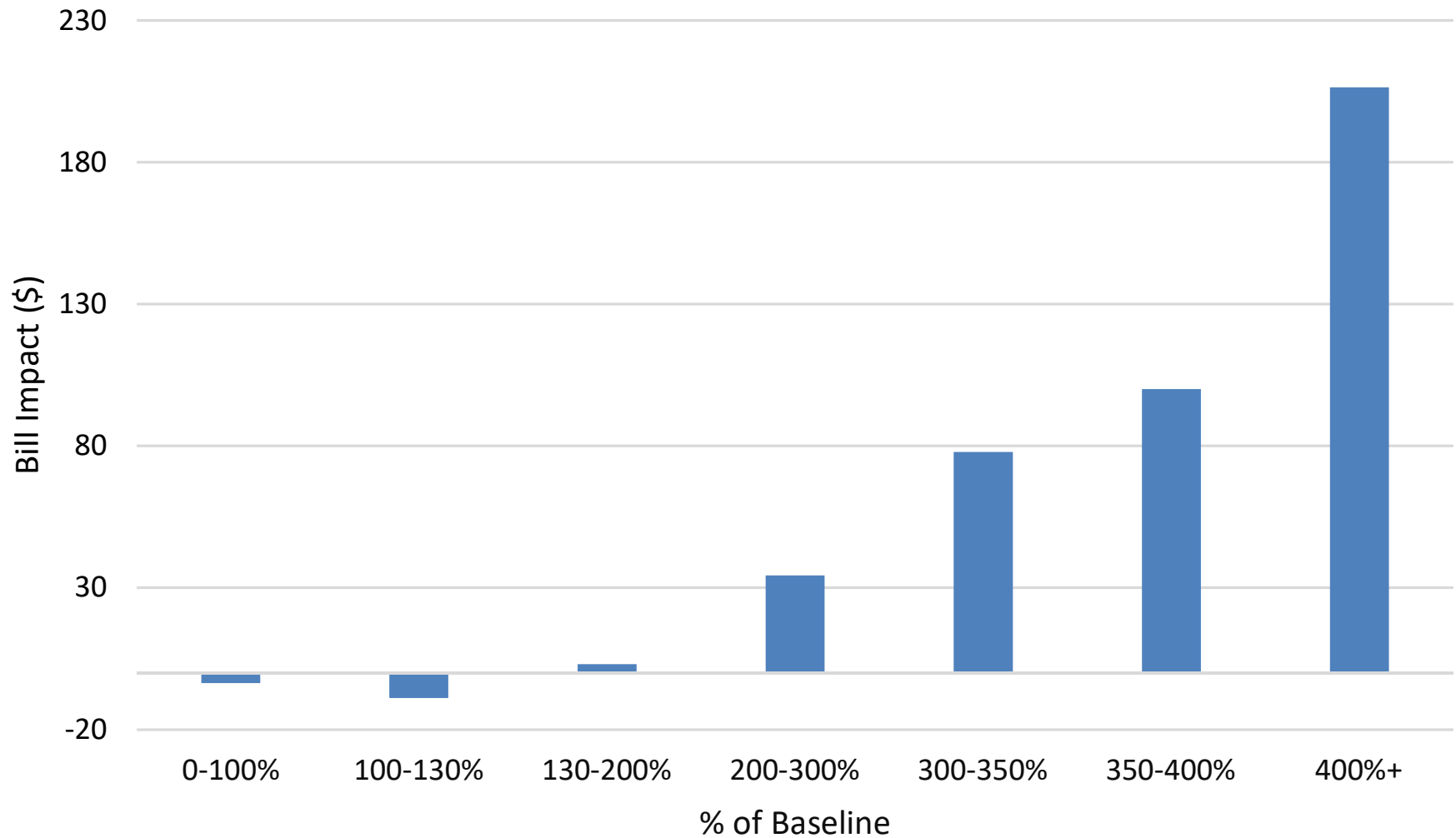
All Non-NEM Customers, All Climate Zones - Summer 2018 Tiered Rate vs 2-Period Default TOU



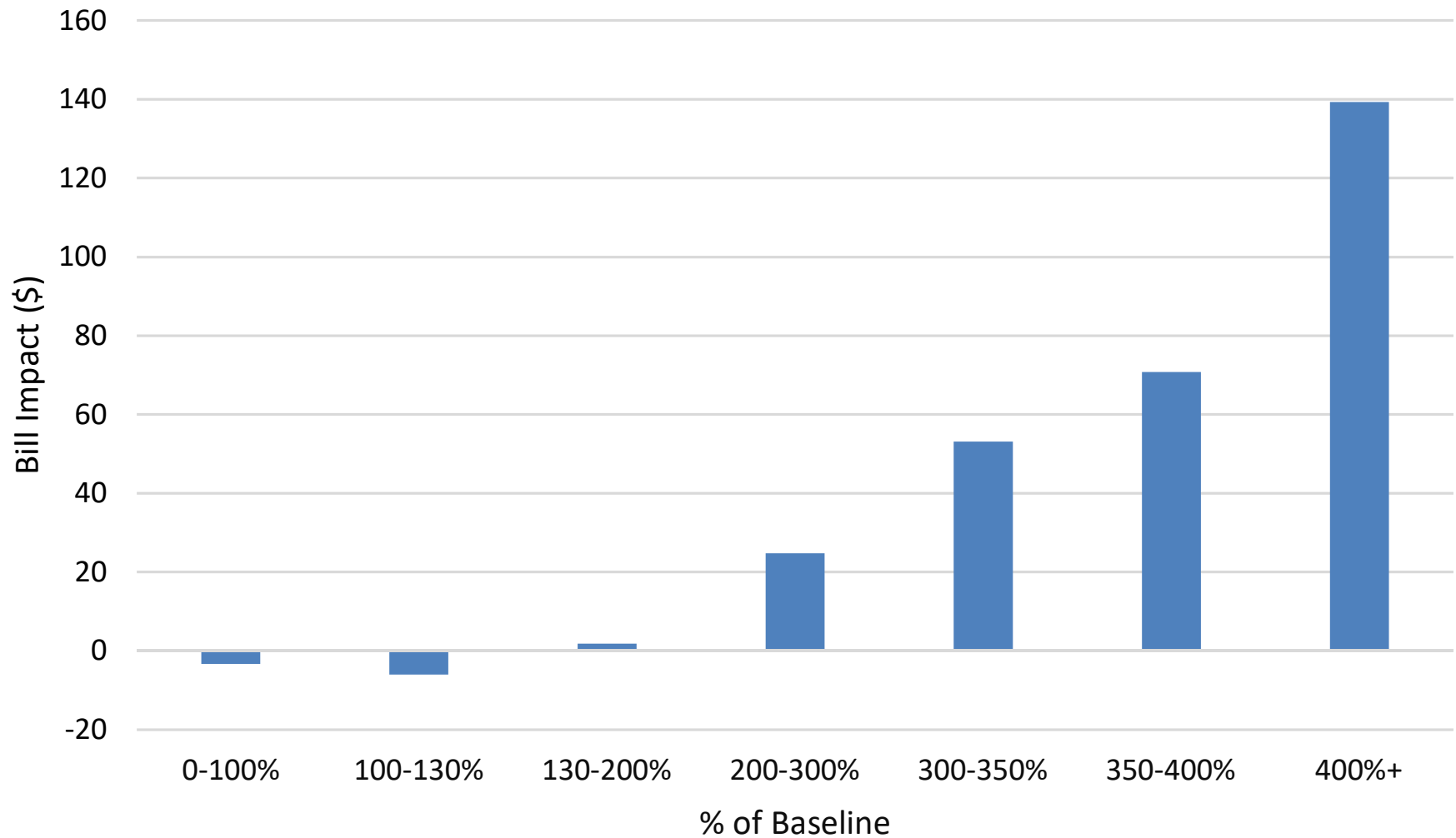
All Non-NEM Customers, Cool Climate Zone - Summer 2018 Tiered Rate vs 2-Period Default TOU



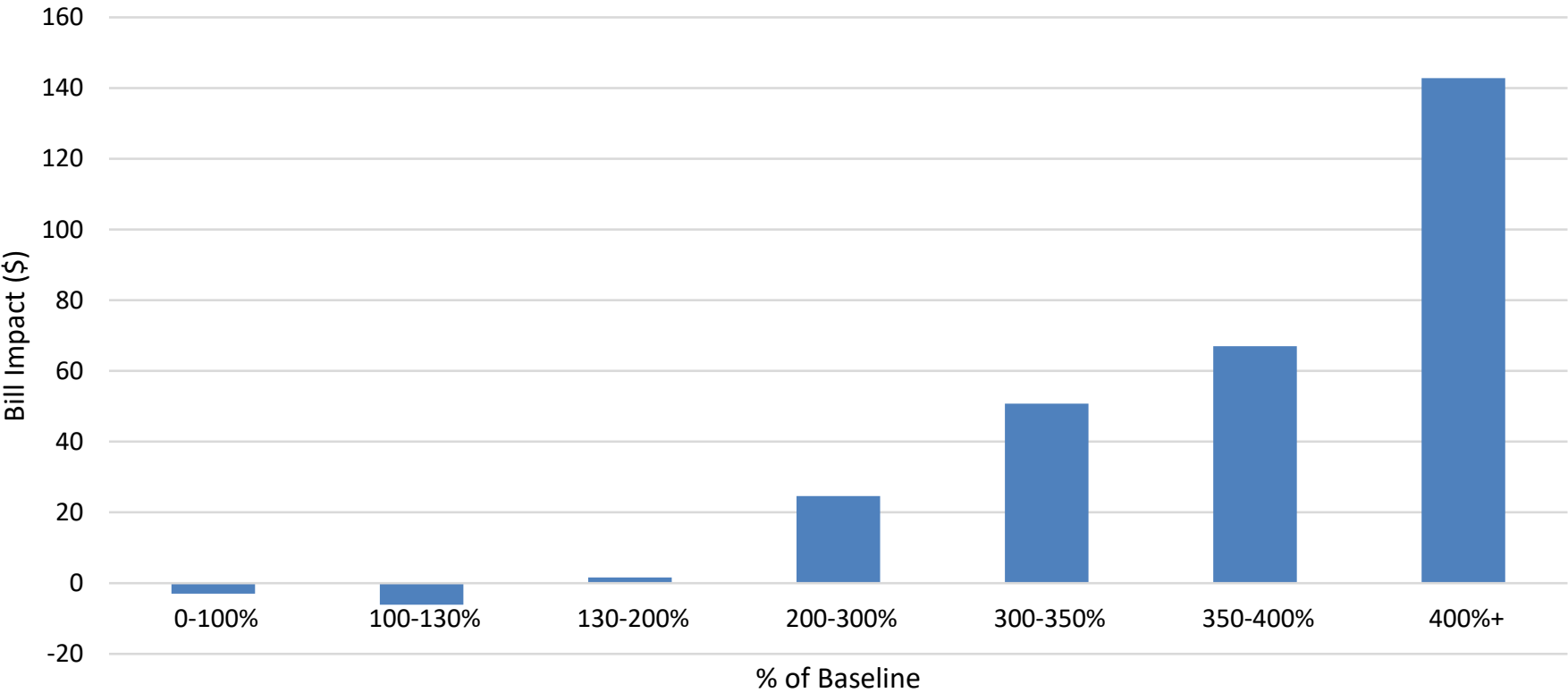
All Non-NEM Customers, Hot Climate Zone - Summer 2018 Tiered Rate vs 2-Period Default TOU



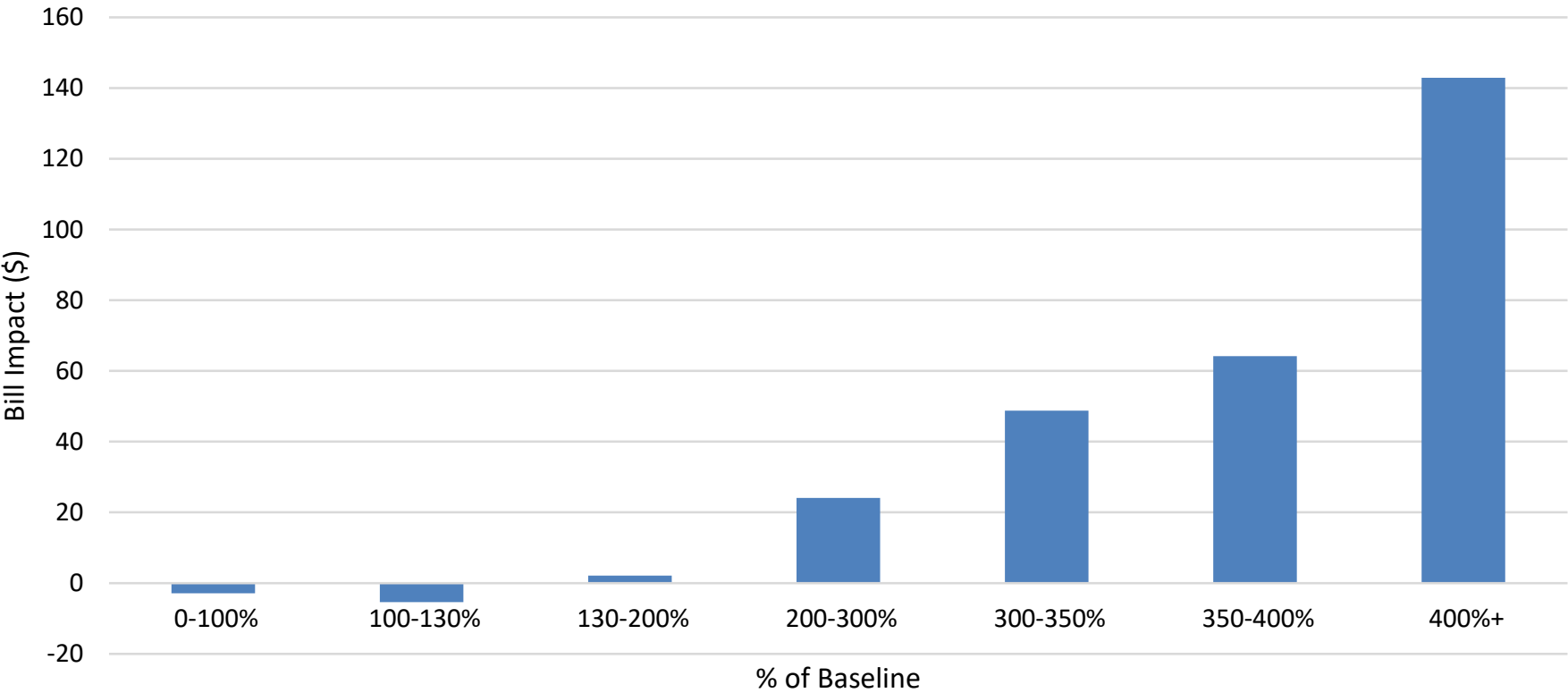
All Non-NEM Customers, Moderate Climate Zone - Summer 2018 Tiered Rate vs 2-Period Default TOU



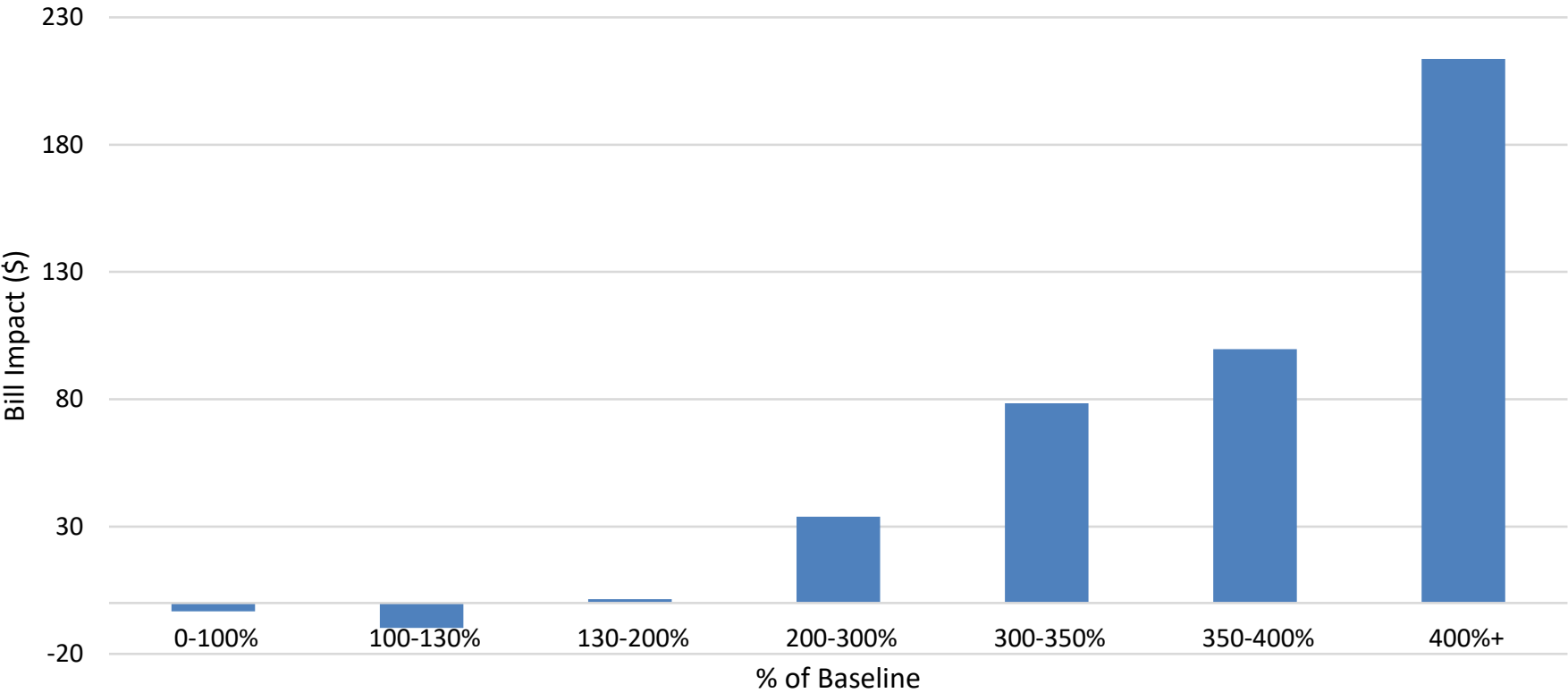
All Non-NEM Customers, Non-CARE
All Climate Zones - Summer
2018 Tiered Rates vs 3-Period Default TOU



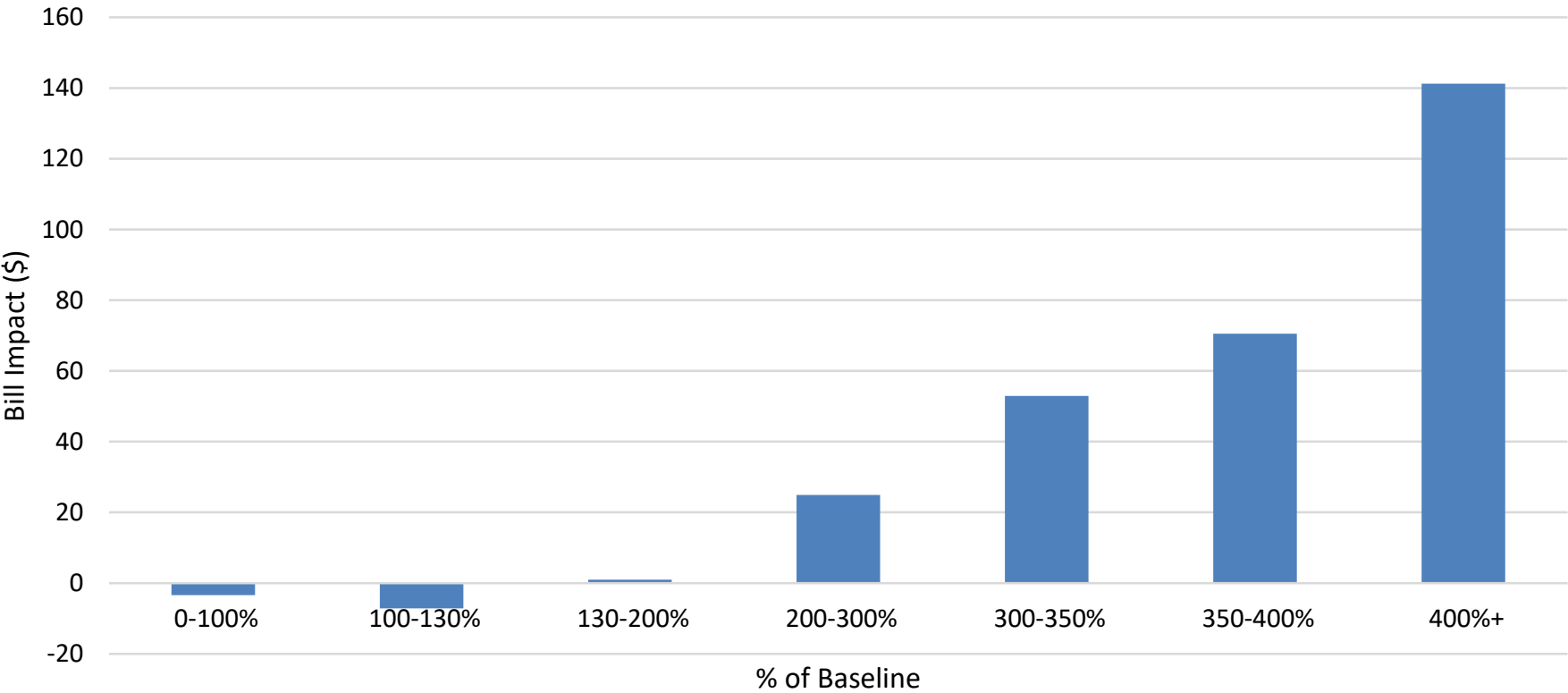
All Non-NEM Customers, Non-CARE
Cool Zone - Summer
2018 Tiered Rates vs 3-Period Default TOU



