XCEL ENERGY RE-TOU TRIAL

2019 PRESENTATION TO STAKEHOLDERS

NOVEMBER 18, 2019

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IMPACT ANALYSIS FINDINGS

2019 RE-TOU FINDINGS

Participant Data

- **5,713** non-solar RE-TOU participants *and* **2,943** RE-TOU control group customers

- **929** solar RE-TOU participants *and* **641** RE-TOU matched control group customers

Demand Impacts

- **3.2% average Summer reduction** in on-peak demand for non-solar participants without EV
- **3.1% average Winter reduction** in on-peak demand for non-solar participants without EV

- **35% average Summer reduction** in <u>gross</u> on-peak demand for solar participants
- **30% average Winter reduction** in <u>gross</u> on-peak demand for solar participants

Energy Impacts

- **1.2% increase** in Summer average monthly energy consumption for non-solar participants without EV
- **0.3% increase** in Winter average monthly energy consumption for non-solar participants without EV

- **5.7% decrease** in Summer average gross monthly net energy consumption for solar participants
- **13.5% increase** in Winter average gross monthly energy consumption for solar participants
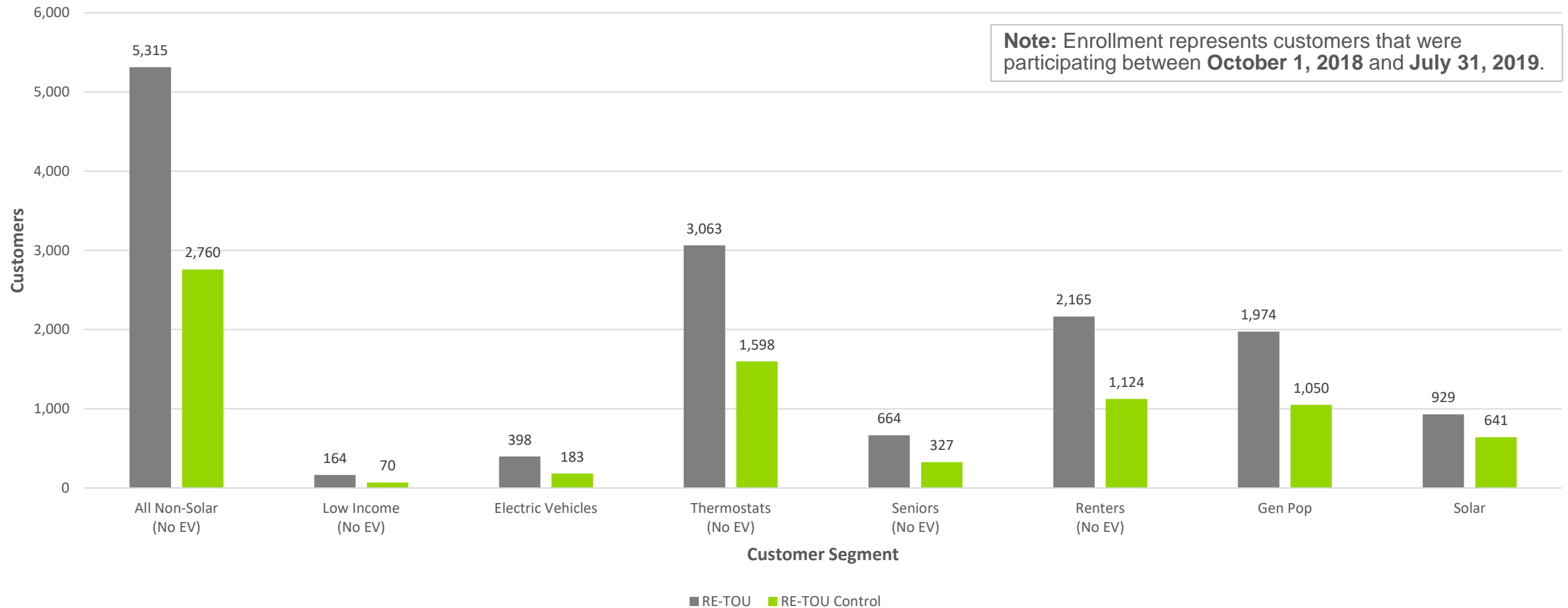
Bill Impacts

- Average non-solar (non-EV) participant's annual bill is increasing 2.2% (or $18.07)

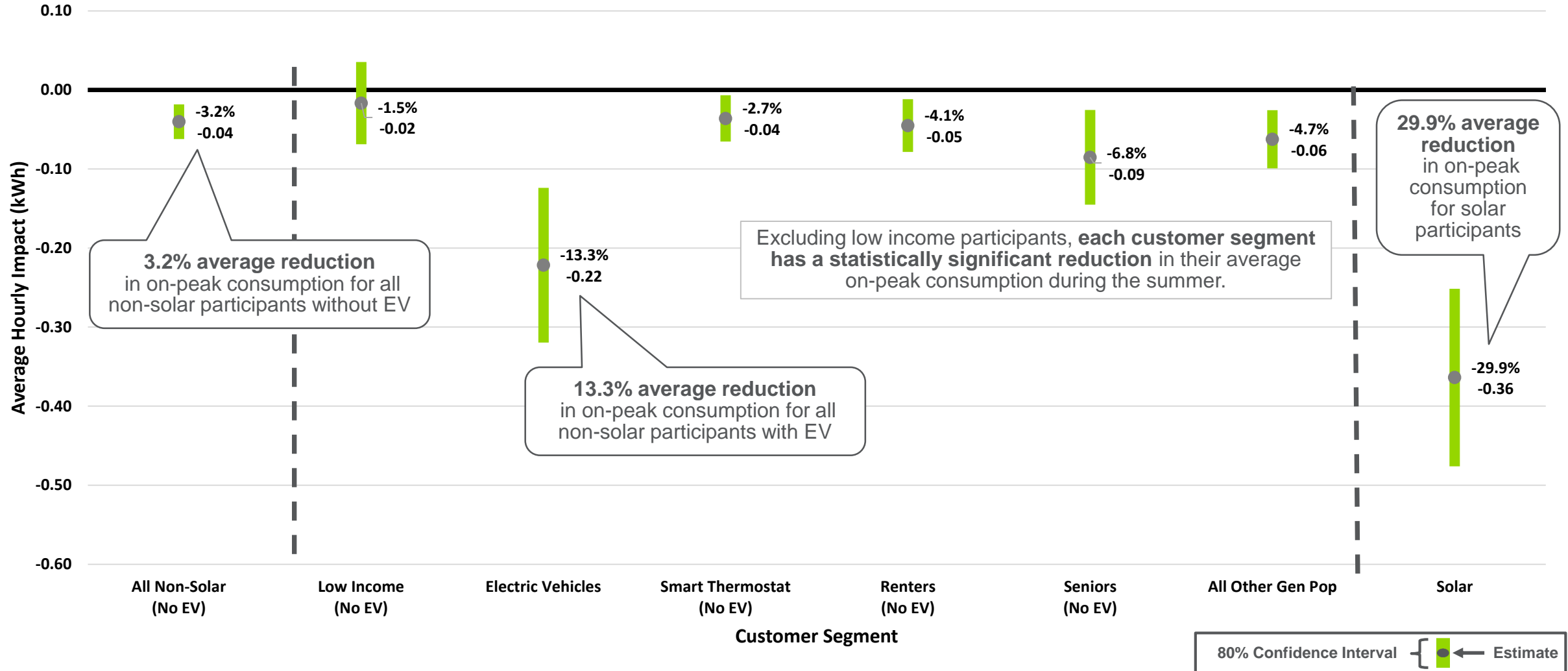- Average solar participant's annual bill is decreasing 13% (or -$129.28)