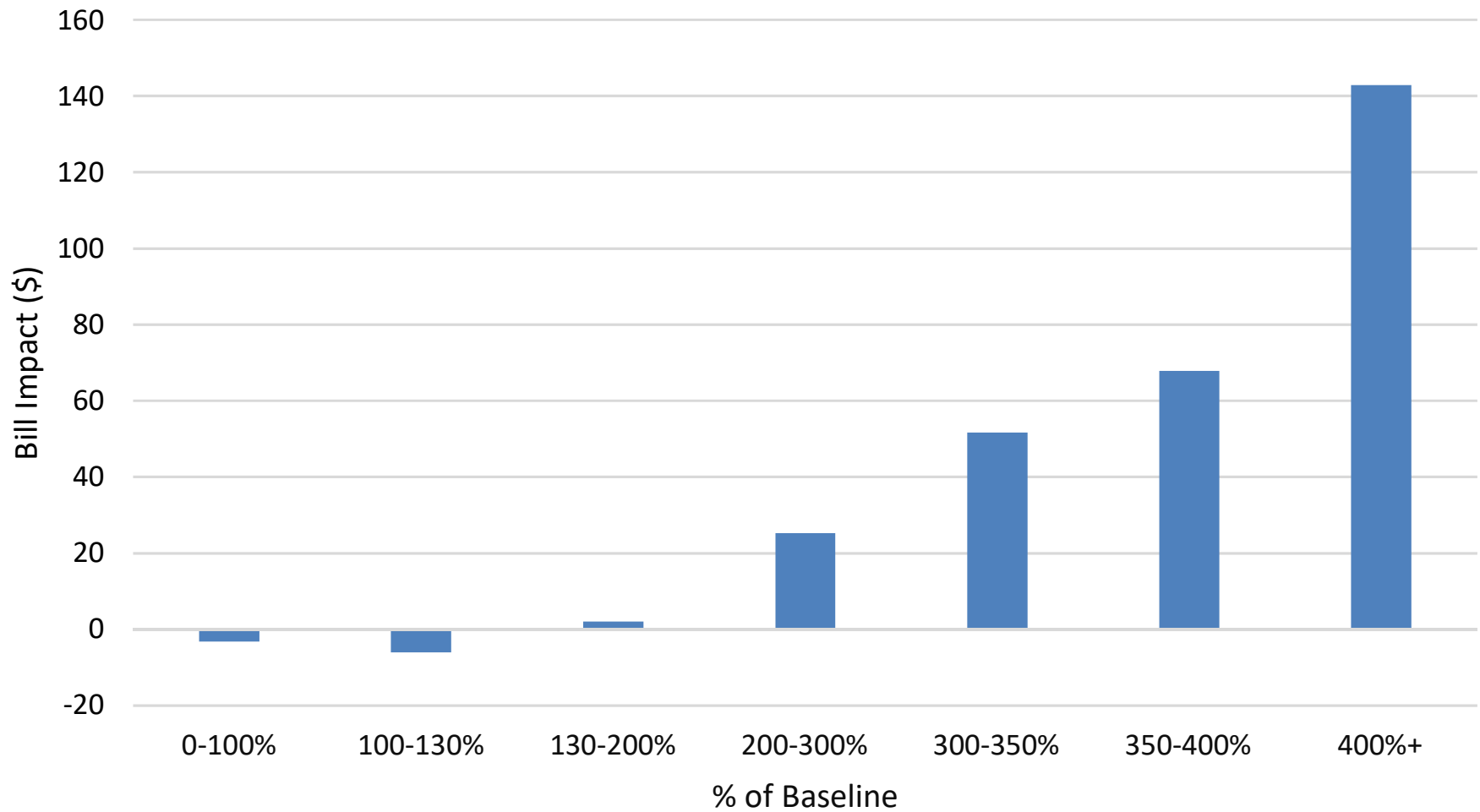
All Non-NEM Customers, Non-CARE
Hot Zone - Summer
2018 Tiered Rates vs 3-Period Default TOU



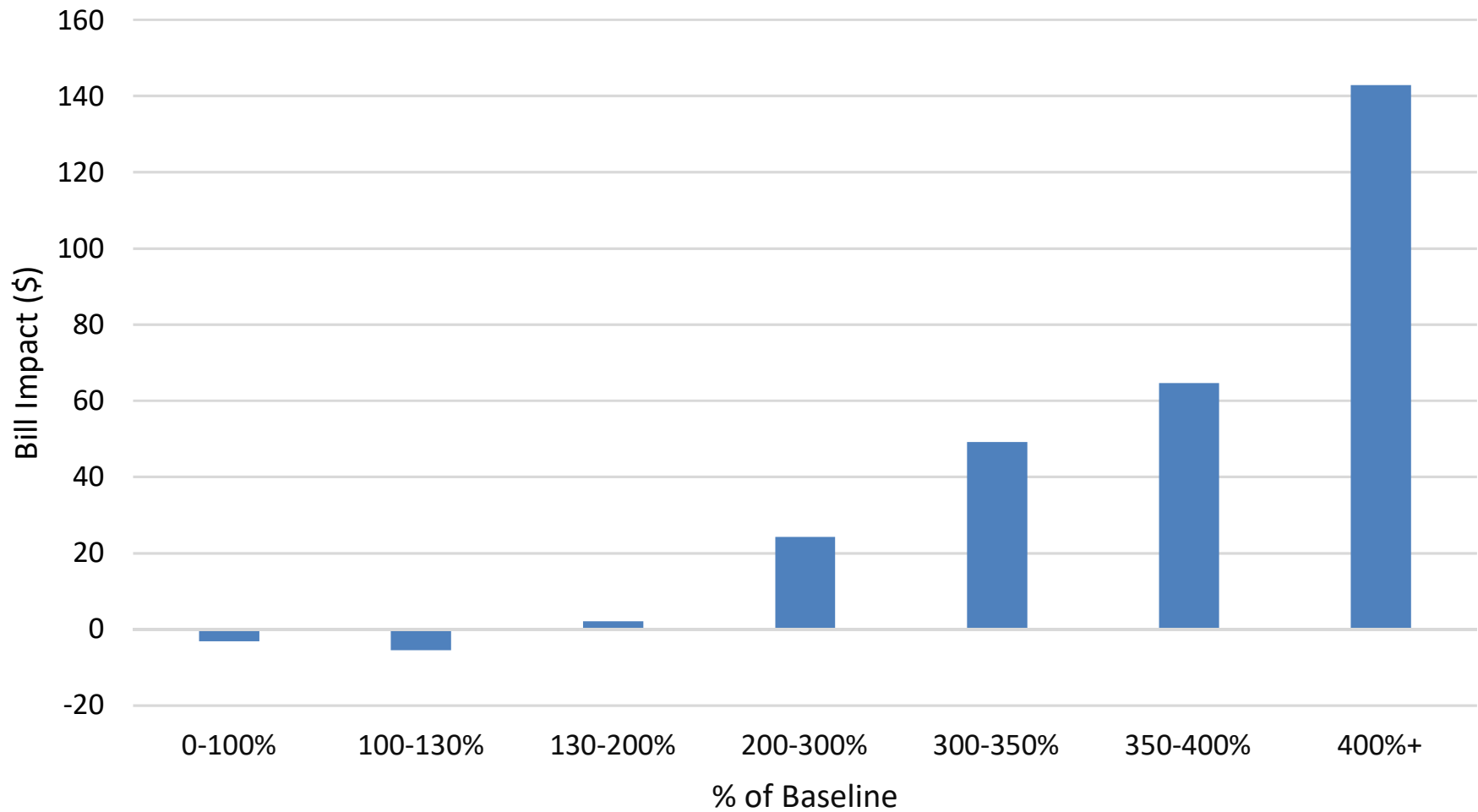
All Non-NEM Customers, Non-CARE
Moderate Zone - Summer
2018 Tiered Rates vs 3-Period Default TOU



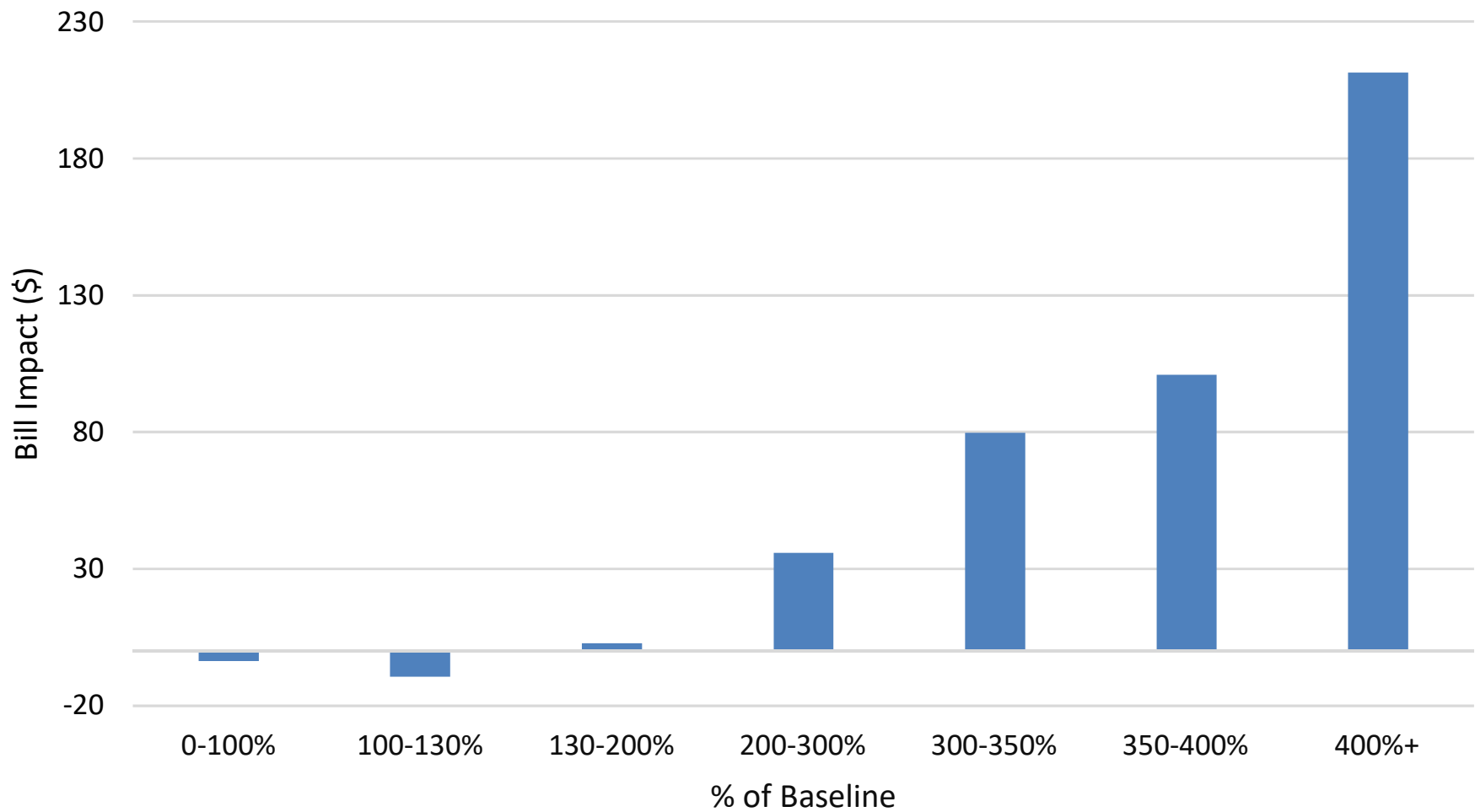
All Non-CARE/FERA, Non-NEM Customers
All Climate Zones - Summer
2018 Tiered Rates vs 2-Period Default TOU



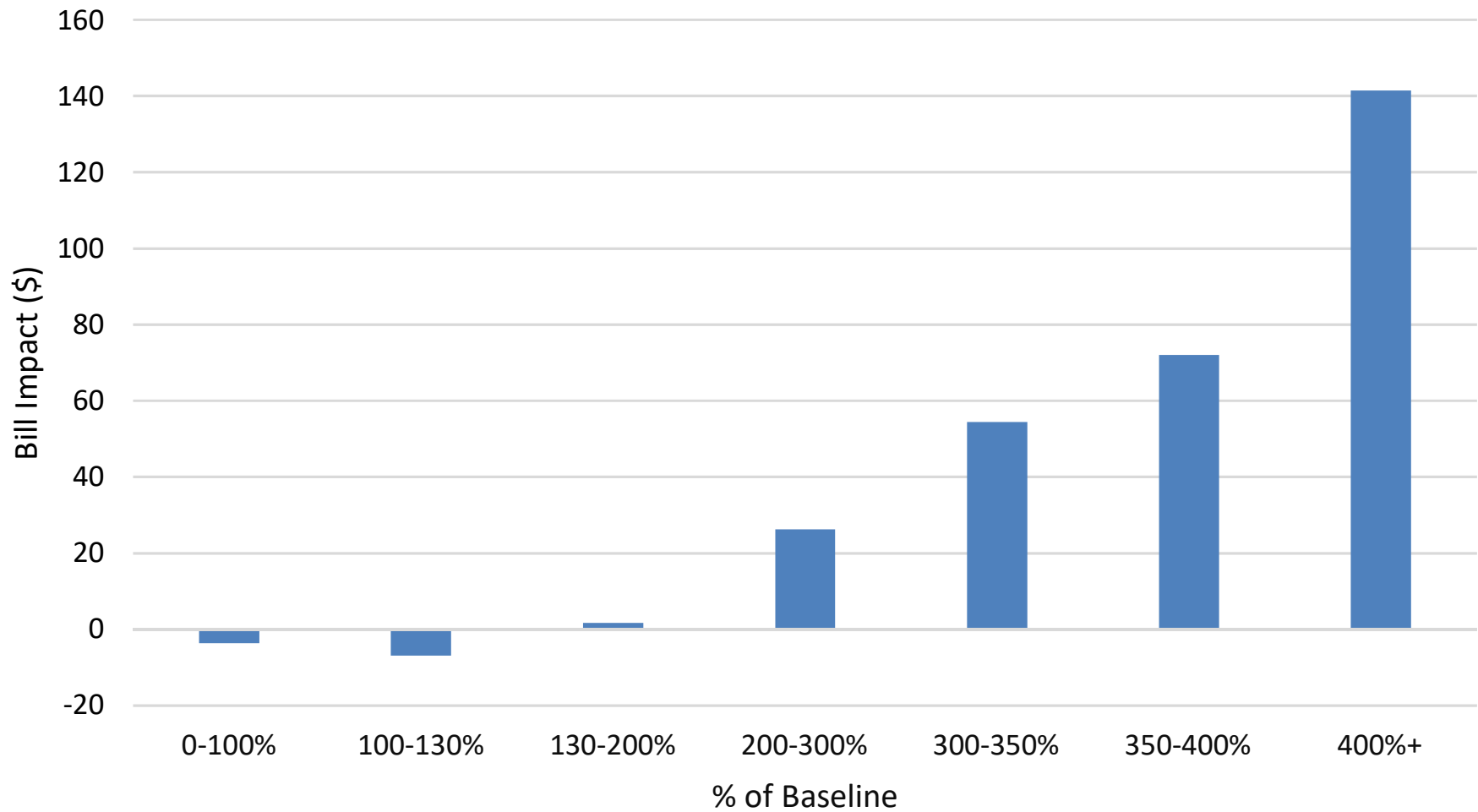
All Non-CARE/FERA, Non-NEM Customers
Cool Climate Zone - Summer
2018 Tiered Rates vs 2-Period Default TOU



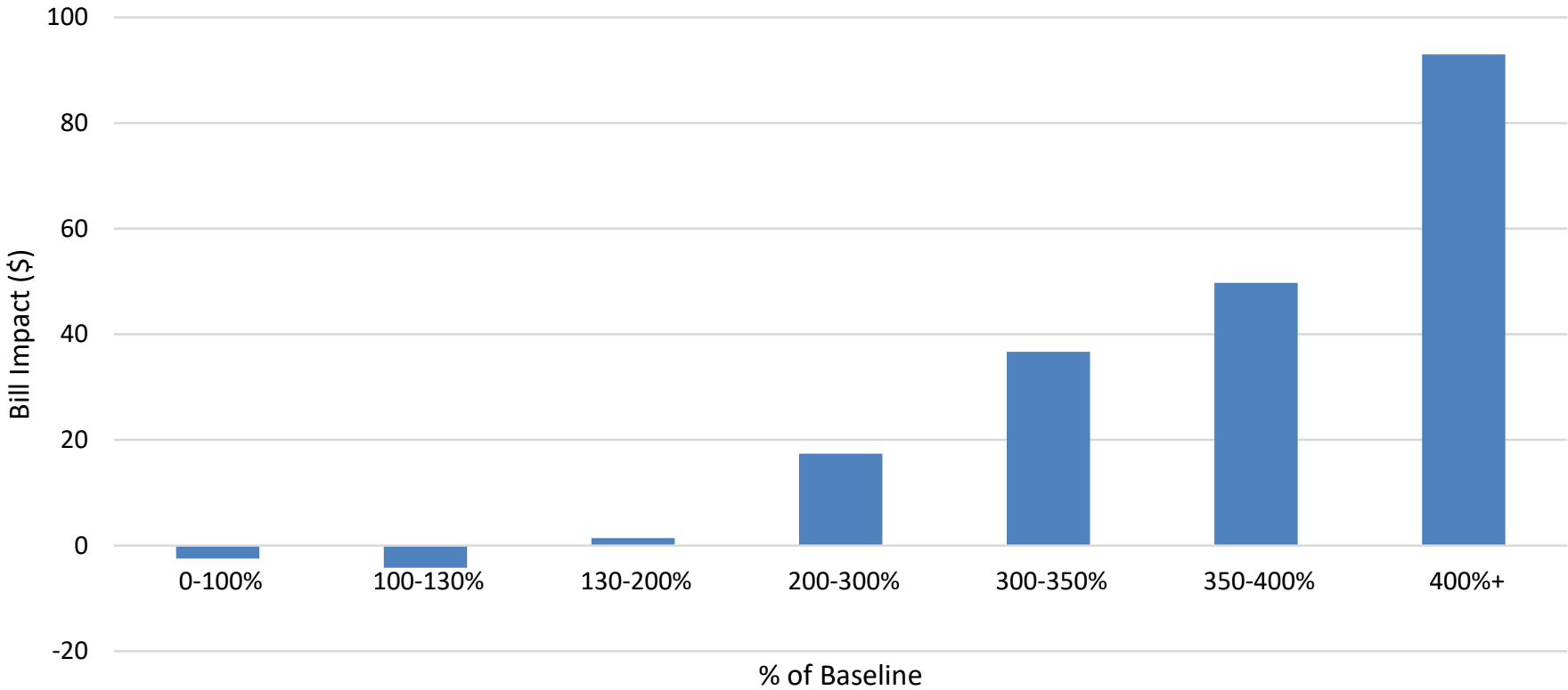
All Non-CARE/FERA, Non-NEM Customers
Hot Climate Zone - Summer
2018 Tiered Rates vs 2-Period Default TOU



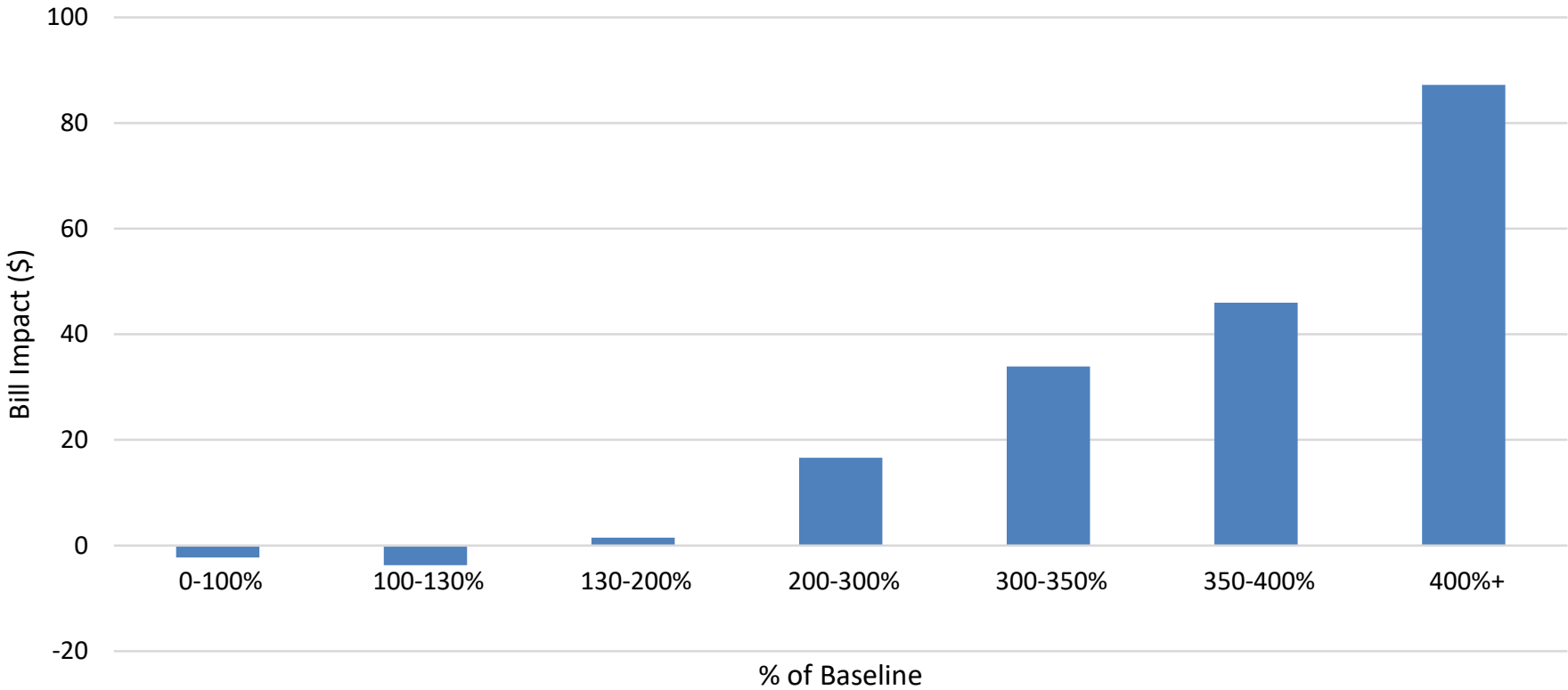
All Non-CARE/FERA, Non-NEM Customers
Moderate Climate Zone - Summer
2018 Tiered Rates vs 2-Period Default TOU