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RE-TOU SAMPLE SIZE
PARTICIPANTS AND CONTROLS DURING 2018/2019 EVALUATION YEAR
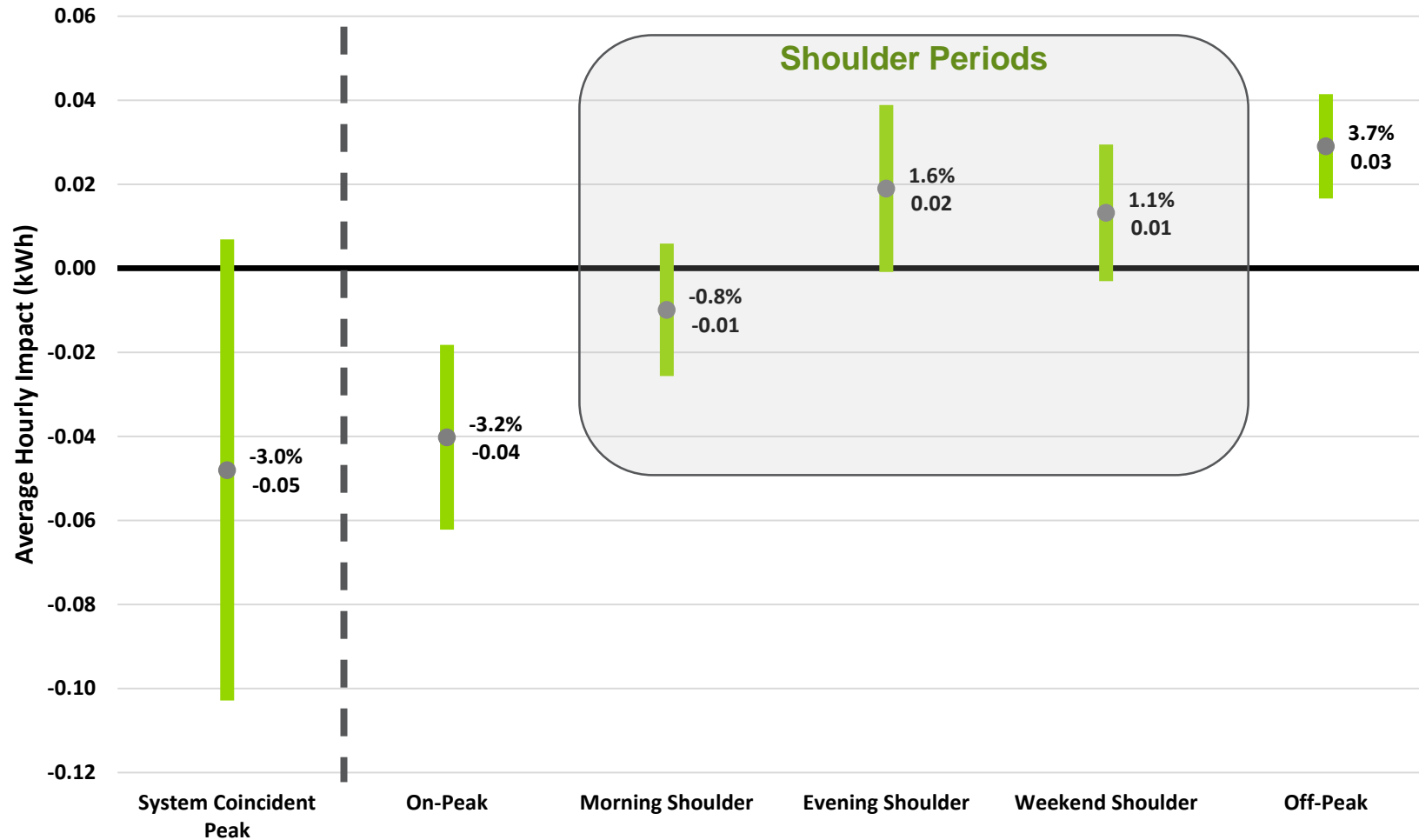
RE-TOU Evaluation Year Participation (Including Overlap)

Note: Enrollment represents customers that were participating between **October 1, 2018** and **July 31, 2019**.

■ RE-TOU   ■ RE-TOU Control

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SUMMER RE-TOU ON-PEAK IMPACTS BY CUSTOMER SEGMENT

All Non-Solar (No EV): -3.2% / -0.04 — **3.2% average reduction** in on-peak consumption for all non-solar participants without EV

Low Income (No EV): -1.5% / -0.02

Electric Vehicles: -13.3% / -0.22 — **13.3% average reduction** in on-peak consumption for all non-solar participants with EV

Smart Thermostat (No EV): -2.7% / -0.04

Renters (No EV): -4.1% / -0.05

Seniors (No EV): -6.8% / -0.09

All Other Gen Pop: -4.7% / -0.06

Solar: -29.9% / -0.36 — **29.9% average reduction** in on-peak consumption for solar participants

Excluding low income participants, **each customer segment has a statistically significant reduction** in their average on-peak consumption during the summer.

80% Confidence Interval — Estimate

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RE-TOU ON-PEAK CONSUMPTION IMPACTS – WINTER

3.1% average reduction in on-peak consumption for all non-solar participants without EV

Excluding low income and renters, **each customer segment has a statistically significant reduction** in their average on-peak consumption during the winter.