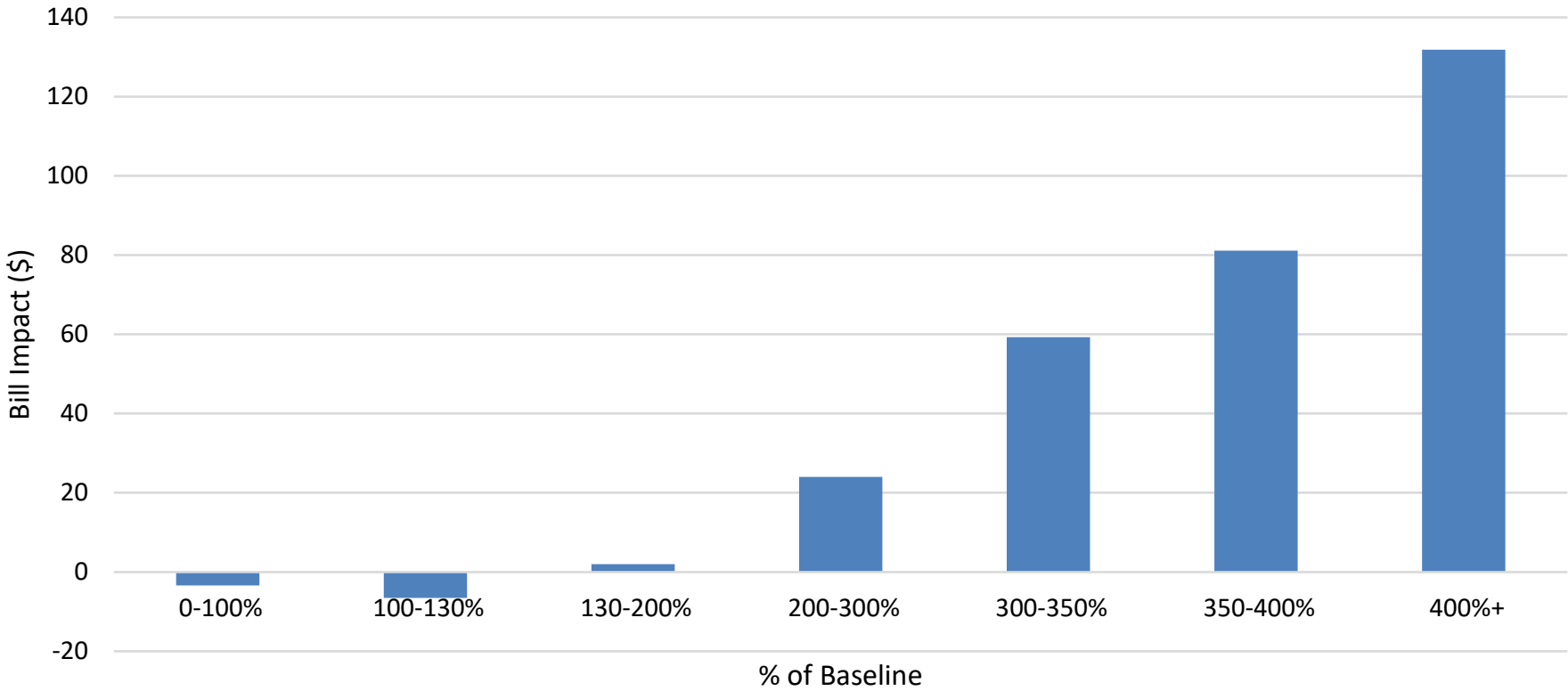
All Non-NEM Customers, CARE/FERA
All Climate Zones - Summer
2018 Tiered Rates vs 3-Period Default TOU



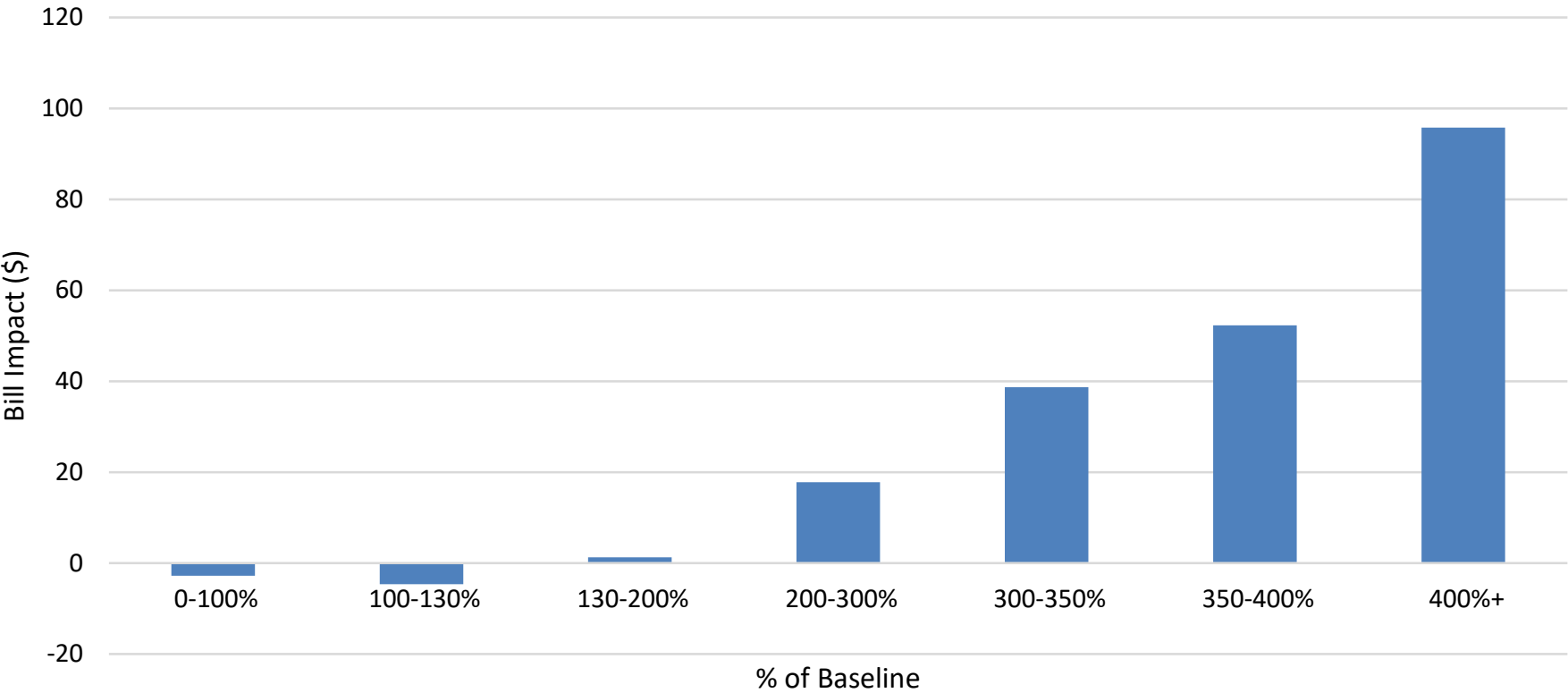
All Non-NEM Customers, CARE/FERA
Cool Zone - Summer
2018 Tiered Rates vs 3-Period Default TOU



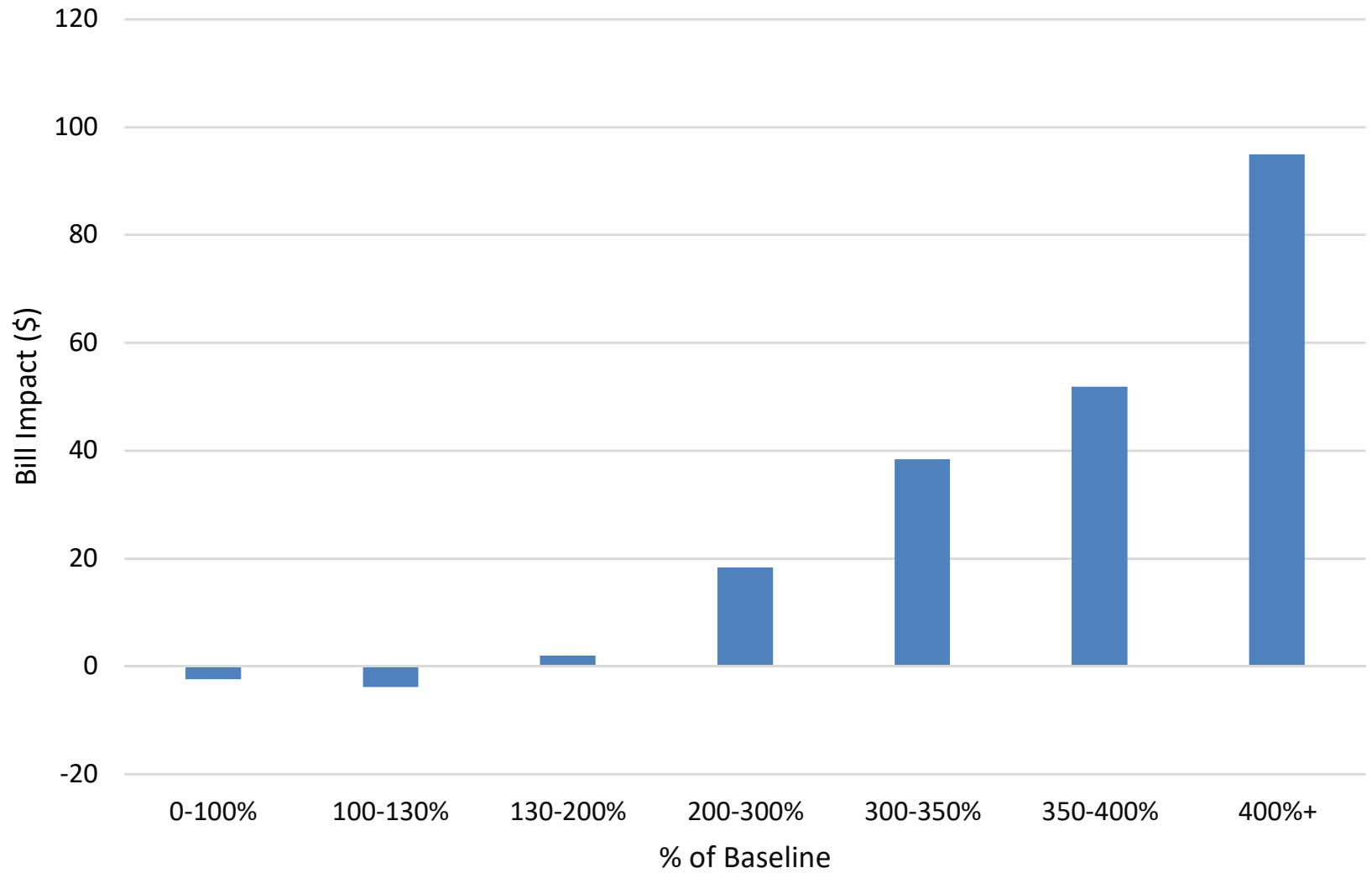
All Non-NEM Customers, CARE/FERA
Hot Zone - Summer
2018 Tiered Rates vs 3-Period Default TOU



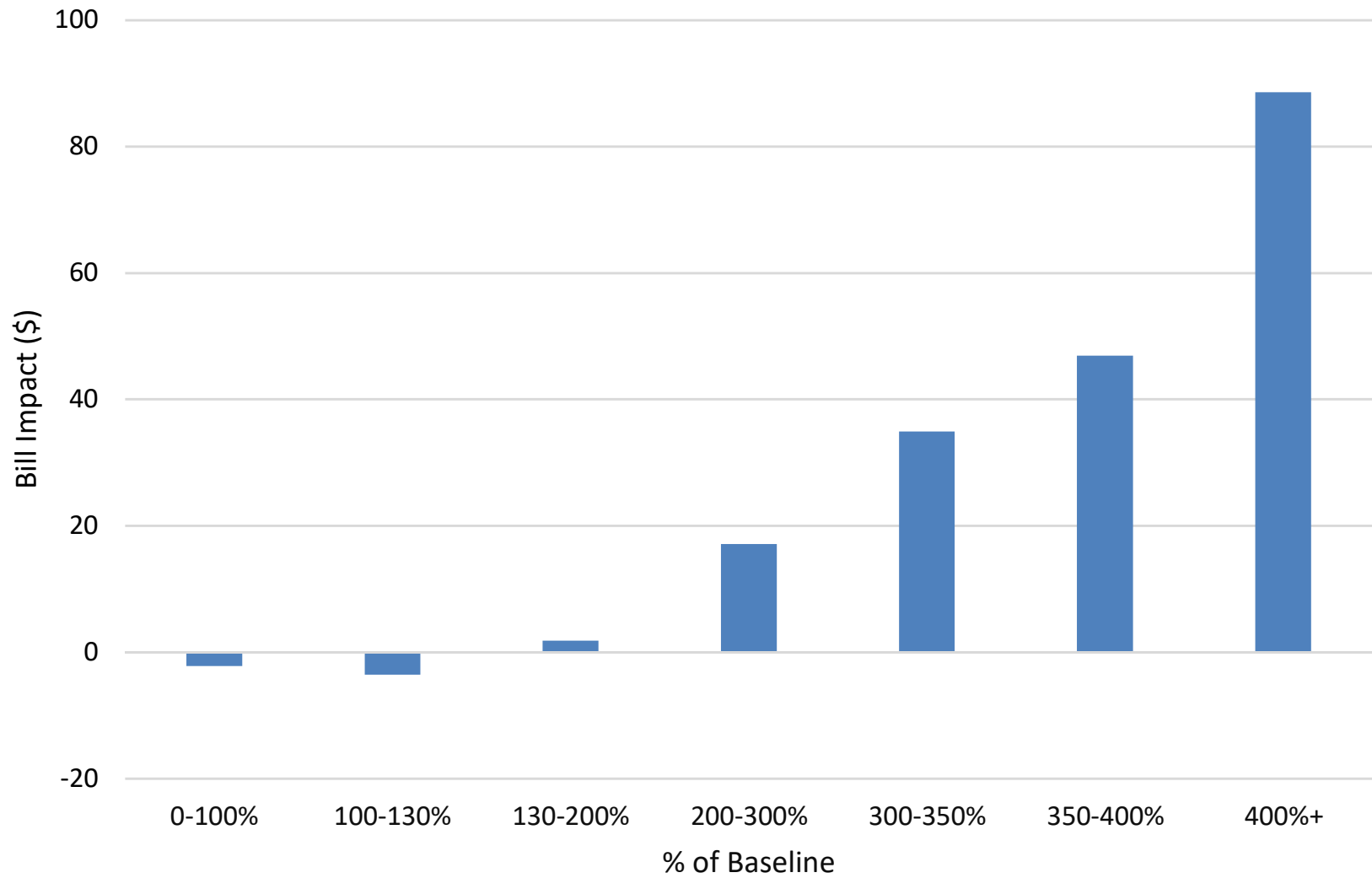
All Non-NEM Customers, CARE/FERA
Moderate Zone - Summer
2018 Tiered Rates vs 3-Period Default TOU



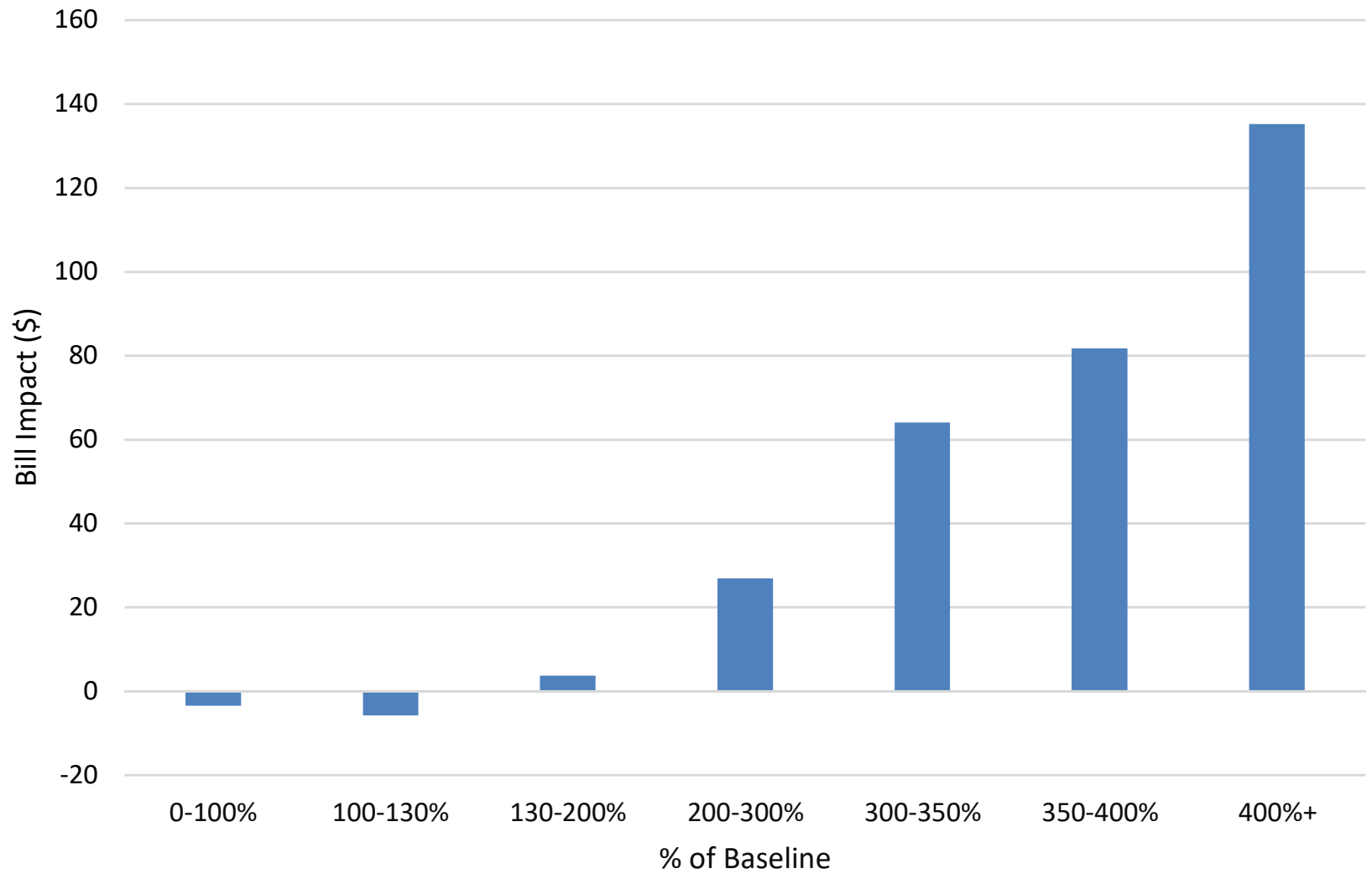
All CARE/FERA, Non-NEM Customers
All Climate Zones - Summer
2018 Tiered Rates vs 2-Period Default TOU



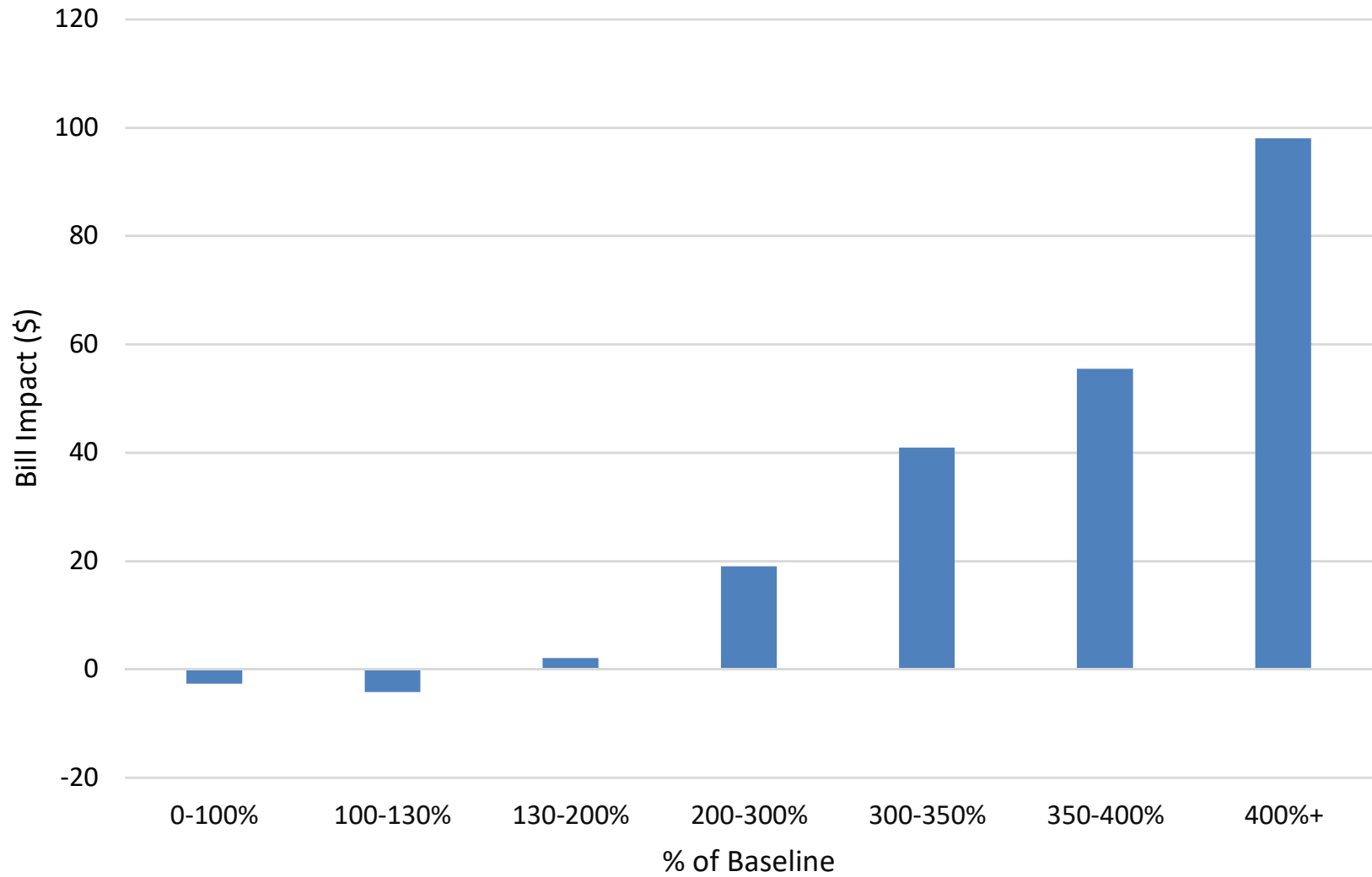
All CARE/FERA, Non-NEM Customers
Cool Climate Zone - Summer
2018 Tiered Rates vs 2-Period Default TOU