19.5% average reduction in on-peak consumption for all non-solar participants with EV

15.1% average reduction in on-peak consumption for solar participants

Average Hourly Impact (kWh)

Segment	Value %	Value
All Non-Solar (No EV)	-3.1%	-0.02
Low Income (No EV)	-3.3%	-0.02
Electric Vehicles	-19.5%	-0.23
Smart Thermostat (No EV)	-3.2%	-0.02
Renters (No EV)	0.0%	0.00
Seniors (No EV)	-5.4%	-0.04
All Other Gen Pop	-5.2%	-0.04
Solar	-15.1%	-0.09

Customer Segment

80% Confidence Interval — Estimate

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RE-TOU ENERGY IMPACTS – ALL NON-SOLAR (NO EV) – SUMMER

- Participants are reducing on-peak consumption

- Shoulder consumption impact estimates are not statistically significant, but indicate a decrease in morning hours and an increase in evening and weekend hours

- Participants are increasing off-peak consumption

- For an average Summer month, this results in a 1.2% (8.3 kWh) increase in consumption

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RE-TOU ENERGY IMPACTS – ALL NON-SOLAR (NO EV) – WINTER
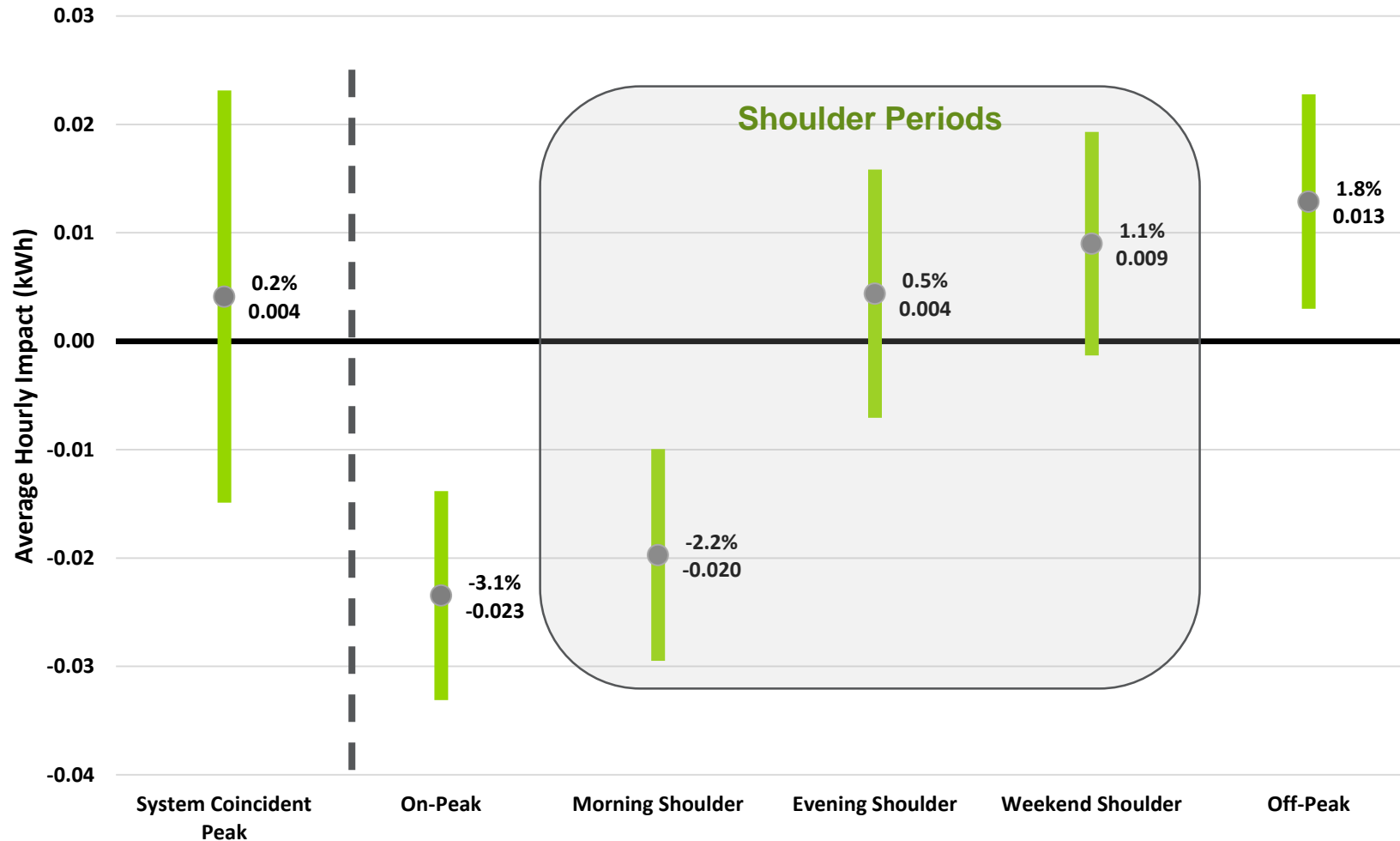
- Participants are reducing on-peak consumption

- Participants are reducing Morning Shoulder consumption and impact estimates indicate an increase in evening and weekend shoulder consumption that is not statistically different than zero