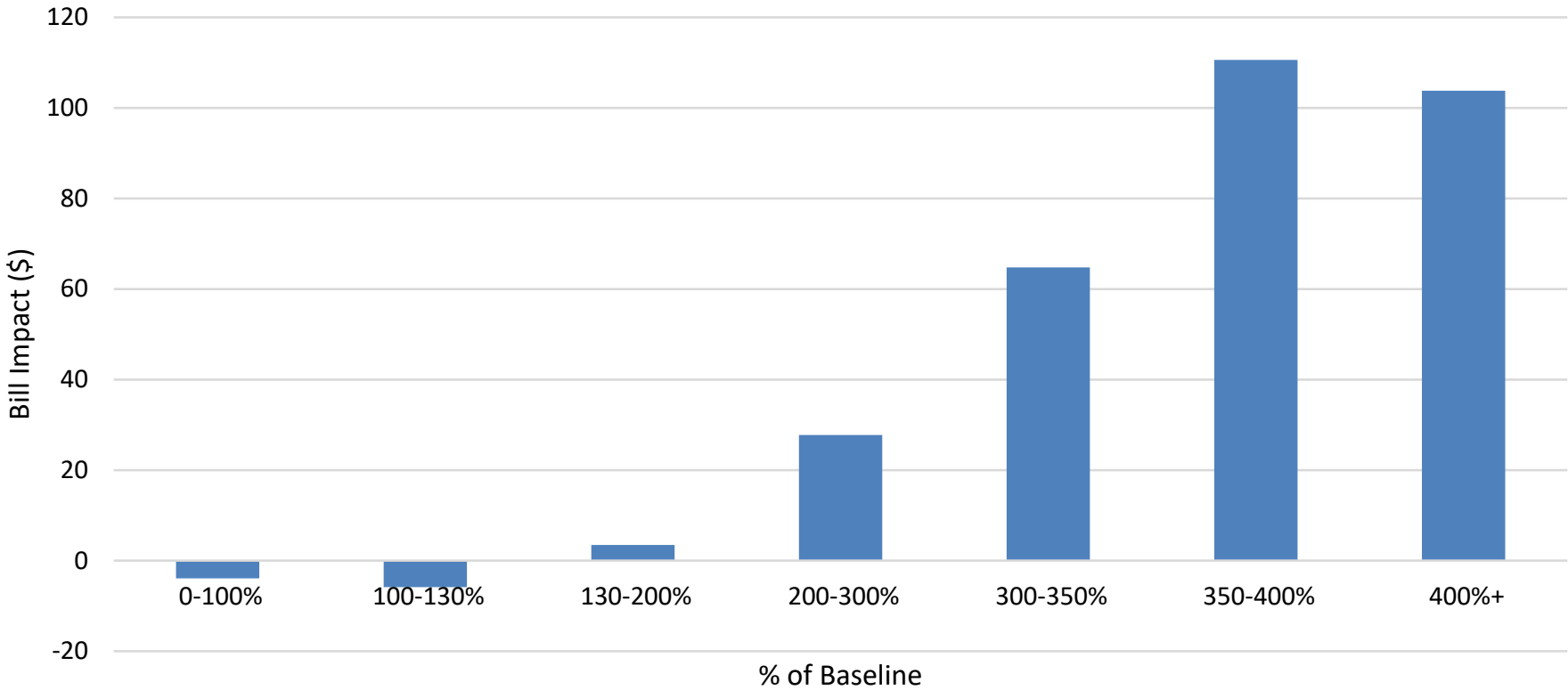
All CARE/FERA, Non-NEM Customers
Hot Climate Zone - Summer
2018 Tiered Rates vs 2-Period Default TOU



All CARE/FERA, Non-NEM Customers
Moderate Climate Zone - Summer
2018 Tiered Rates vs 2-Period Default TOU



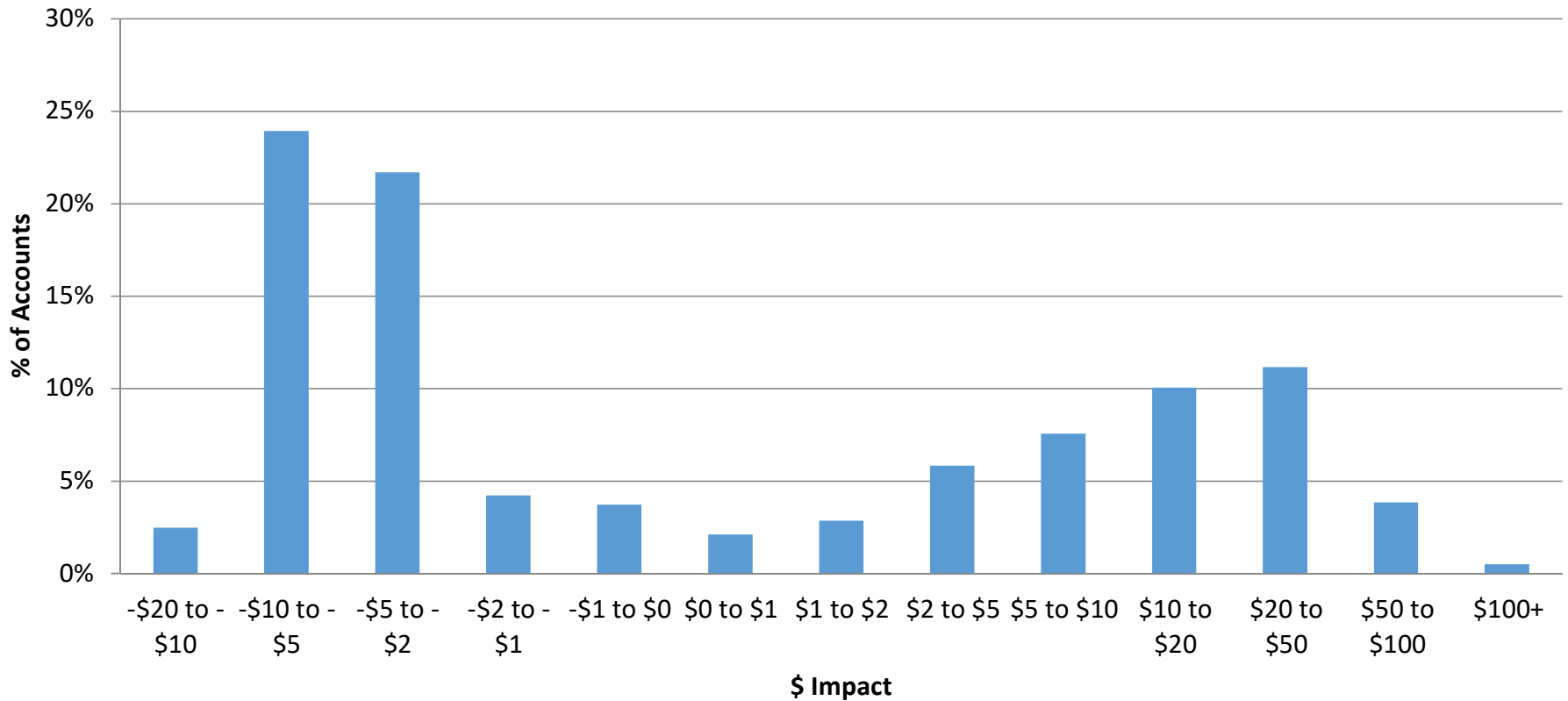
All-Electric CARE, Non-NEM Customers
Hot Climate Zone- Summer
2018 Tiered Rates vs 3-Period Default TOU



CLIMATE_ZONE FL_NEM BASIC_AE CARE

Count of PREM_ID

CARE non-NEM All Electric, Hot Climate Zone Summer Average Monthly Bill Gain/Loss Percentage of Customers 2018 Tiered Rates vs 2 Period Default TOU



T-> 2P Summer Bill Impact

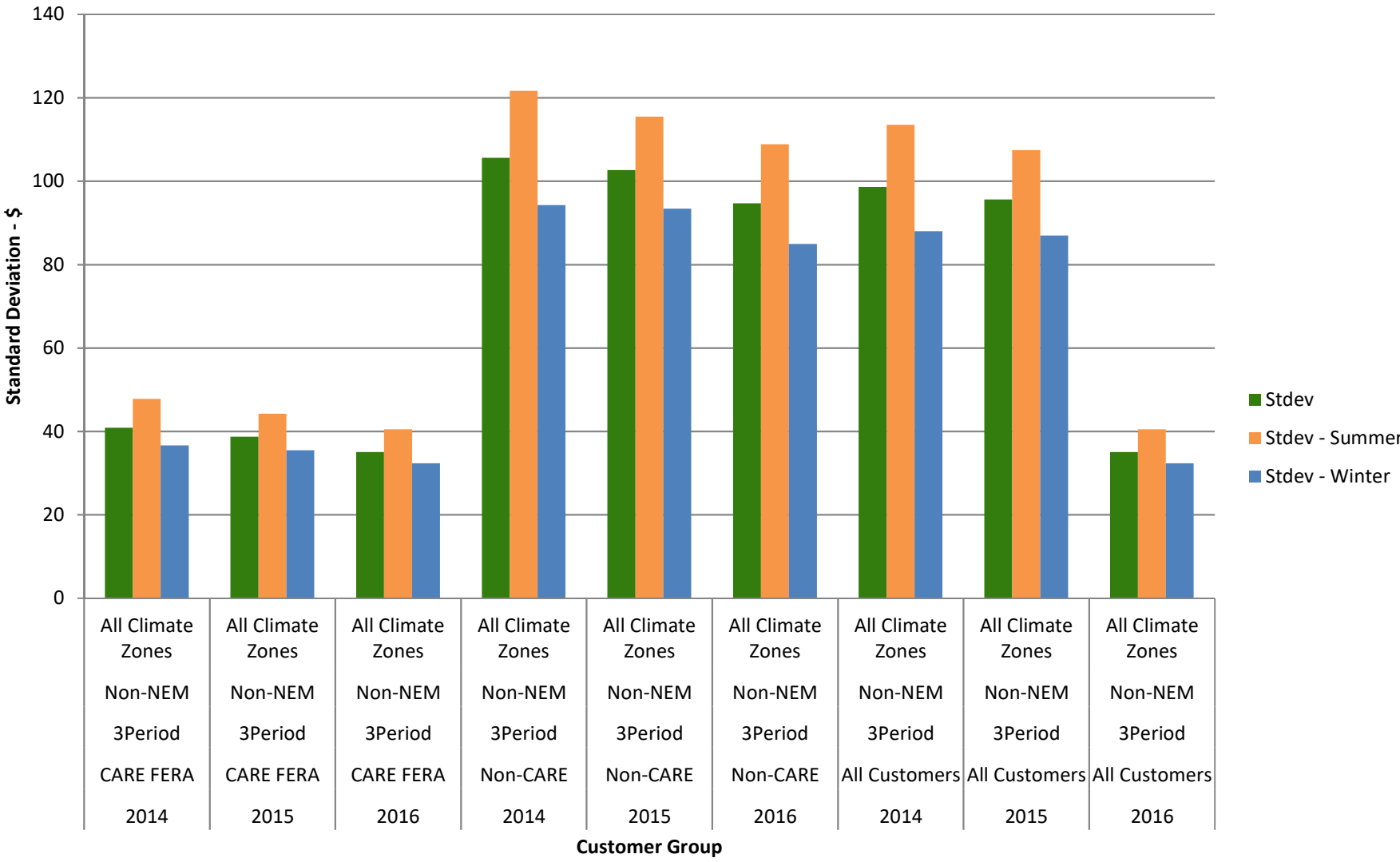
Attachment C

Bill Volatility Analysis

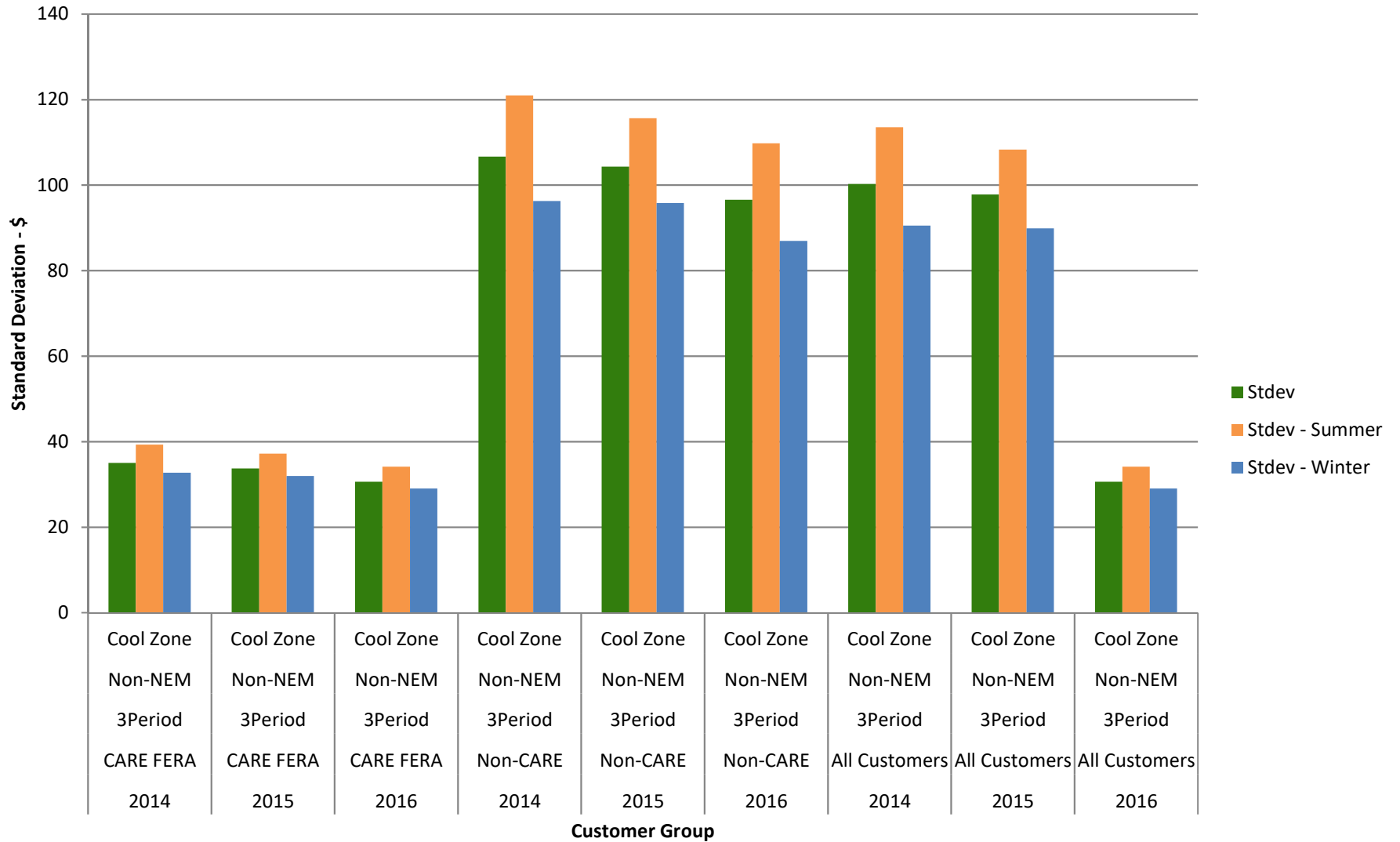
Bill Volatility

Standard Deviation of Bills in Summer vs. Winter vs. Annually

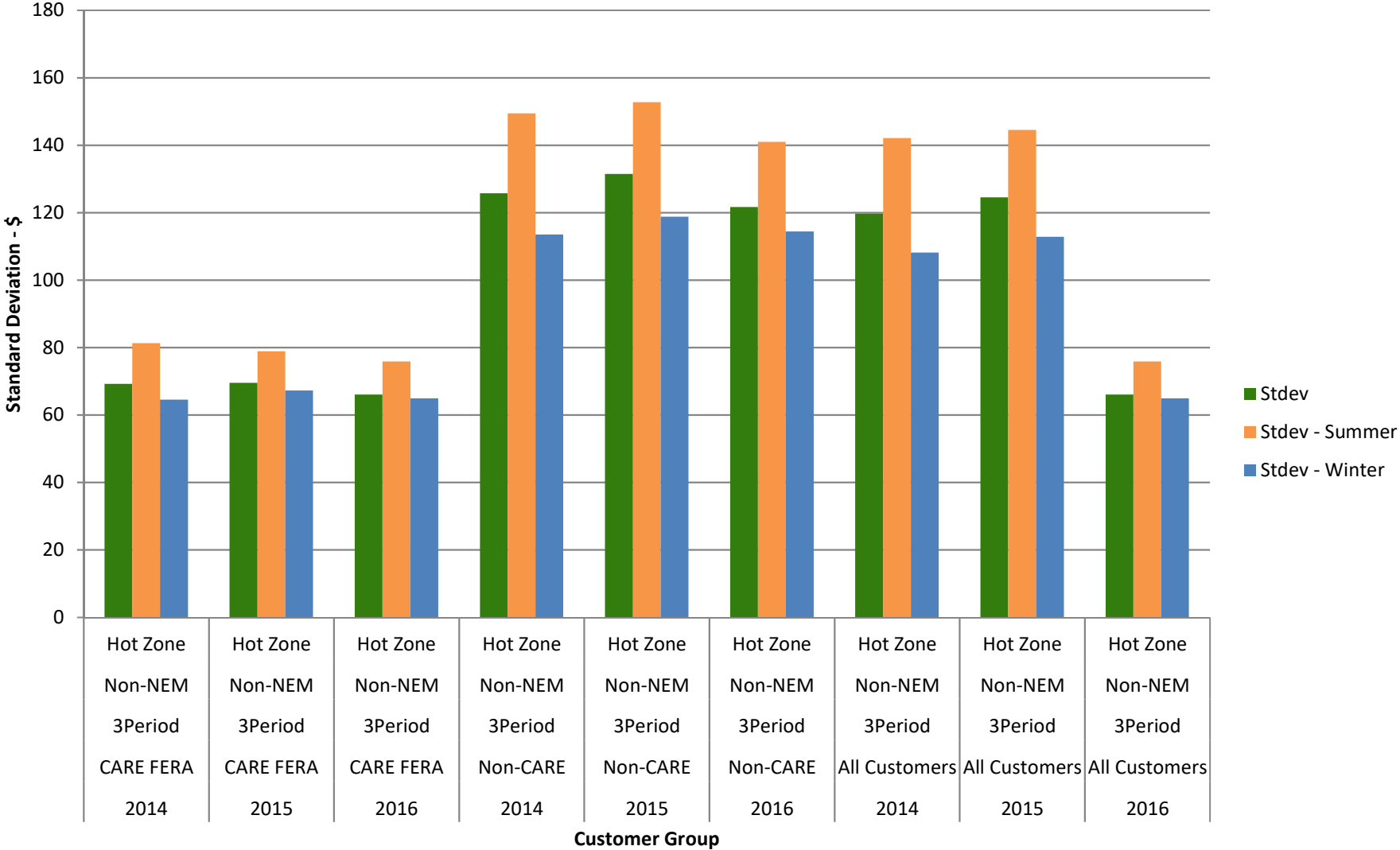
Estimated Standard Deviations of Bills All Climate Zones, Non-NEM Customers 3 Period TOU



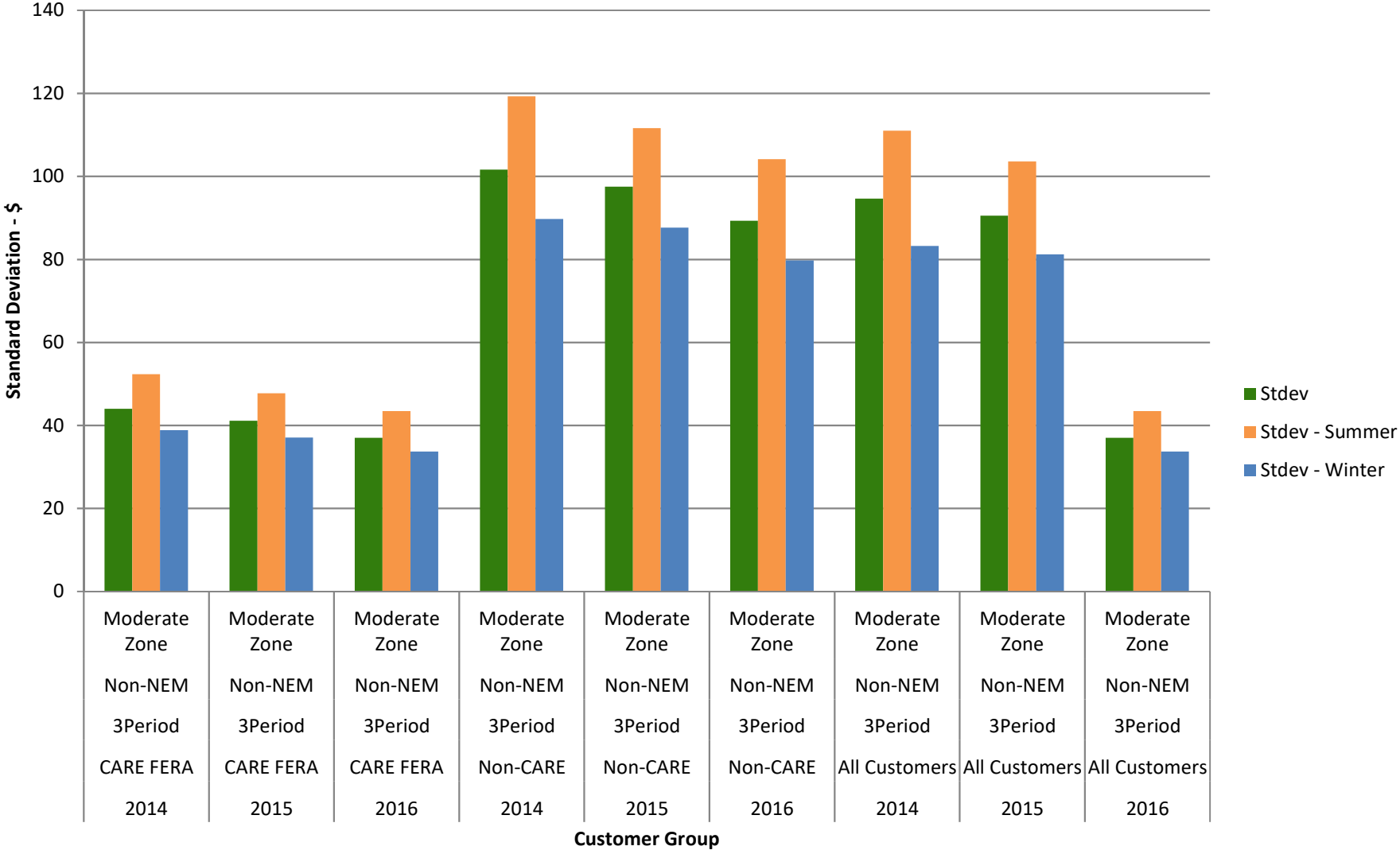
Estimated Standard Deviations of Bills Cool Climate Zone, Non-NEM Customers 3 Period TOU