- Participants are increasing off-peak consumption

- For an average Winter month, this results in a 0.3% (1.6 kWh) increase in consumption
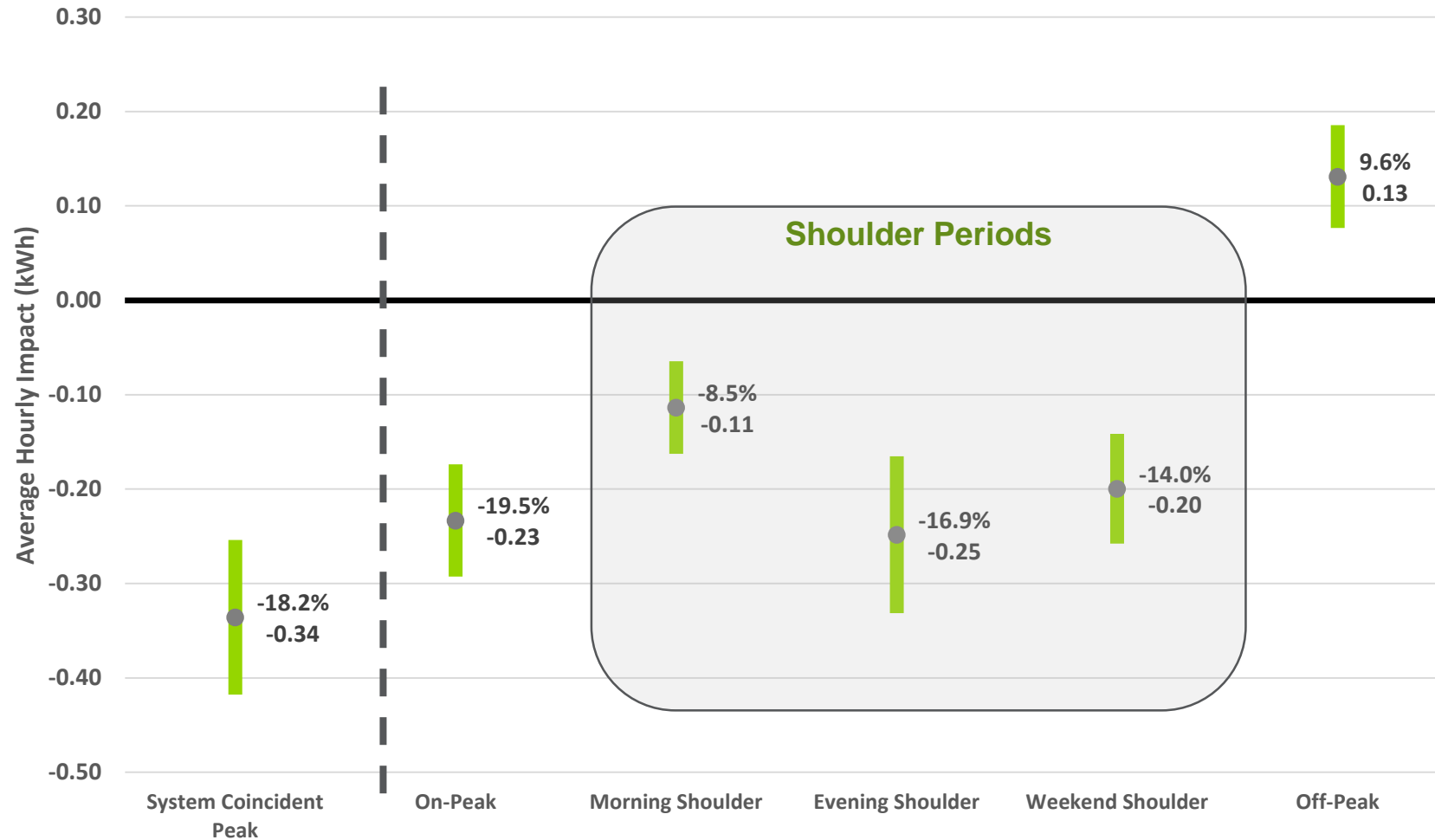
RE-TOU ENERGY IMPACTS – ELECTRIC VEHICLES – SUMMER
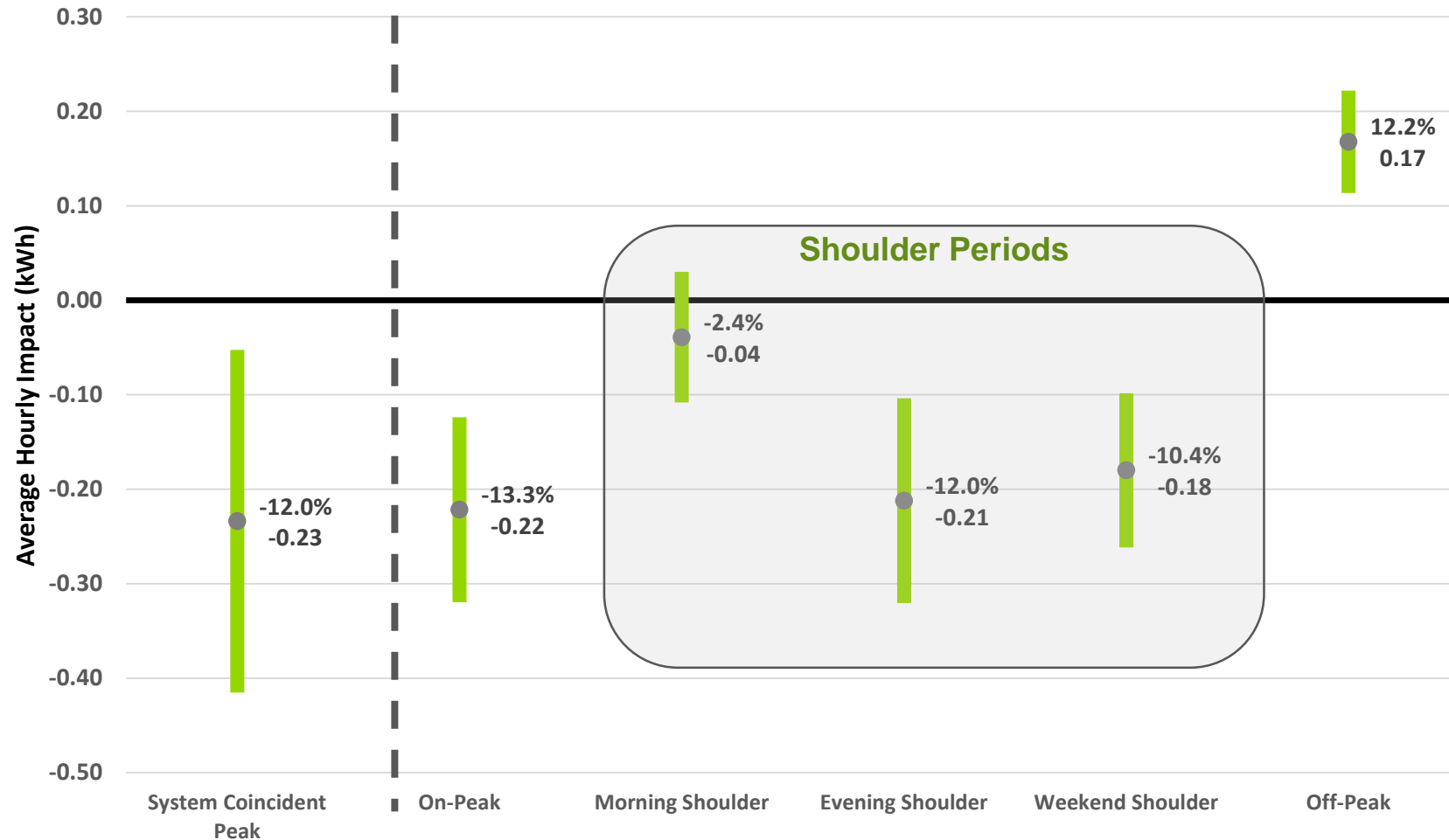
- Participants are reducing on-peak, evening shoulder, and weekend shoulder consumption

- Impact estimates indicate an decrease in morning shoulder consumption that is not statistically different than zero