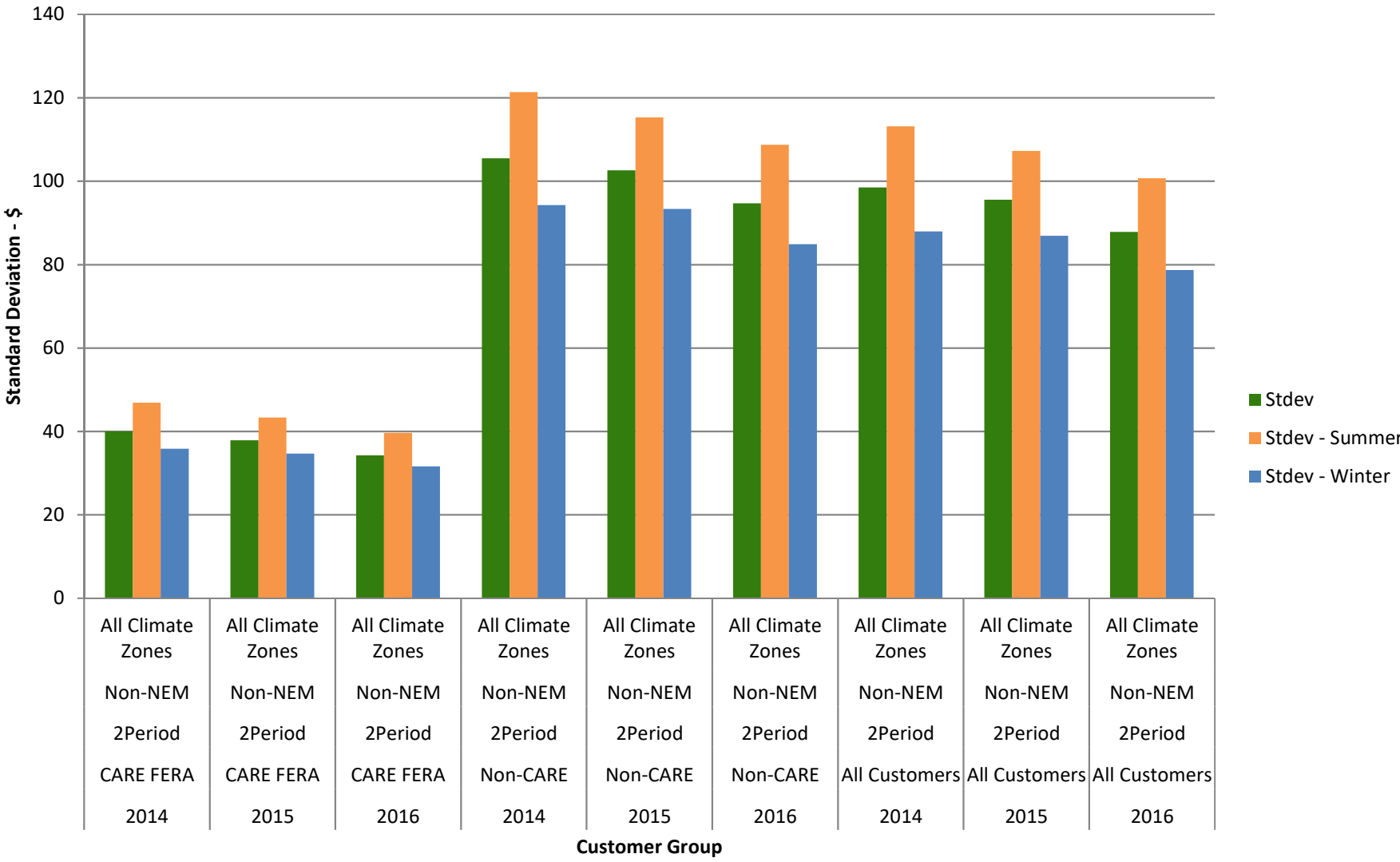
Estimated Standard Deviations of Bills Hot Climate Zone, Non-NEM Customers 3 Period TOU



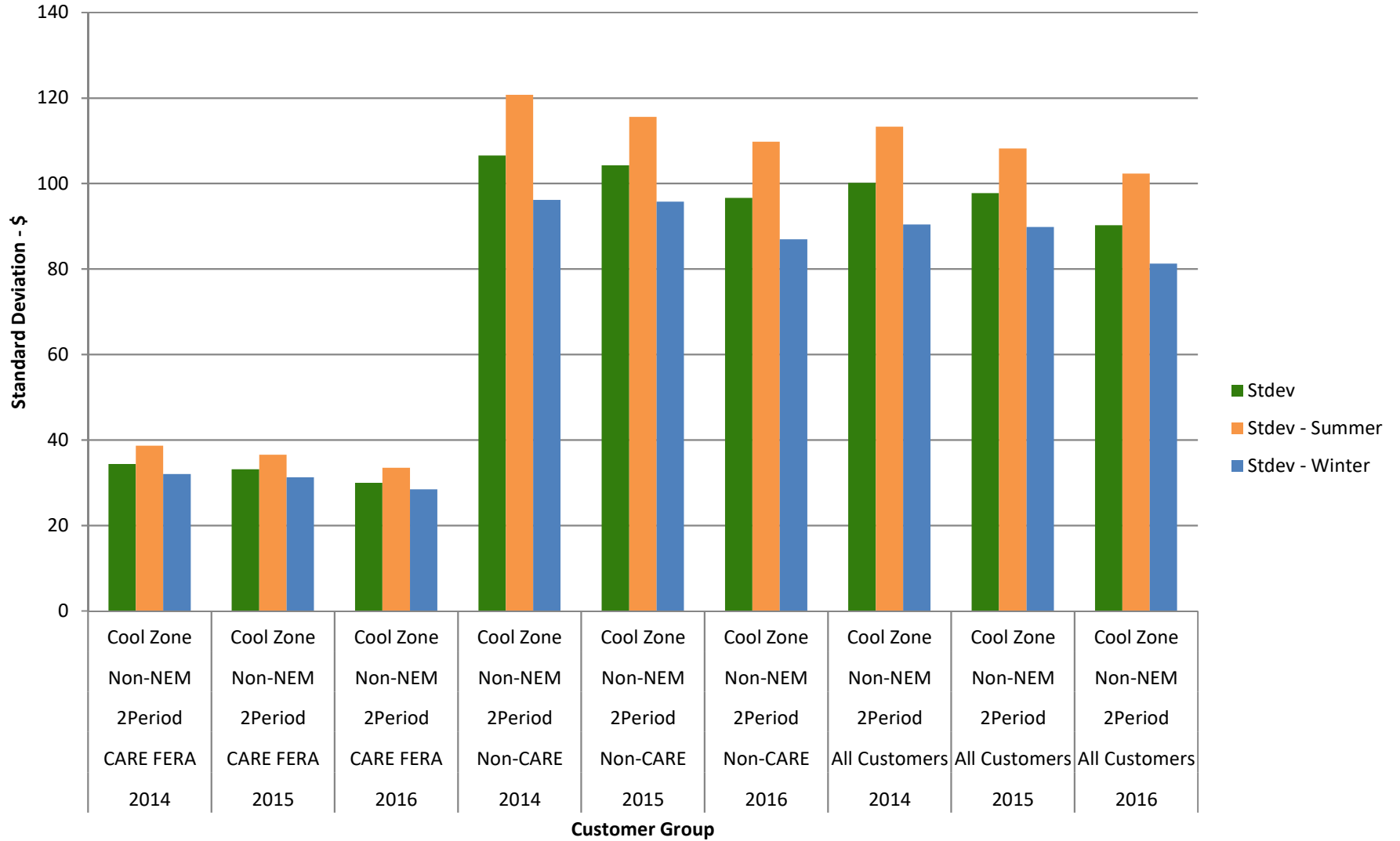
Estimated Standard Deviations of Bills Moderate Climate Zone, Non-NEM Customers 3 Period TOU



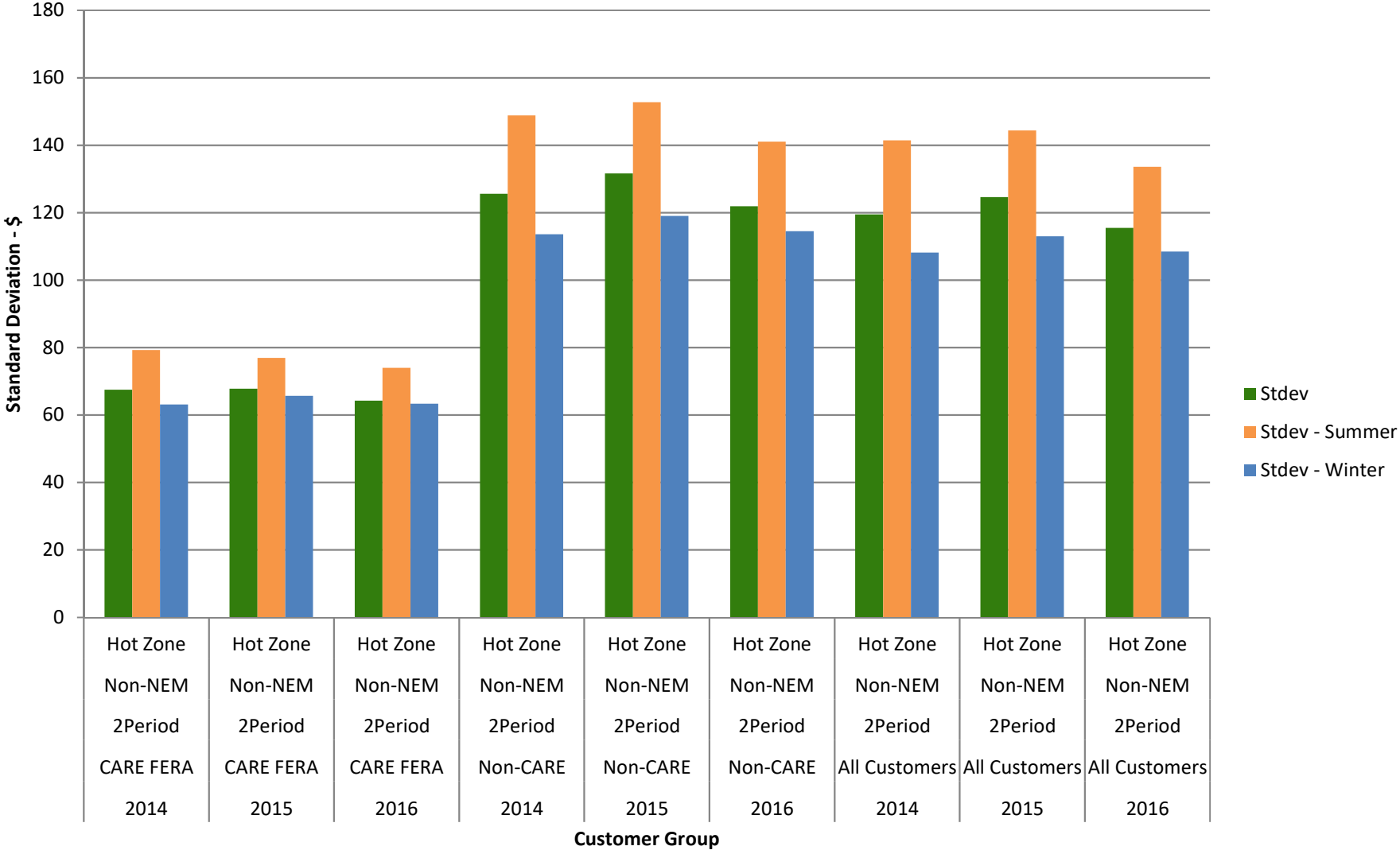
Estimated Standard Deviations of Bills All Climate Zones, Non-NEM Customers 2 Period TOU



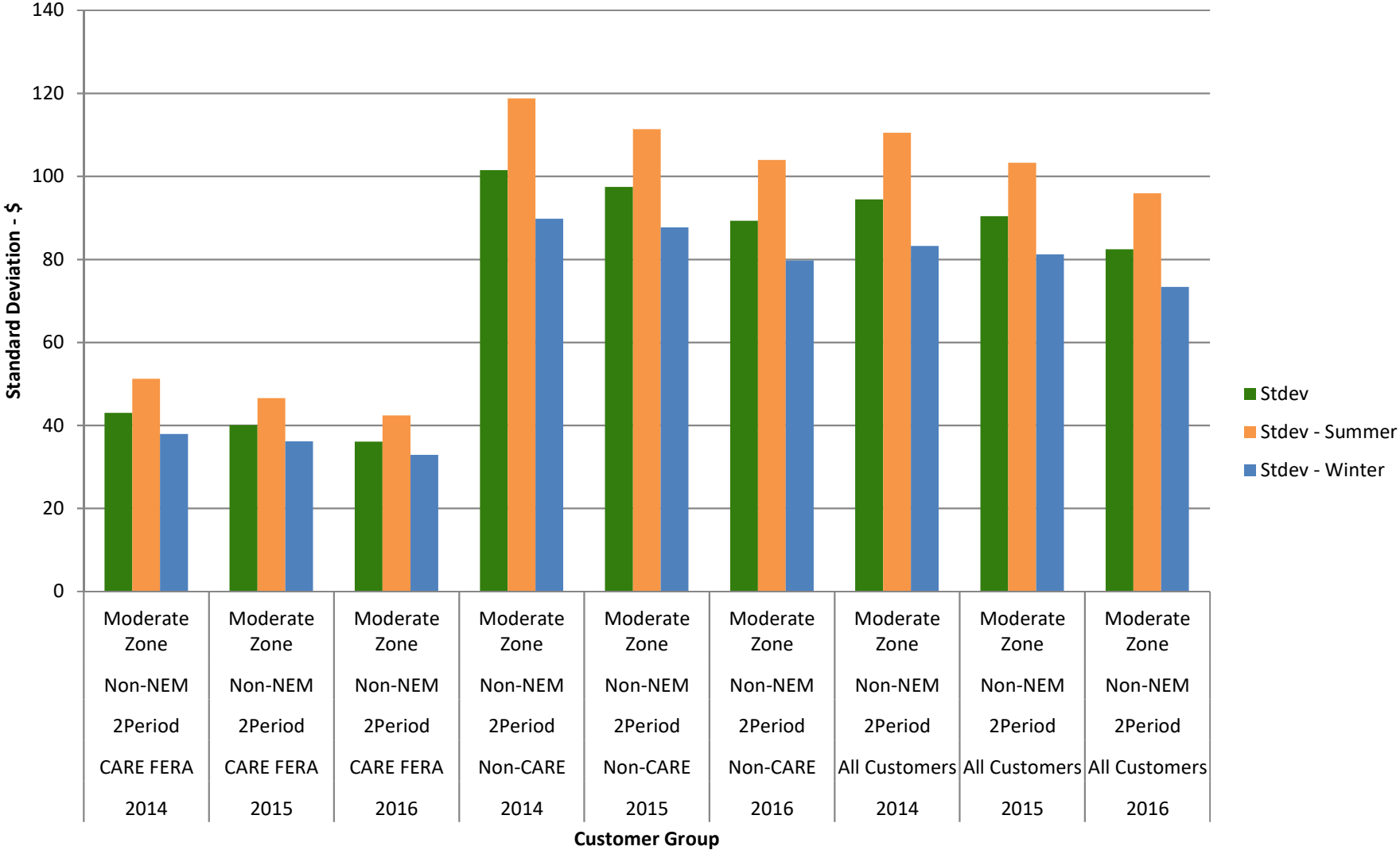
Estimated Standard Deviations of Bills Cool Climate Zone, Non-NEM Customers 2 Period TOU



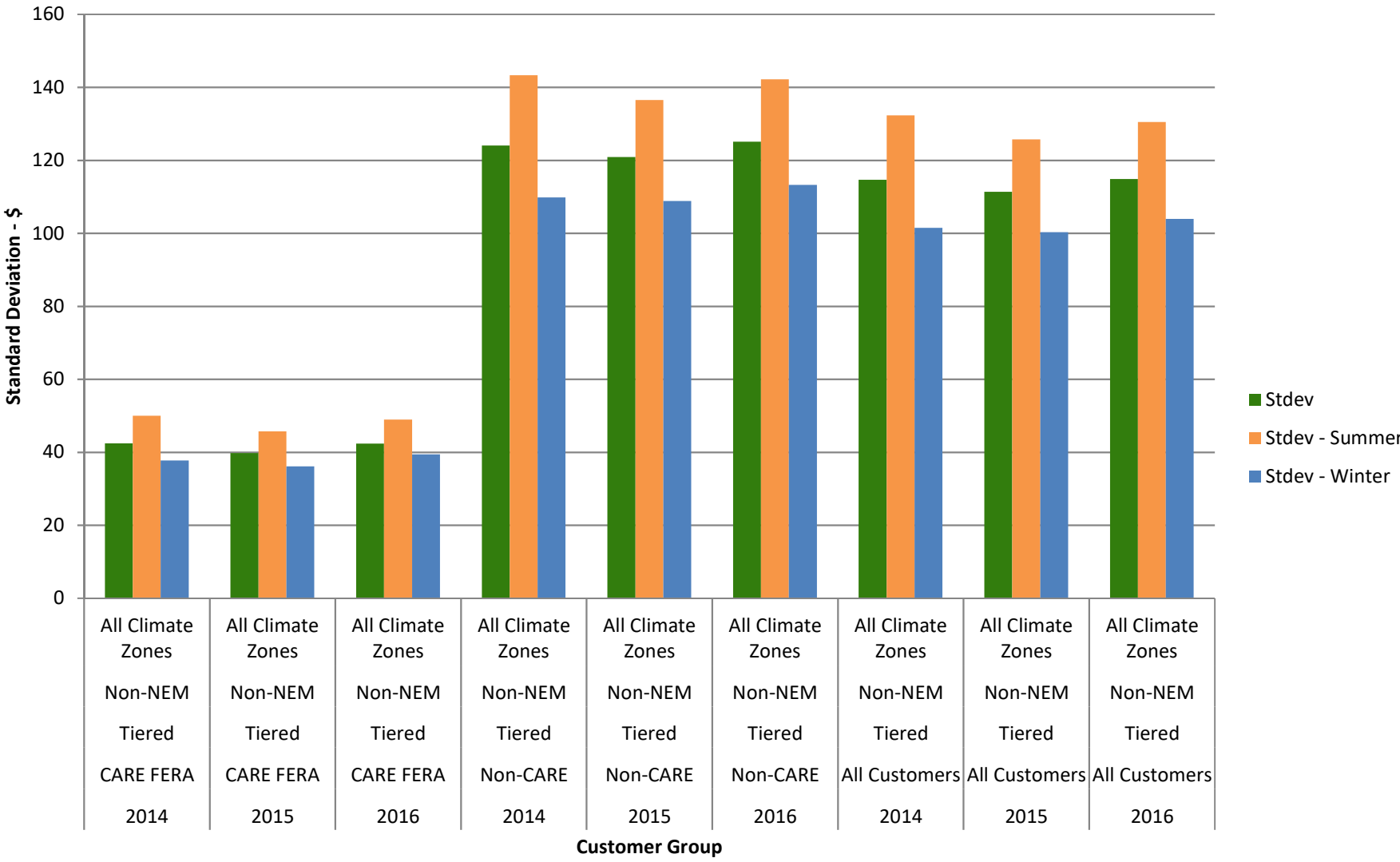
Estimated Standard Deviations of Bills Hot Climate Zone, Non-NEM Customers 2 Period TOU



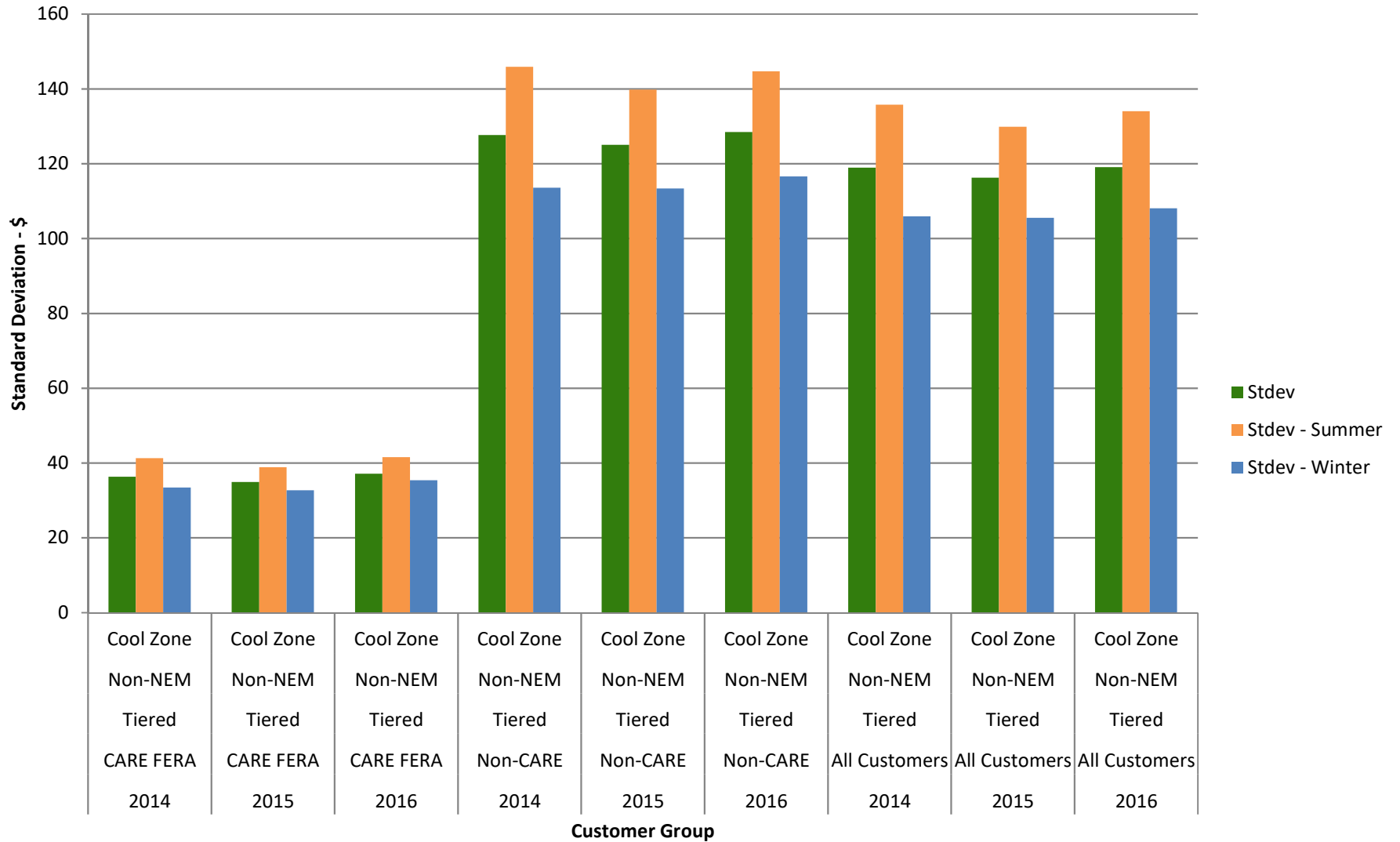
Estimated Standard Deviations of Bills Moderate Climate Zone, Non-NEM Customers 2 Period TOU