- Participants are increasing off-peak consumption

- For an average Summer month, this results in a 0.5% (5.3 kWh) increase in consumption
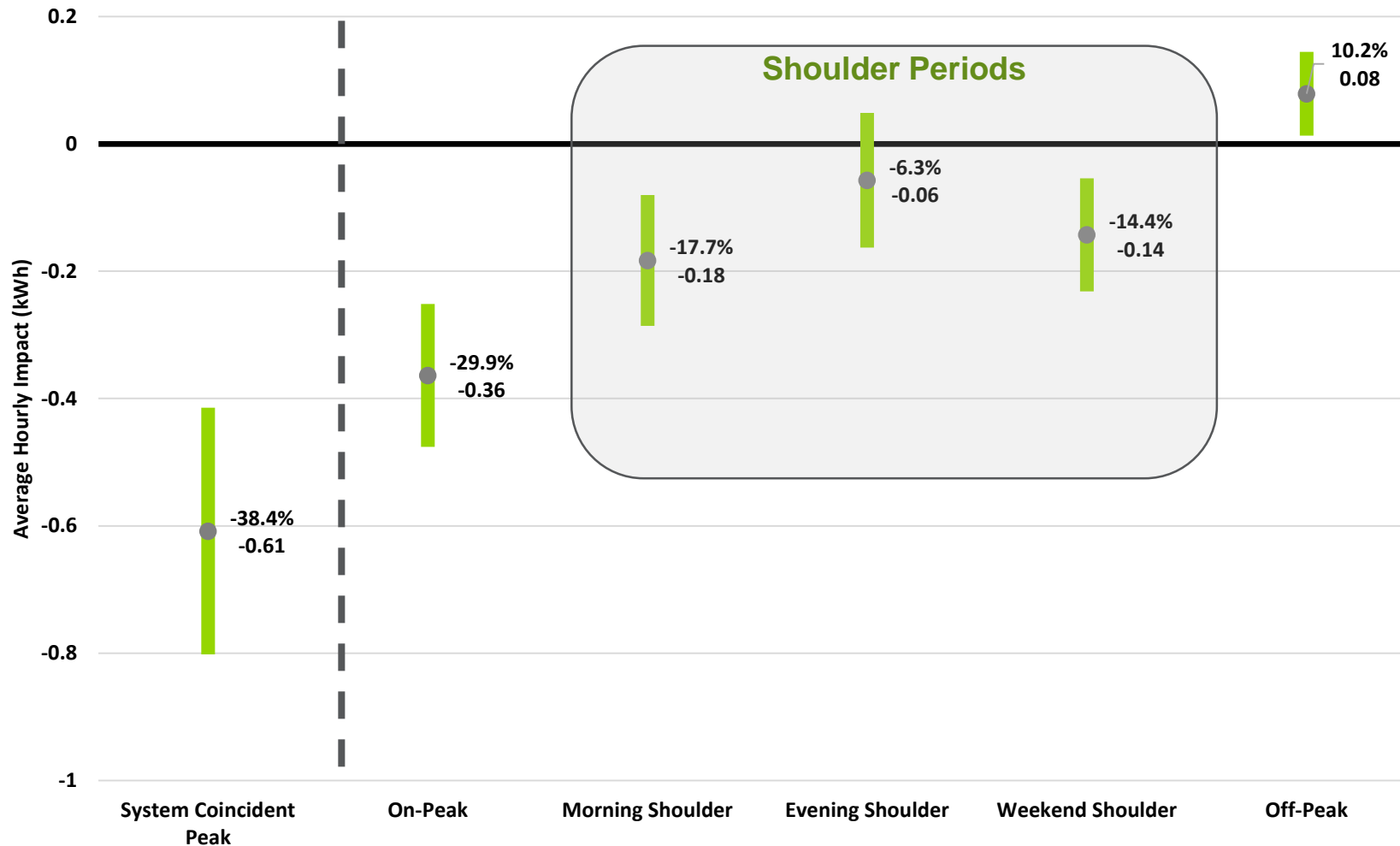
RE-TOU ENERGY IMPACTS – ELECTRIC VEHICLES – WINTER

- Participants are reducing consumption during on-peak and shoulder periods

- Participants are increasing off-peak consumption

- For an average Winter month, this results in a 2.2% (21.4 kWh) decrease in consumption

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RE-TOU ENERGY IMPACTS – SOLAR – SUMMER

- Participants are reducing gross consumption during on-peak, morning shoulder, and weekend shoulder hours

- Impact estimates indicate an decrease in evening shoulder consumption that is not statistically different than zero