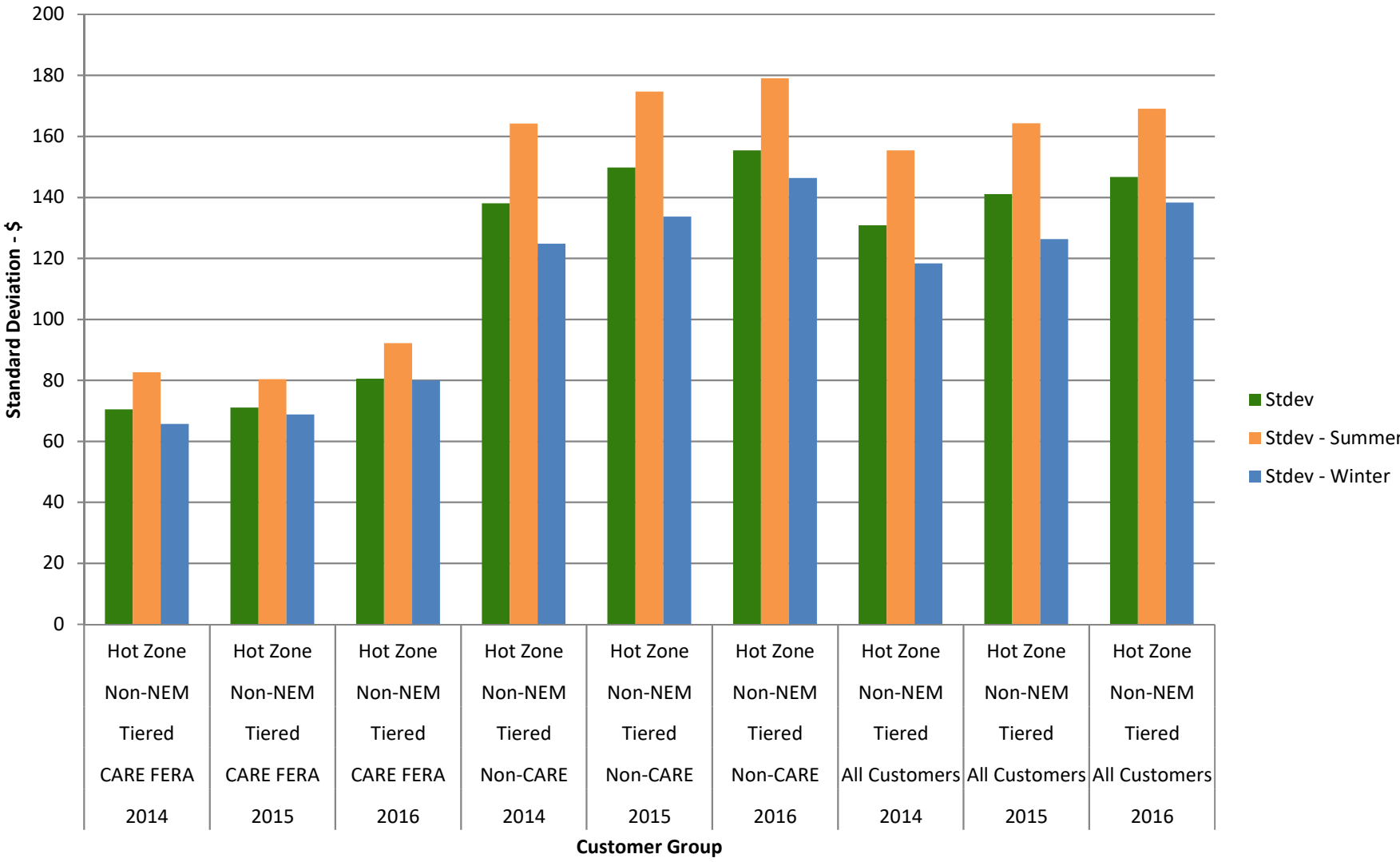
Estimated Standard Deviations of Bills All Climate Zones, Non-NEM Customers Tiered Rates



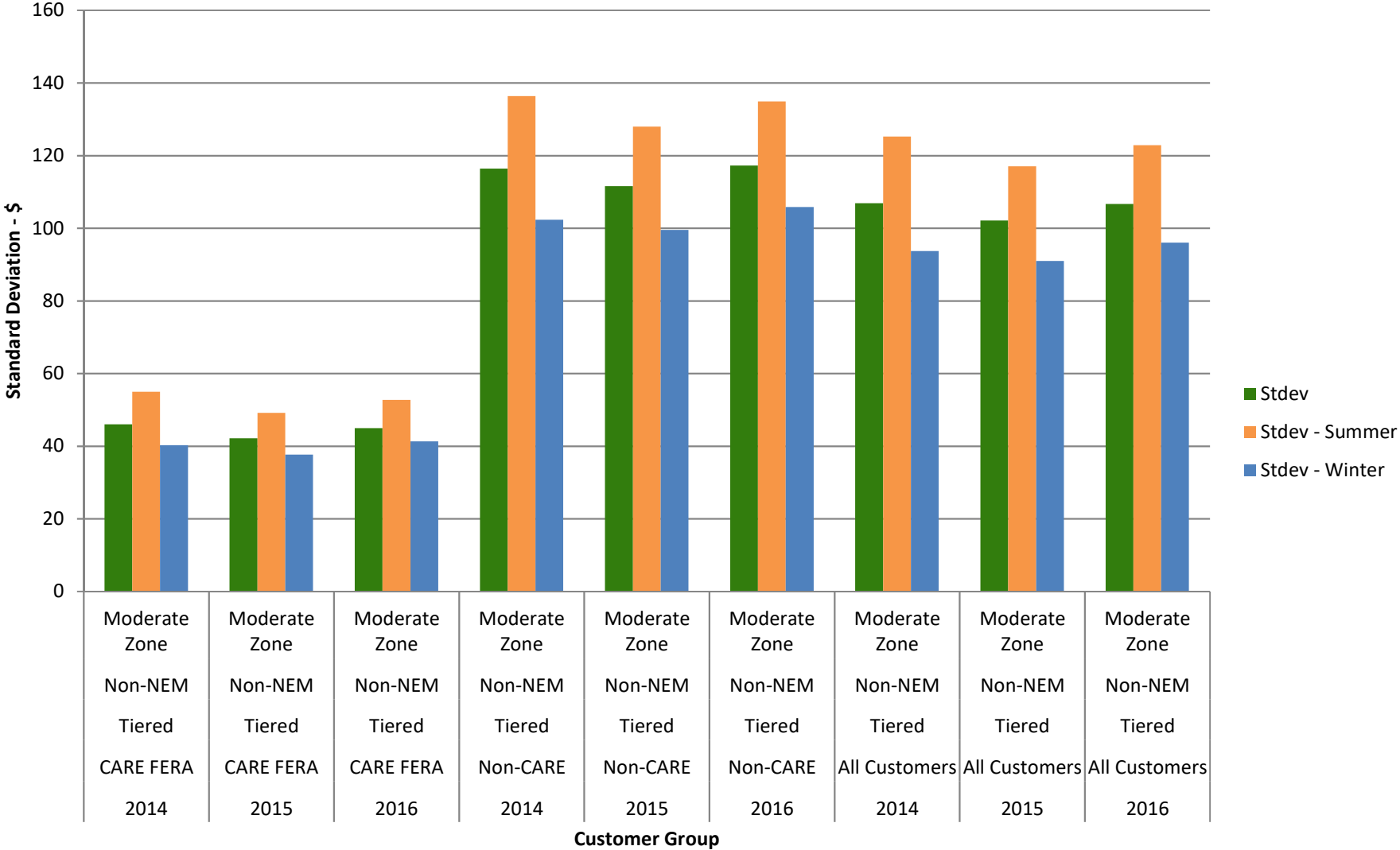
Estimated Standard Deviations of Bills Cool Climate Zone, Non-NEM Customers Tiered Rates



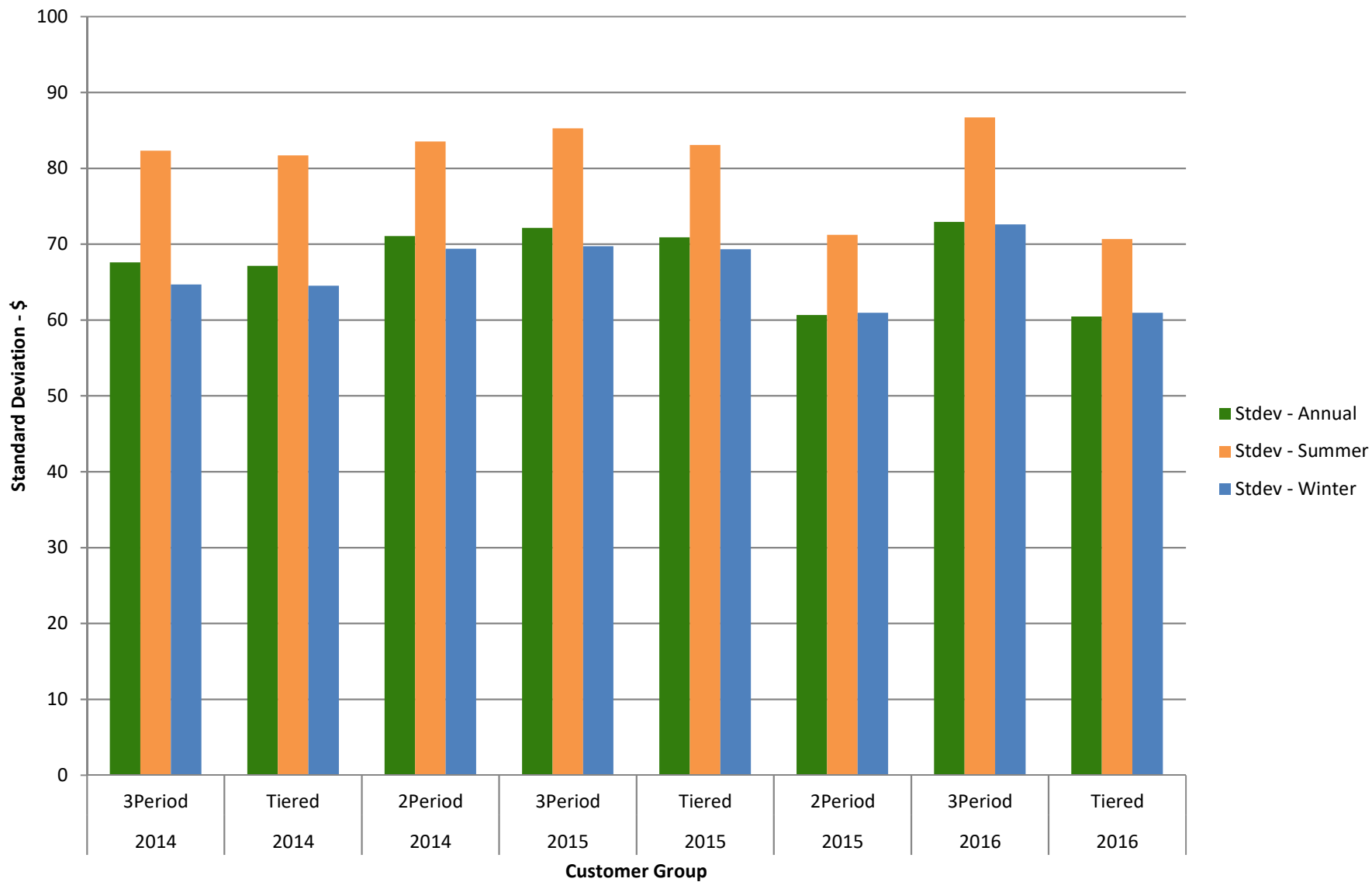
Estimated Standard Deviations of Bills Hot Climate Zone, Non-NEM Customers Tiered Rates



Estimated Standard Deviations of Bills Moderate Climate Zone, Non-NEM Customers Tiered Rates



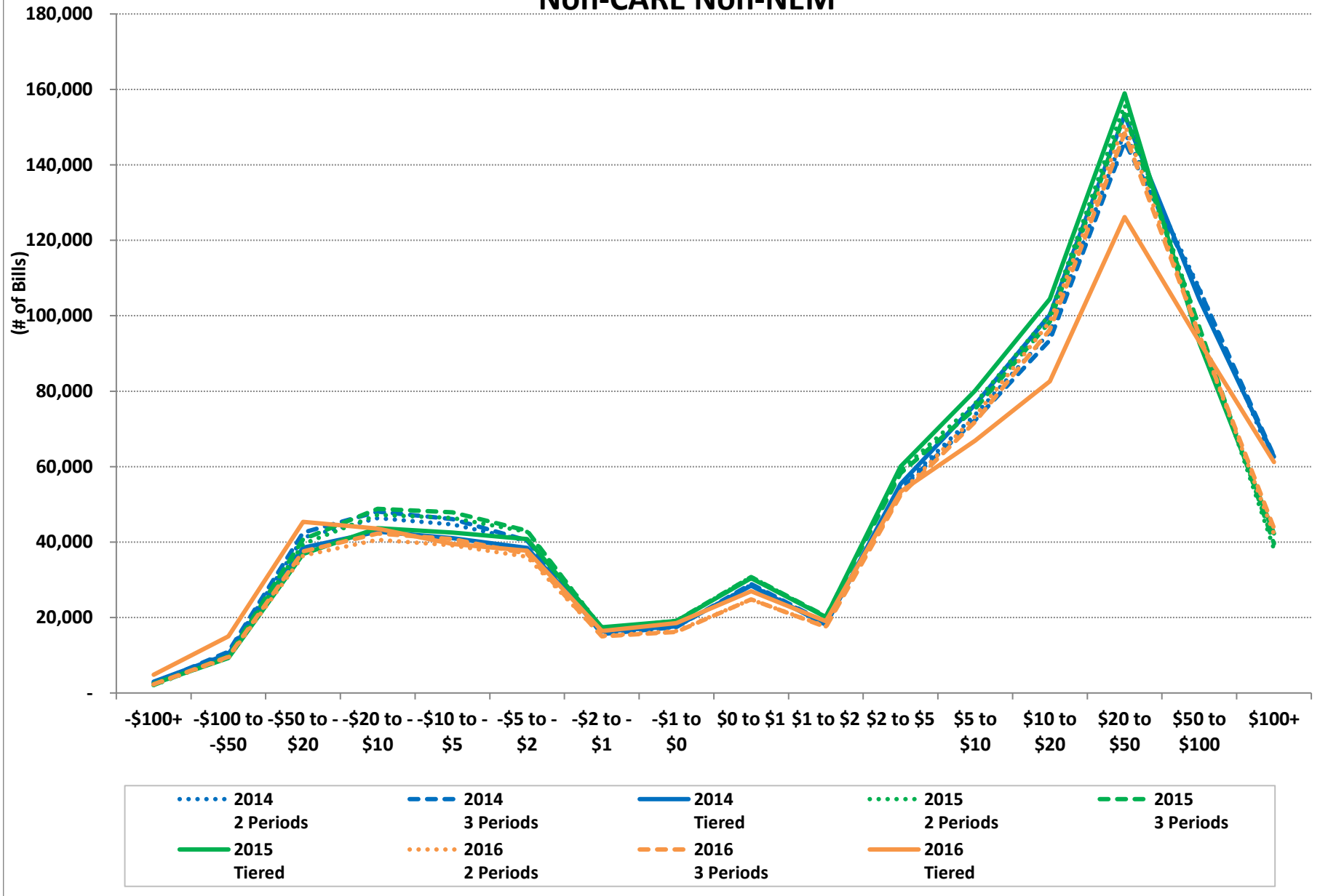
Estimated Standard Deviations of Bills All-Electric, Non-NEM CARE Hot Zone Customers



Bill Volatility

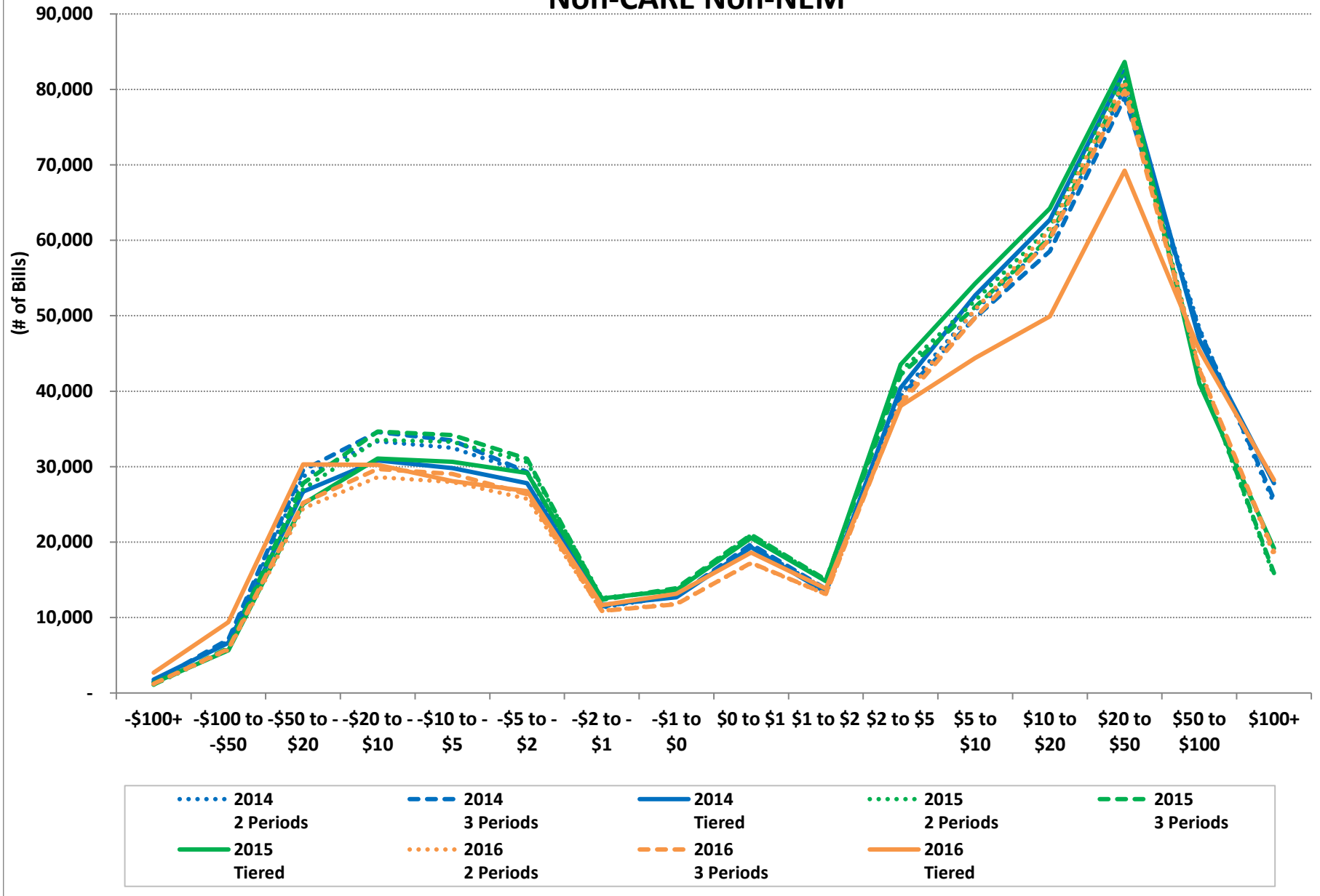
Distribution of Difference Between Average Summer and
Average Winter

Summer-Winter Differential - All Zones Non-CARE Non-NEM



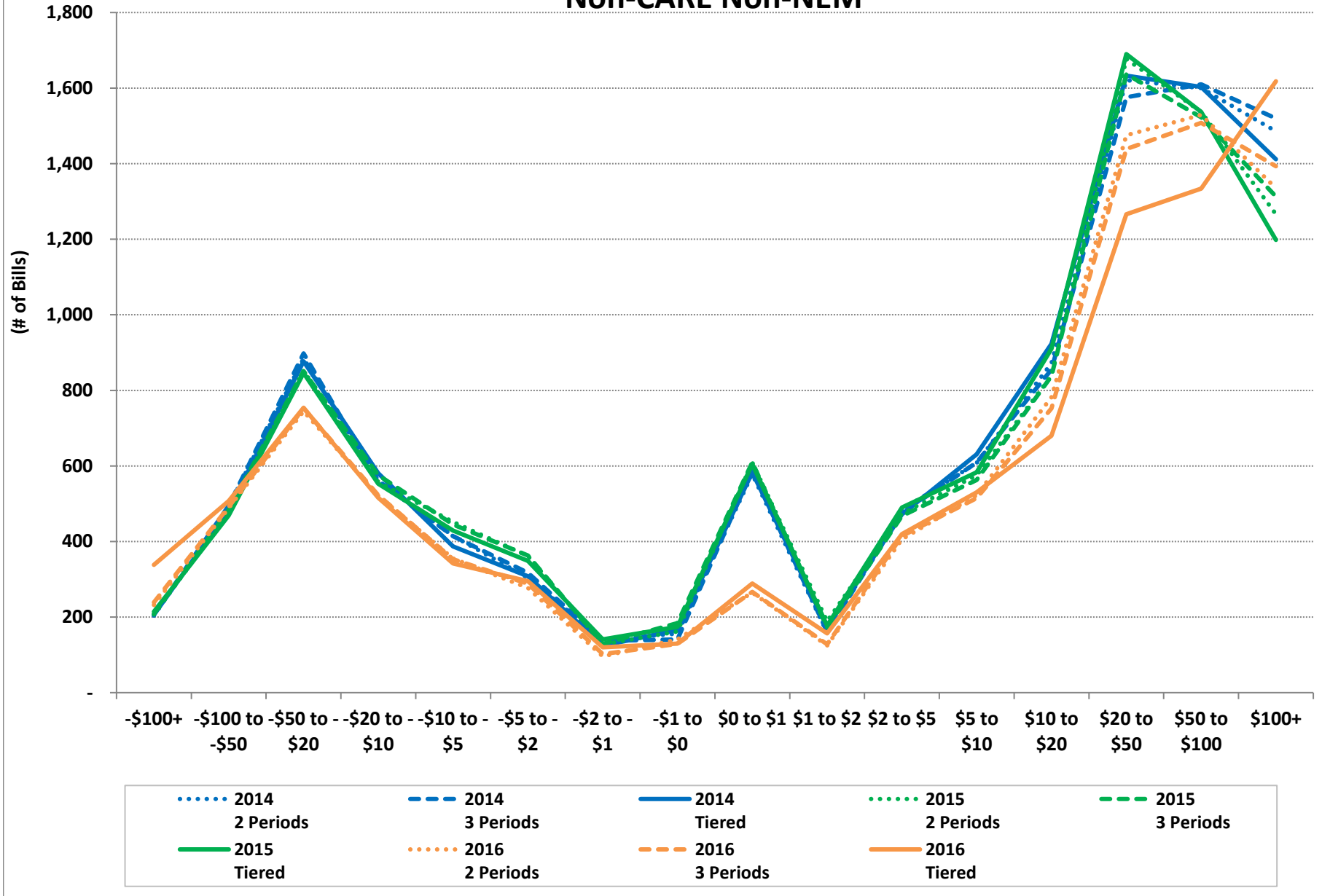
2014: 806,936 customers
 2015: 801,451 customers
 2016: 750,379 customers