- Participants are increasing off-peak consumption

- For an average Summer month, this results in a 5.7% (41.3 kWh) decrease in gross consumption
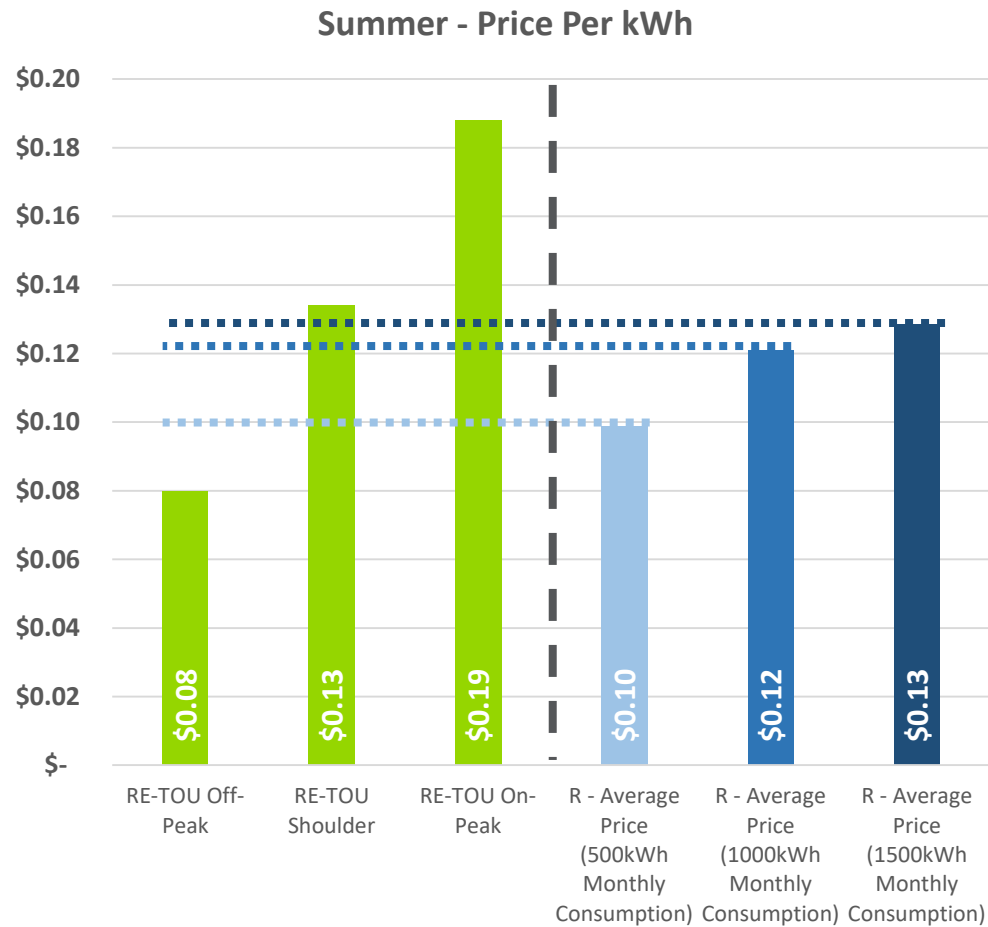
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RE-TOU ENERGY IMPACTS – SOLAR – WINTER
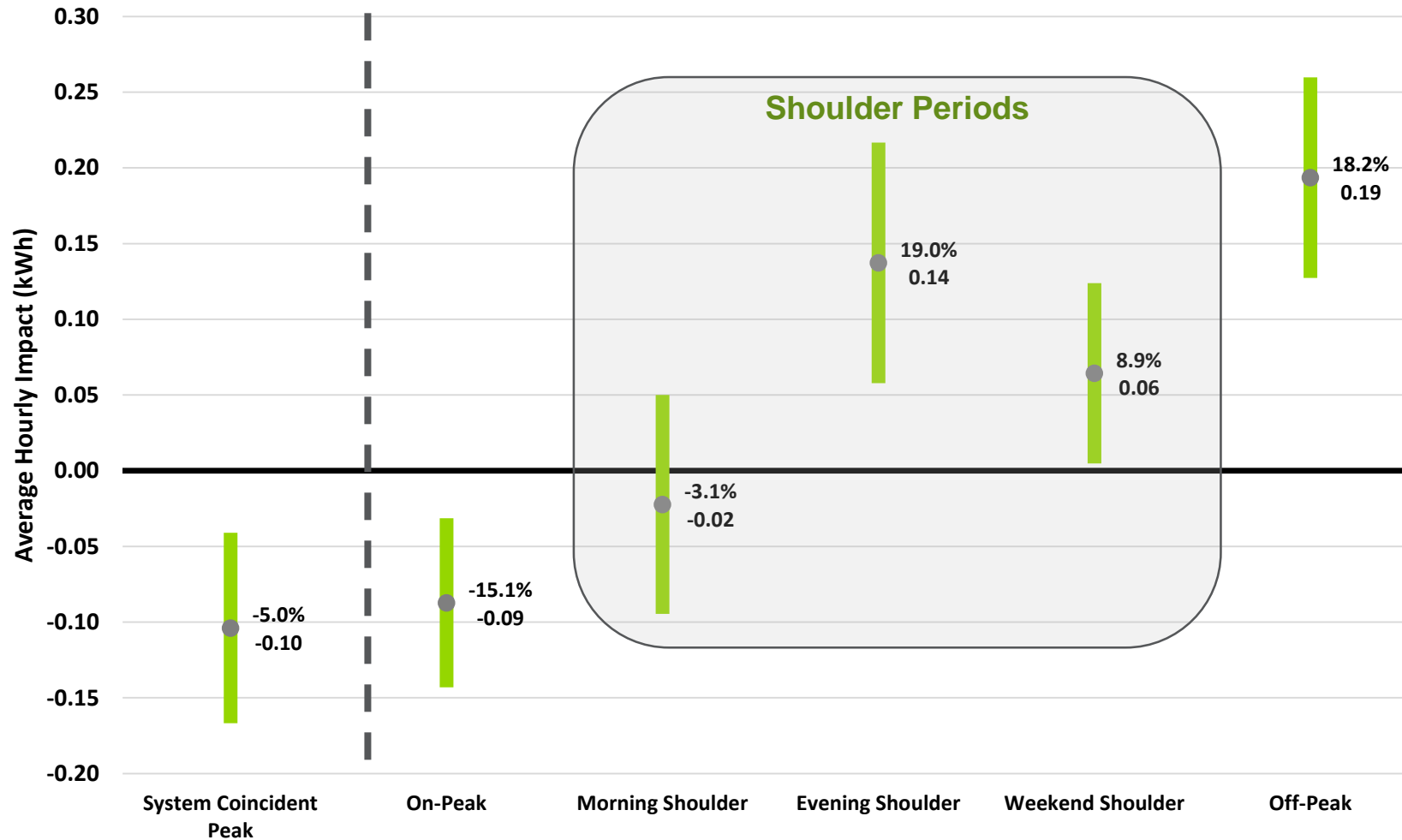
- Participants are reducing on-peak consumption

- Participants are reducing Morning Shoulder consumption and impact estimates indicate an increase in evening and weekend shoulder consumption that is not statistically different than zero

- Participants are increasing off-peak consumption

- For an average Winter month, this results in a 13.5% (74.8 kWh) increase in gross consumption

RE-TOU BILL IMPACTS – TRANSITION FROM R

Summer - Price Per kWh

Bar chart values:
- RE-TOU Off-Peak: $0.08
- RE-TOU Shoulder: $0.13
- RE-TOU On-Peak: $0.19
- R - Average Price (500kWh Monthly Consumption): $0.10
- R - Average Price (1000kWh Monthly Consumption): $0.12
- R - Average Price (1500kWh Monthly Consumption): $0.13

Winter - Price Per kWh

Bar chart values:
- RE-TOU Off-Peak: $0.08
- RE-TOU Shoulder: $0.10
- RE-TOU On-Peak: $0.14
- R - Average Price (All Consumption): $0.10

- Participants are transitioning from an R rate with an **inclining block design**

- During the Summer, consumption up to 500 kWh on the R rate is billed at a lower price ($0.10/kWh) than consumption over 500 kWh ($0.14/kWh). This results in a **higher average price per kWh for higher consumption customers on R**.

- High consumption customers are transitioning onto TOU with a higher average price than lower consumption customers – which results in a **greater initial propensity to save money on RE-TOU**

- During the Winter, all consumption is billed at the same price on R and all customers have the same initial propensity to save money.

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# RE-TOU BILL IMPACTS – LIMITATIONS

- Bill impacts are based on the average <u>consumption</u> of participants in the trial and are not the average of individual participant bill impacts. This is due to the behavioral impact estimates being an average across all participants and those impacts do not reflect the exact behavior of any individual participant.

- Bill impacts should not be broadly interpreted as a measure of revenue neutrality since they are calculated with the average consumption of participants and do not represent the cumulative distribution of bill impacts across all participants.

- RE-TOU rate design was based on load research data that differs from the consumption level and load profile of customers that self-selected to participate in the trial. Any potential deviations in revenue neutrality can be attributed to the following differences:

|	Xcel Baseline Rate Design Assumptions	Trial Participants	Difference
Annual Avg Monthly Consumption	629.0 kWh	609.9 kWh	-19.0 kWh
Annual Consumption Allocation - Summer	718.5 kWh	707.5 kWh	-11.0 kWh
Annual Consumption Allocation - Winter	584.2 kWh	561.2 kWh	-23.1 kWh
Summer Energy Consumption Allocation by Rate Period			
On-Peak	15.6%	15.5%	-0.05%
Shoulder	44.9%	47.2%	2.3%
Off-Peak	39.5%	37.2%	-2.3%
Winter Energy Consumption Allocation by Rate Period			
On-Peak	11.8%	11.7%	-0.2%
Shoulder	41.9%	44.0%	2.1%
Off-Peak	46.3%	44.3%	-2.0%

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RE-TOU BILL IMPACTS – NON-SOLAR WITHOUT EV

Bill impacts are a function of the changes in rate structure and customer behavior. The net of these effects is the total bill impact.

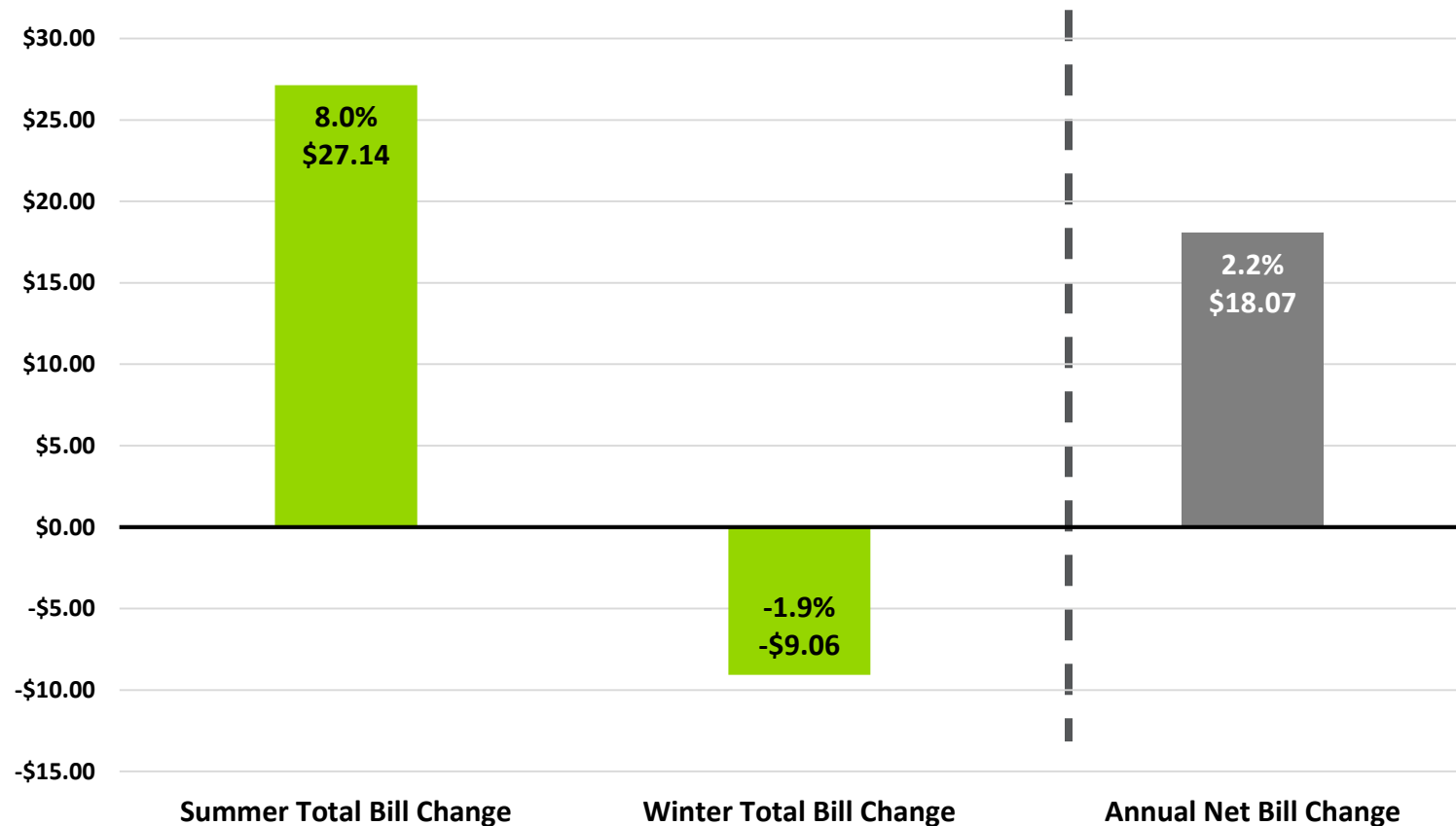Summer RE-TOU Bill Impacts: All Non-Solar Non-EV

Winter RE-TOU Bill Impacts: All Non-Solar (No EV)