Summer-Winter Differential - Cool Zone Non-CARE Non-NEM



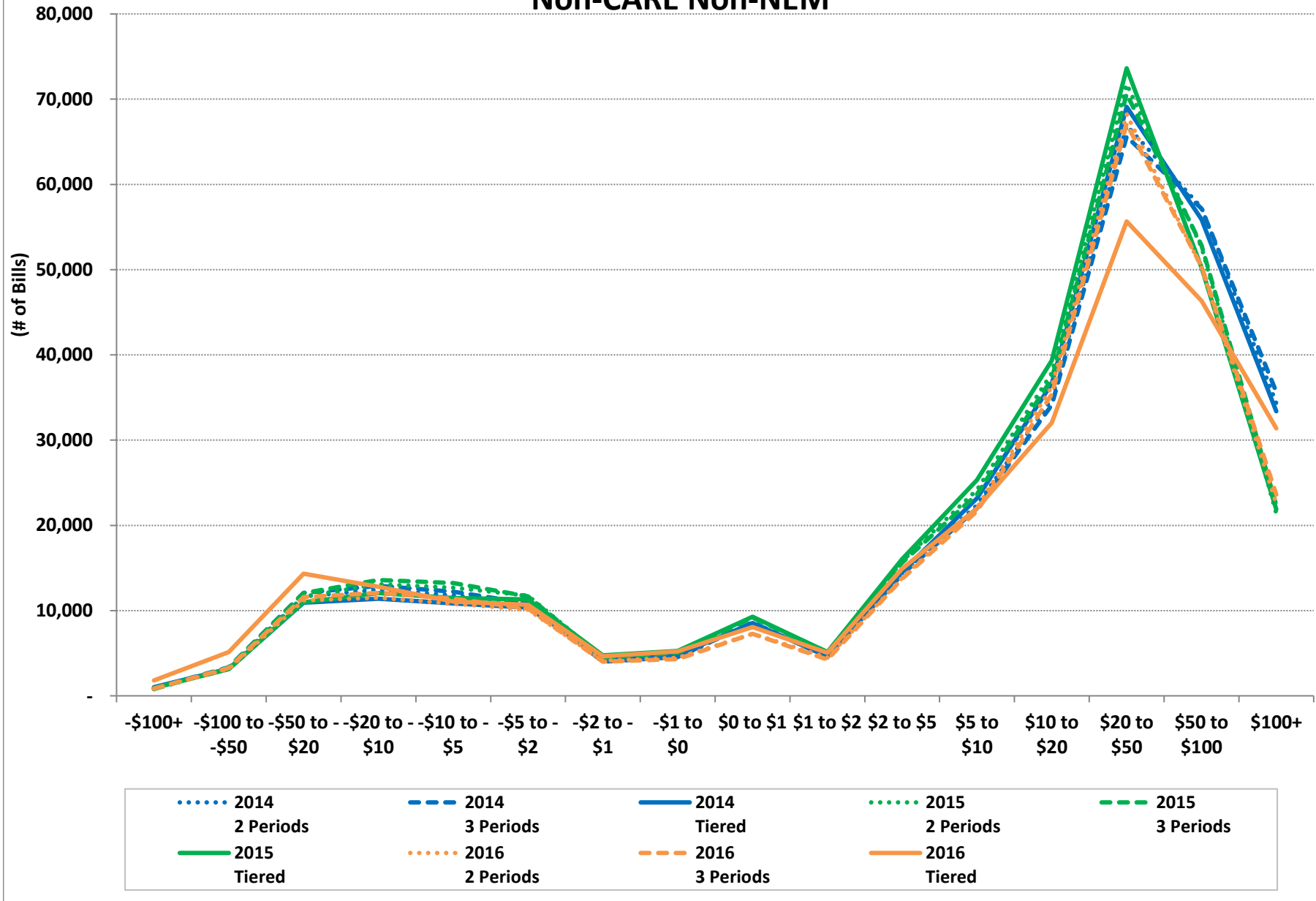
2014: 493,529 customers
 2015: 490,322 customers
 2016: 459,952 customers

Summer-Winter Differential - Hot Zone Non-CARE Non-NEM



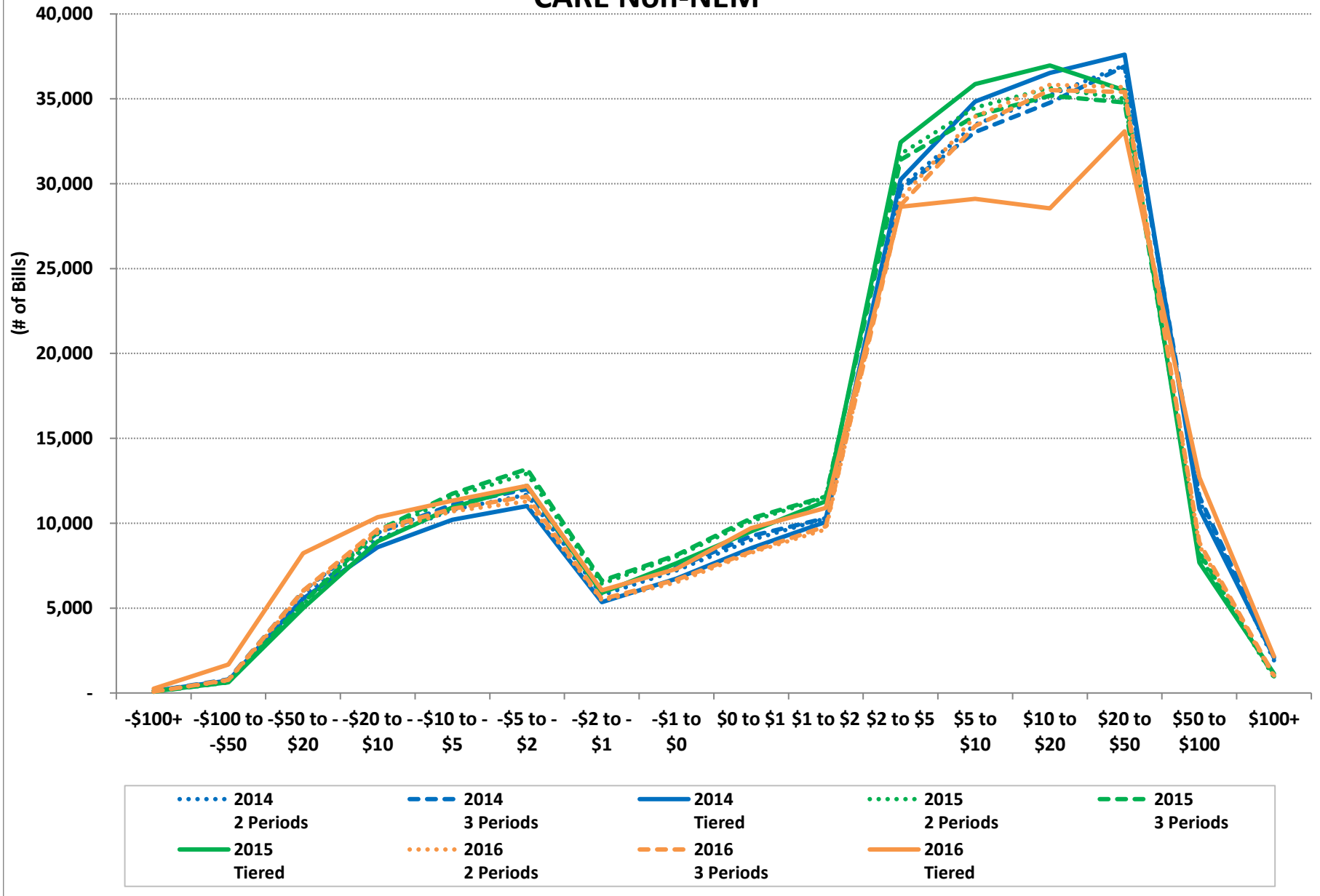
2014: 10,564 customers
2015: 10,365 customers
2016: 9,296 customers

Summer-Winter Differential - Moderate Zone Non-CARE Non-NEM



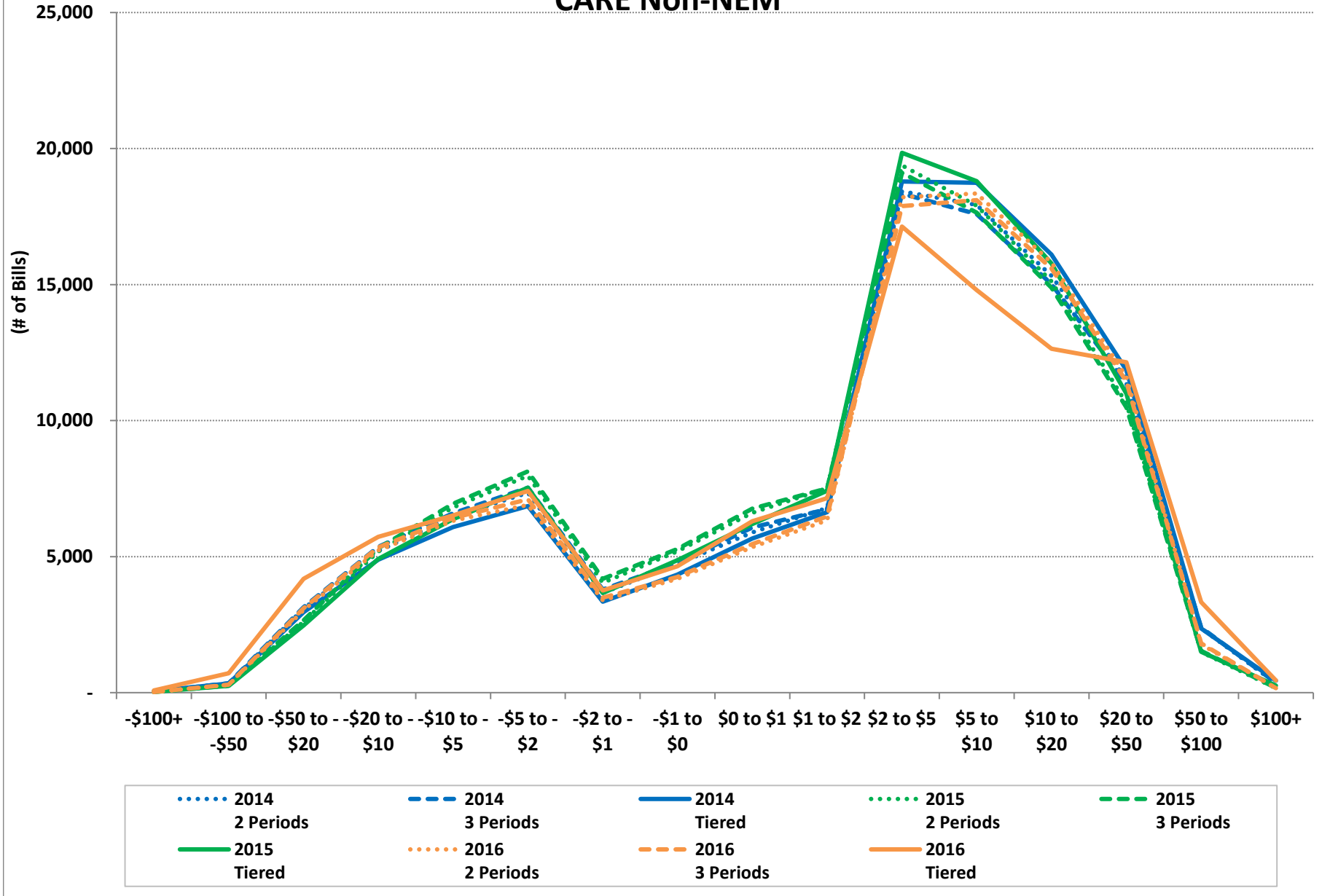
2014: 302,843 customers
 2015: 300,764 customers
 2016: 281,131 customers

Summer-Winter Differential - All Zones CARE Non-NEM



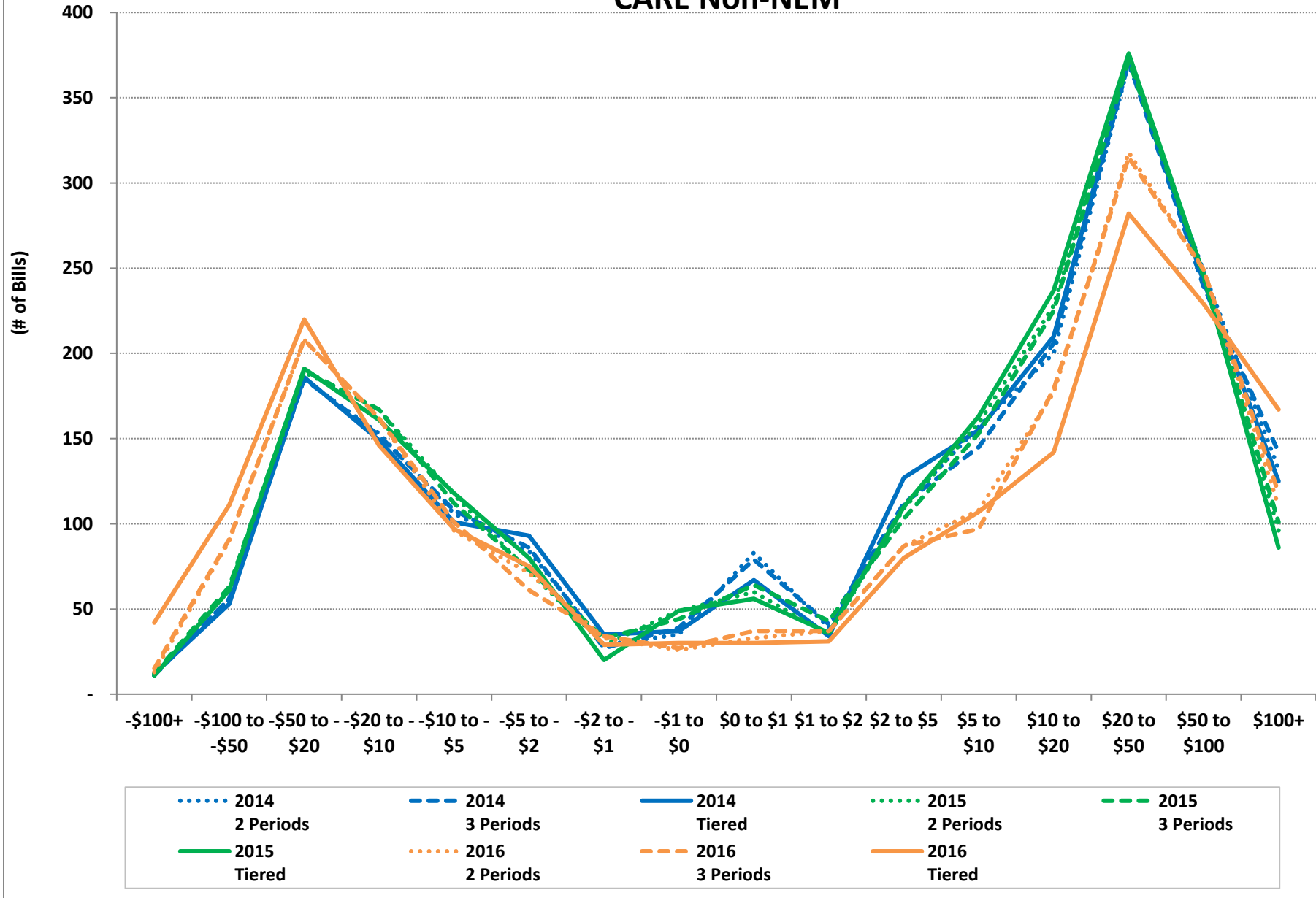
2014: 219,091 customers
 2015: 221,745 customers
 2016: 212,264 customers

Summer-Winter Differential - Cool Zone CARE Non-NEM



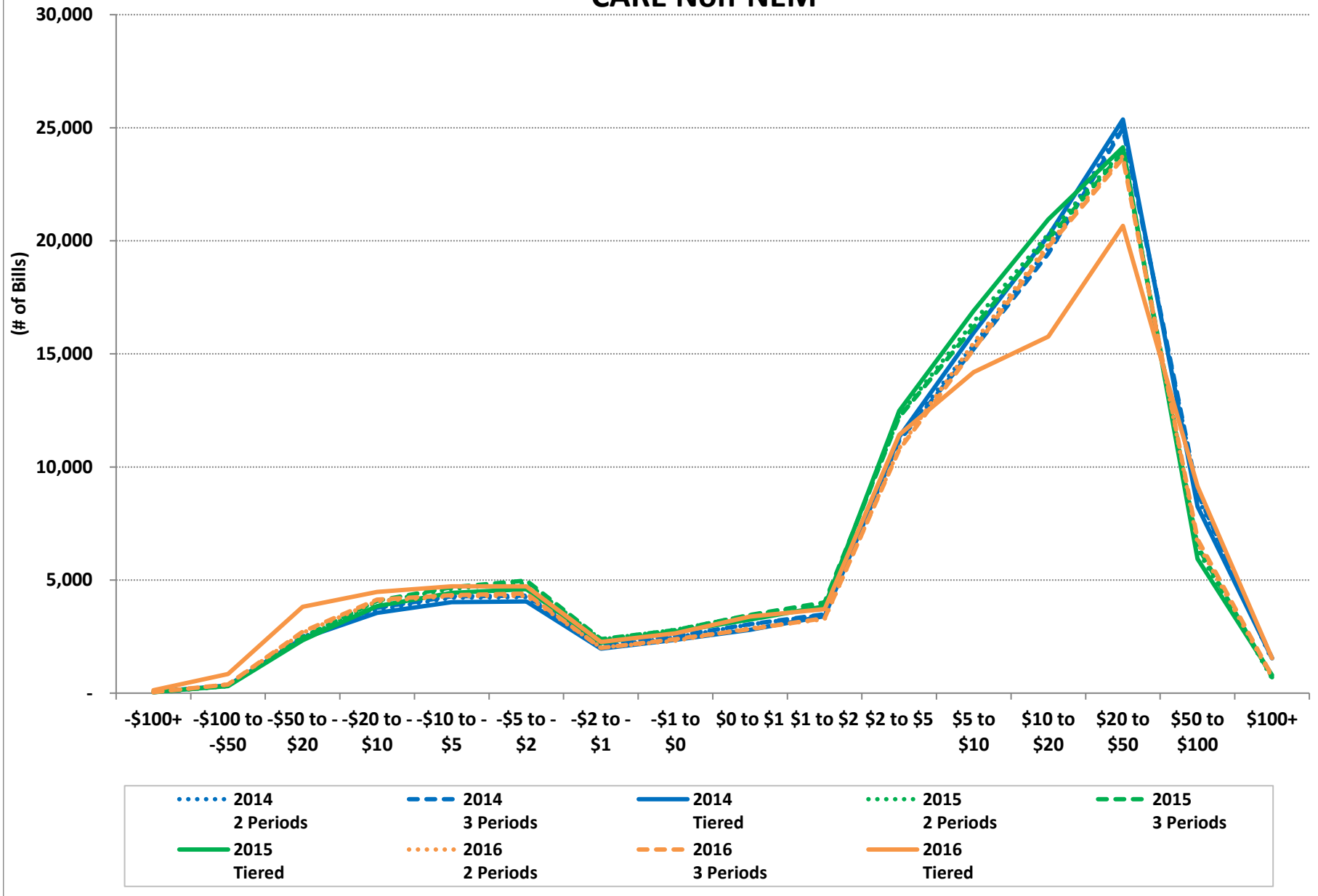
2014: 109,463 customers
 2015: 110,911 customers
 2016: 106,974 customers

Summer-Winter Differential - Hot Zone CARE Non-NEM



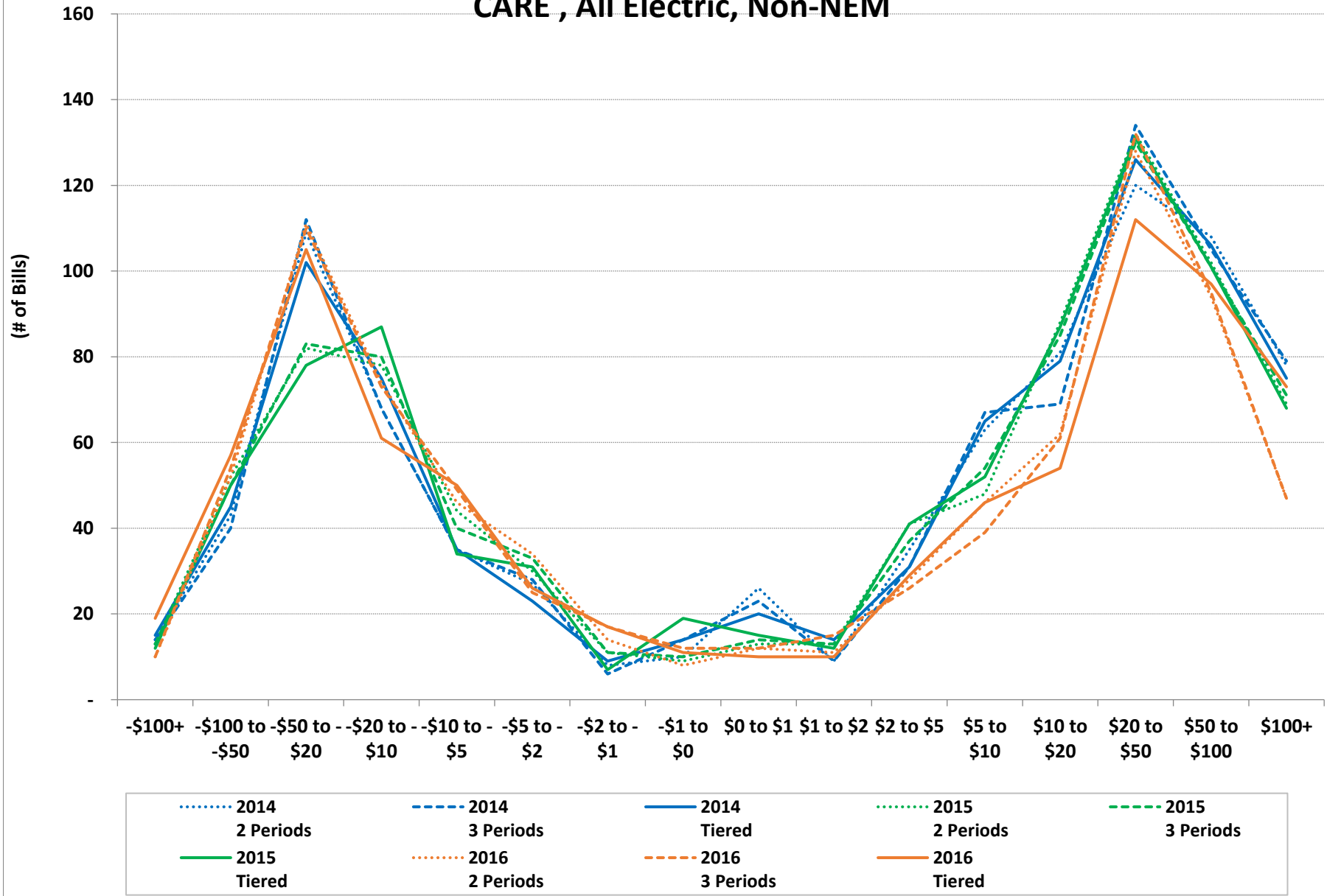
2014: 1,999 customers
 2015: 2,001 customers
 2016: 1,818 customers

Summer-Winter Differential - Moderate Zone CARE Non-NEM



2014: 107,629 customers
 2015: 108,833 customers
 2016: 103,472 customers

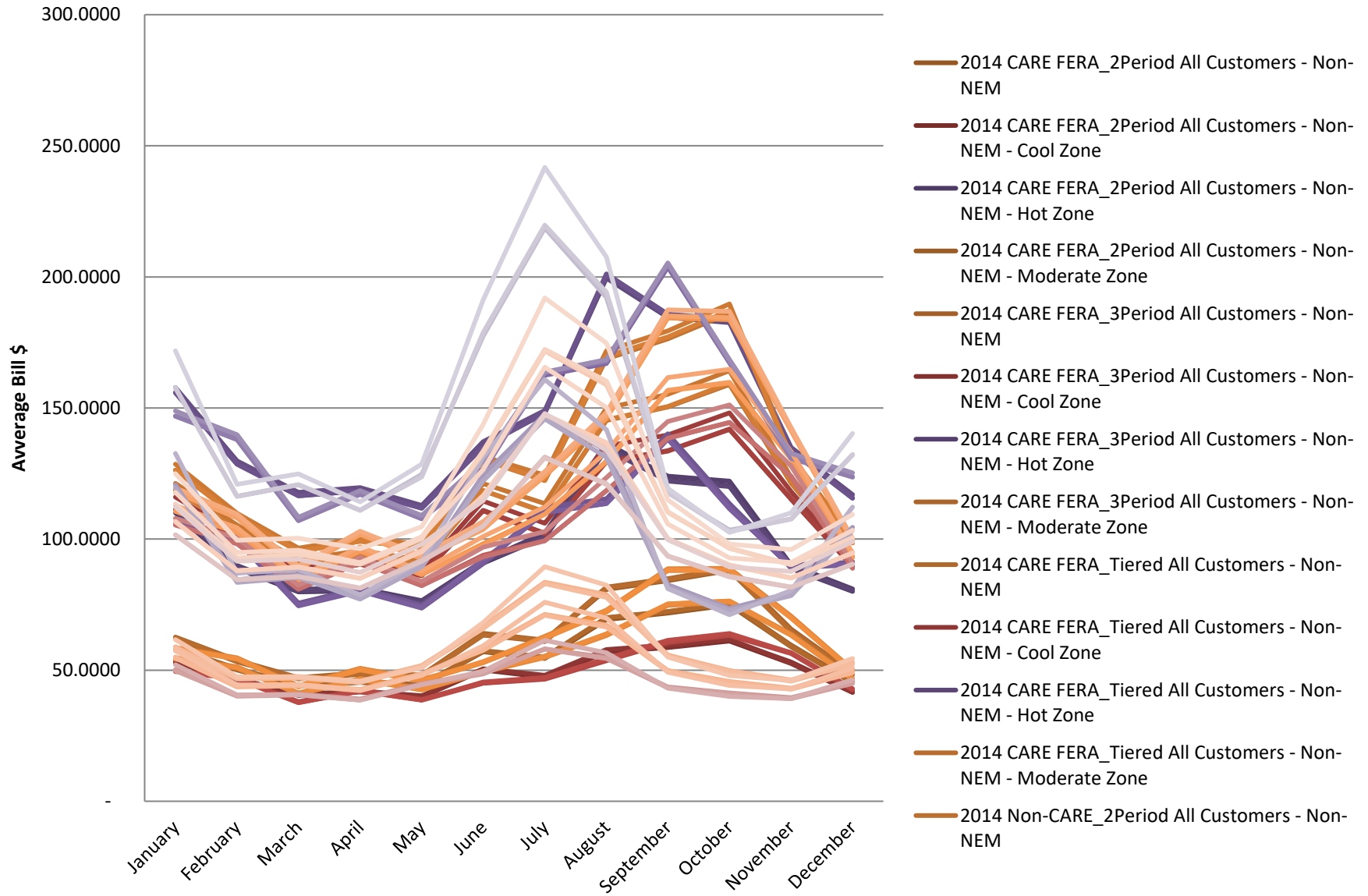
Winter-Summer Differential - Hot Zone CARE , All Electric, Non-NEM



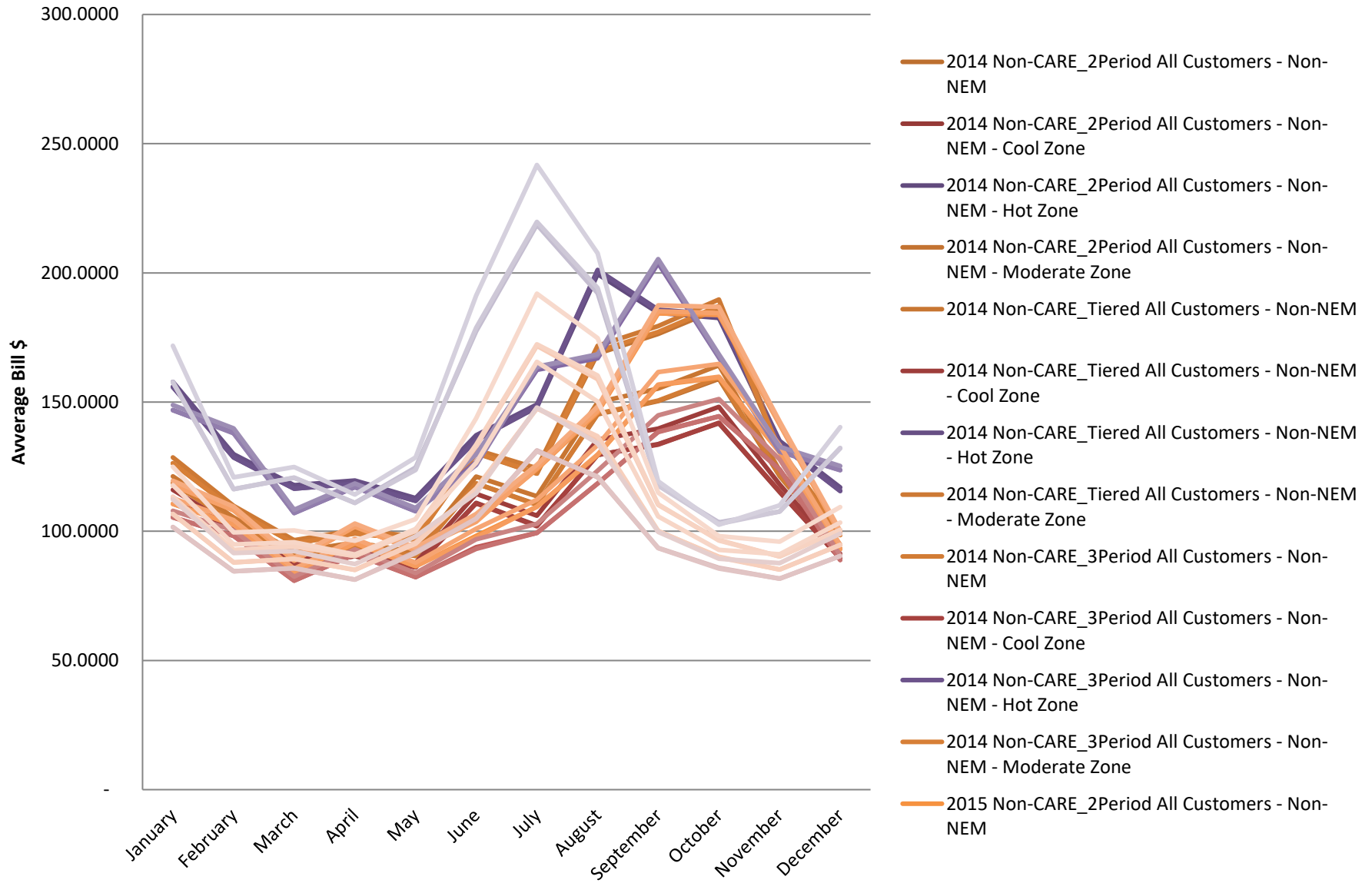
Bill Volatility

Average Bill by Month

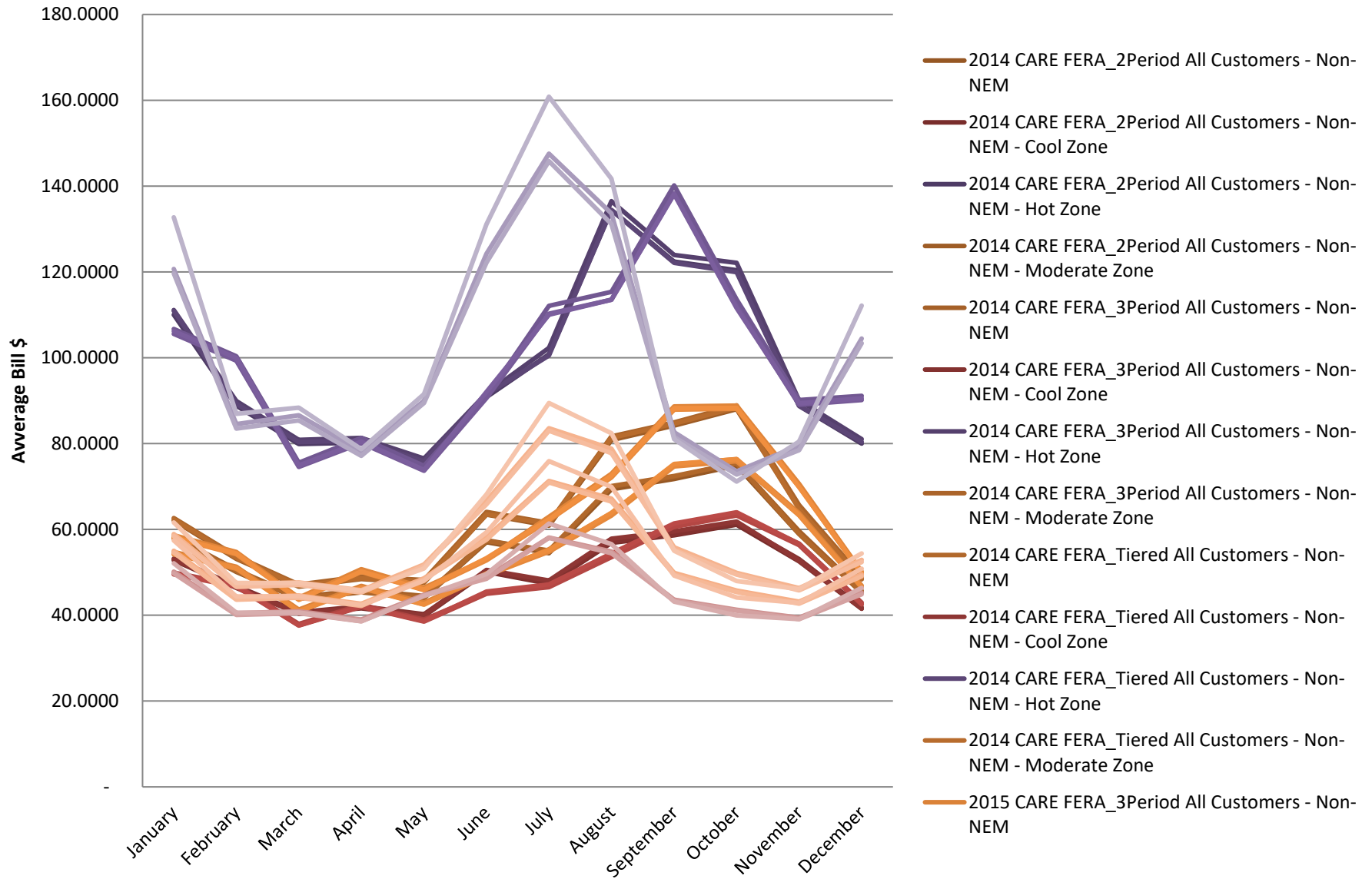
Average Bill by Month All Non-NEM Customers



Average Bill by Month Non-CARE, Non-NEM Customers



Average Bill by Month CARE/FERA, Non-NEM Customers



Average Bill by Month All Electric non-NEM CARE Customers - Hot Zone



Attachment D

Electricity Burden

**Electricity Burden
2018 Tiered
Climate Zone: All**

Electricity Burden	Number of Customers		
	Non-CARE	CARE	TOTAL
0% to 1%	273,957	67,485	341,442
1% to 2%	261,169	73,157	334,326
2% to 3%	110,671	34,189	144,860
3% to 4%	50,761	17,403	68,164
4% to 5%	26,238	10,277	36,515
5% to 6%	15,120	6,626	21,746
6% to 7%	9,671	4,622	14,293
7% to 8%	6,587	3,264	9,851
8% to 9%	4,557	2,306	6,863
9% to 10%	3,395	1,748	5,143
10% to 15%	8,532	4,014	12,546
Over 15%	6,203	1,373	7,576
TOTAL	776,861	226,464	1,003,325

**Electricity Burden
2018 Tiered
Climate Zone: Cool**

Electricity Burden	Number of Customers		
	Non-CARE	CARE	TOTAL
0% to 1%	189,313	41,253	230,566
1% to 2%	156,190	37,099	193,289
2% to 3%	58,206	15,331	73,537
3% to 4%	24,780	7,389	32,169
4% to 5%	12,306	4,204	16,510
5% to 6%	7,018	2,669	9,687
6% to 7%	4,460	1,703	6,163
7% to 8%	2,976	1,160	4,136
8% to 9%	2,018	753	2,771
9% to 10%	1,420	517	1,937
10% to 15%	3,526	1,045	4,571
Over 15%	2,317	328	2,645
TOTAL	464,530	113,451	577,981

**Electricity Burden
2018 Tiered
Climate Zone: Hot**

Electricity Burden	Number of Customers		
	Non-CARE	CARE	TOTAL
0% to 1%	2,828	368	3,196
1% to 2%	2,685	616	3,301
2% to 3%	1,967	446	2,413
3% to 4%	1,159	264	1,423
4% to 5%	693	145	838
5% to 6%	416	81	497
6% to 7%	282	43	325
7% to 8%	159	35	194
8% to 9%	119	19	138
9% to 10%	85	18	103
10% to 15%	243	29	272
Over 15%	171	31	202
TOTAL	10,807	2,095	12,902

**Electricity Burden
2018 Tiered
Climate Zone: Moderate**

Electricity Burden	Number of Customers		
	Non-CARE	CARE	TOTAL
0% to 1%	81,816	25,864	107,680
1% to 2%	102,294	35,442	137,736
2% to 3%	50,498	18,412	68,910
3% to 4%	24,822	9,750	34,572
4% to 5%	13,239	5,928	19,167
5% to 6%	7,686	3,876	11,562
6% to 7%	4,929	2,876	7,805
7% to 8%	3,452	2,069	5,521
8% to 9%	2,420	1,534	3,954
9% to 10%	1,890	1,213	3,103
10% to 15%	4,763	2,940	7,703
Over 15%	3,715	1,014	4,729
TOTAL	301,524	110,918	412,442

Electricity Burden

3 Period

Climate Zone: All

Electricity Burden	Number of Customers		
	Non-CARE	CARE	TOTAL
0% to 1%	272,585	67,304	339,889
1% to 2%	263,724	72,899	336,623
2% to 3%	111,406	34,331	145,737
3% to 4%	50,730	17,550	68,280
4% to 5%	26,058	10,381	36,439
5% to 6%	14,919	6,649	21,568
6% to 7%	9,478	4,609	14,087
7% to 8%	6,462	3,255	9,717
8% to 9%	4,420	2,343	6,763
9% to 10%	3,257	1,738	4,995
10% to 15%	8,190	4,027	12,217
Over 15%	5,632	1,378	7,010
TOTAL	776,861	226,464	1,003,325

**Electricity Burden
3 Period
Climate Zone: Cool**

Electricity Burden	Number of Customers		
	Non-CARE	CARE	TOTAL
0% to 1%	189,977	41,333	231,310
1% to 2%	157,478	37,009	194,487
2% to 3%	58,241	15,356	73,597
3% to 4%	24,338	7,434	31,772
4% to 5%	12,027	4,170	16,197
5% to 6%	6,811	2,678	9,489
6% to 7%	4,274	1,695	5,969
7% to 8%	2,876	1,156	4,032
8% to 9%	1,884	739	2,623
9% to 10%	1,338	525	1,863
10% to 15%	3,279	1,037	4,316
Over 15%	2,007	319	2,326
TOTAL	464,530	113,451	577,981

**Electricity Burden
3 Period
Climate Zone: Hot**

Electricity Burden	Number of Customers		
	Non-CARE	CARE	TOTAL
0% to 1%	2,757	362	3,119
1% to 2%	2,678	597	3,275
2% to 3%	2,012	456	2,468
3% to 4%	1,161	266	1,427
4% to 5%	719	160	879
5% to 6%	409	79	488
6% to 7%	283	44	327
7% to 8%	178	34	212
8% to 9%	133	19	152
9% to 10%	84	19	103
10% to 15%	243	29	272
Over 15%	150	30	180
TOTAL	10,807	2,095	12,902

Electricity Burden
3 Period
Climate Zone: Moderate

Electricity Burden	Number of Customers		
	Non-CARE	CARE	TOTAL
0% to 1%	79,851	25,609	105,460
1% to 2%	103,568	35,293	138,861
2% to 3%	51,153	18,519	69,672
3% to 4%	25,231	9,850	35,081
4% to 5%	13,312	6,051	19,363
5% to 6%	7,699	3,892	11,591
6% to 7%	4,921	2,870	7,791
7% to 8%	3,408	2,065	5,473
8% to 9%	2,403	1,585	3,988
9% to 10%	1,835	1,194	3,029
10% to 15%	4,668	2,961	7,629
Over 15%	3,475	1,029	4,504
TOTAL	301,524	110,918	412,442

**Electricity Burden
2 Period
Climate Zone: All**

Electricity Burden	Number of Customers		
	Non-CARE	CARE	TOTAL
0% to 1%	272,525	67,628	340,153
1% to 2%	263,889	73,217	337,106
2% to 3%	111,316	34,149	145,465
3% to 4%	50,685	17,377	68,062
4% to 5%	26,004	10,270	36,274
5% to 6%	14,935	6,610	21,545
6% to 7%	9,476	4,592	14,068
7% to 8%	6,446	3,247	9,693
8% to 9%	4,438	2,309	6,747
9% to 10%	3,272	1,742	5,014
10% to 15%	8,200	3,982	12,182
Over 15%	5,675	1,341	7,016
TOTAL	776,861	226,464	1,003,325

**Electricity Burden
2 Period
Climate Zone: Cool**

Electricity Burden	Number of Customers		
	Non-CARE	CARE	TOTAL
0% to 1%	189,654	41,467	231,121
1% to 2%	157,635	37,122	194,757
2% to 3%	58,216	15,269	73,485
3% to 4%	24,426	7,346	31,772
4% to 5%	12,029	4,165	16,194
5% to 6%	6,830	2,661	9,491
6% to 7%	4,285	1,684	5,969
7% to 8%	2,866	1,158	4,024
8% to 9%	1,918	725	2,643
9% to 10%	1,333	525	1,858
10% to 15%	3,308	1,017	4,325
Over 15%	2,030	312	2,342
TOTAL	464,530	113,451	577,981

**Electricity Burden
2 Period
Climate Zone: Hot**

Electricity Burden	Number of Customers		
	Non-CARE	CARE	TOTAL
0% to 1%	2,764	366	3,130
1% to 2%	2,688	606	3,294
2% to 3%	2,011	450	2,461
3% to 4%	1,152	271	1,423
4% to 5%	718	149	867
5% to 6%	409	82	491
6% to 7%	288	41	329
7% to 8%	173	34	207
8% to 9%	126	20	146
9% to 10%	85	19	104
10% to 15%	243	27	270
Over 15%	150	30	180
TOTAL	10,807	2,095	12,902

**Electricity Burden
2 Period
Climate Zone: Moderate**

Electricity Burden	Number of Customers		
	Non-CARE	CARE	TOTAL
0% to 1%	80,107	25,795	105,902
1% to 2%	103,566	35,489	139,055
2% to 3%	51,089	18,430	69,519
3% to 4%	25,107	9,760	34,867
4% to 5%	13,257	5,956	19,213
5% to 6%	7,696	3,867	11,563
6% to 7%	4,903	2,867	7,770
7% to 8%	3,407	2,055	5,462
8% to 9%	2,394	1,564	3,958
9% to 10%	1,854	1,198	3,052
10% to 15%	4,649	2,938	7,587
Over 15%	3,495	999	4,494
TOTAL	301,524	110,918	412,442