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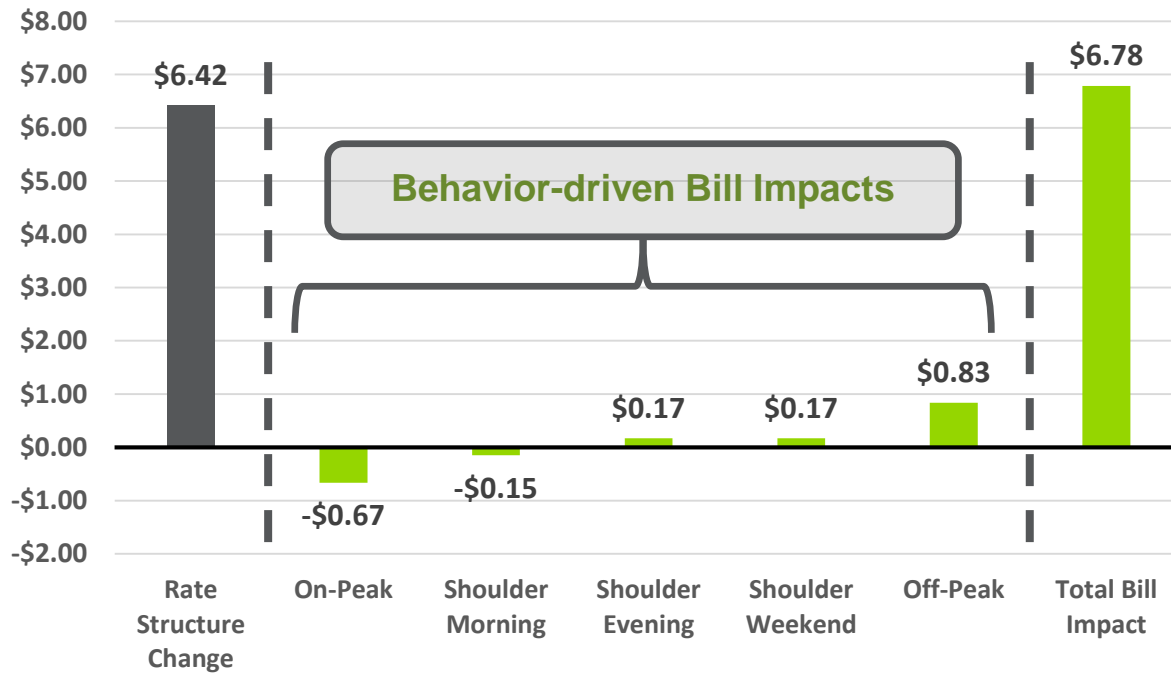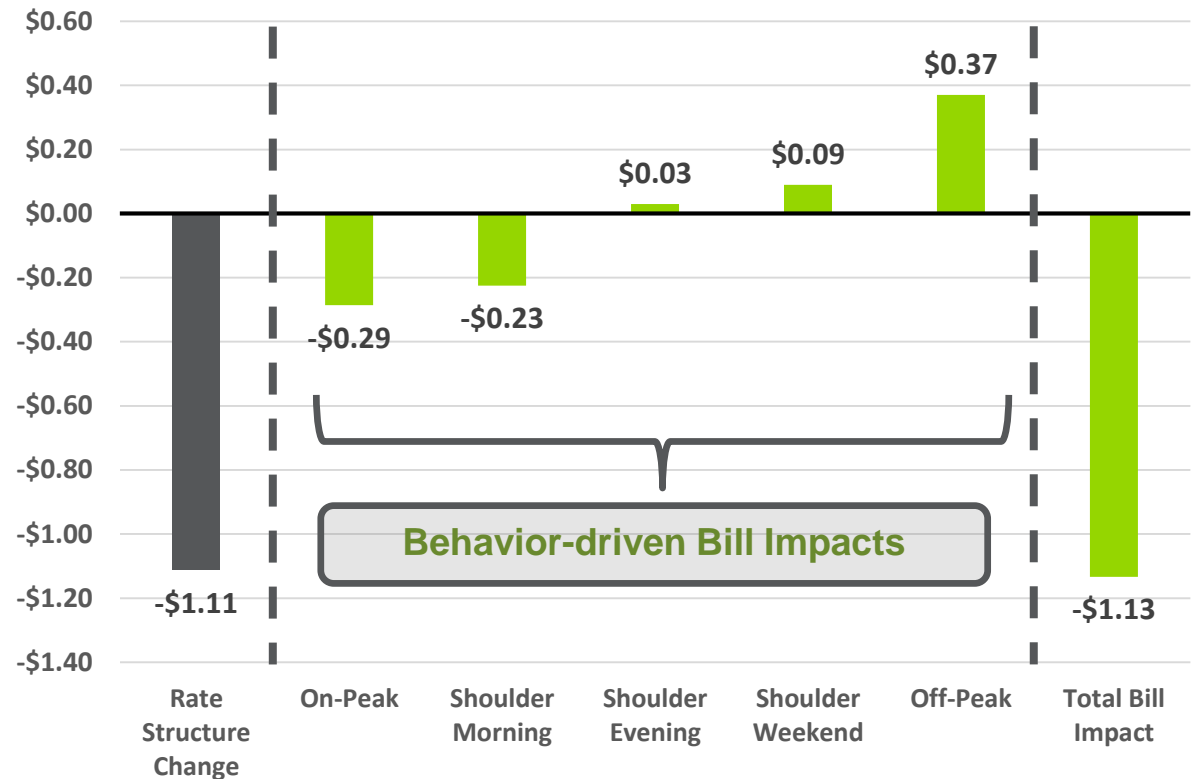
RE-TOU BILL IMPACTS – NON-SOLAR WITHOUT EV

Annualized bill impacts for customers with the average monthly summer (**716 kWh**) and monthly Winter (**563 kWh**) consumption is a 2.2% ($18.07) increase.
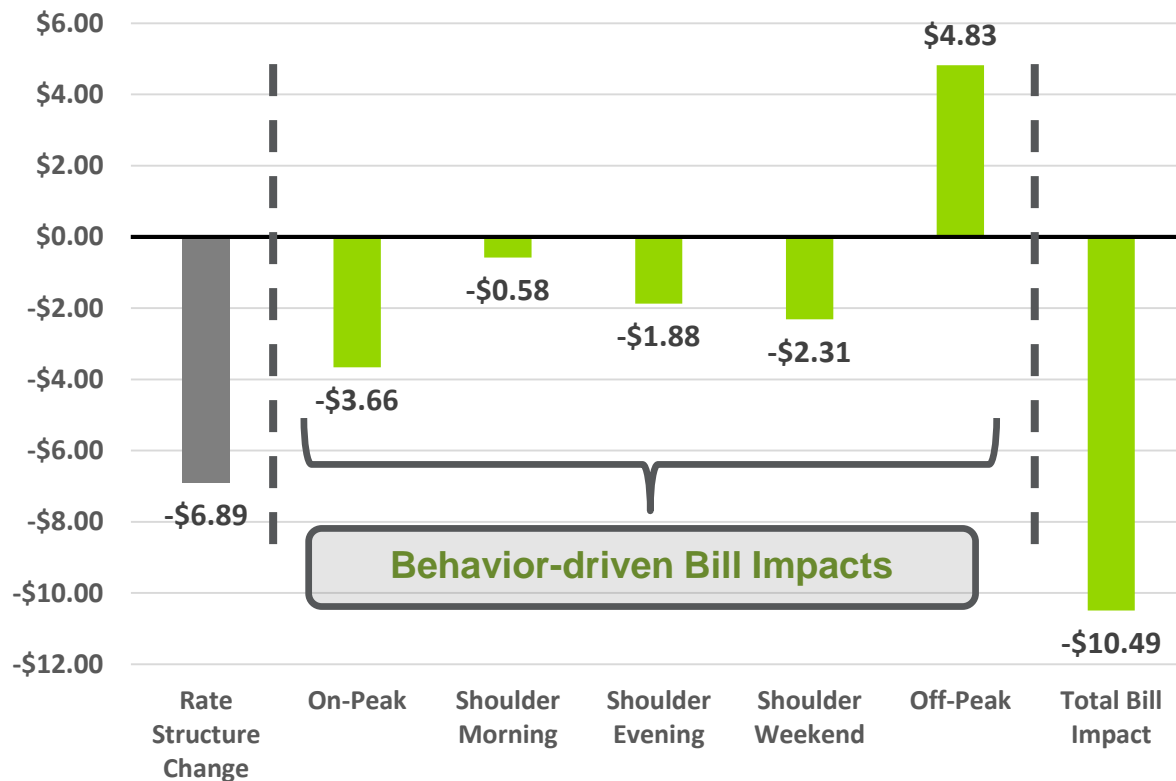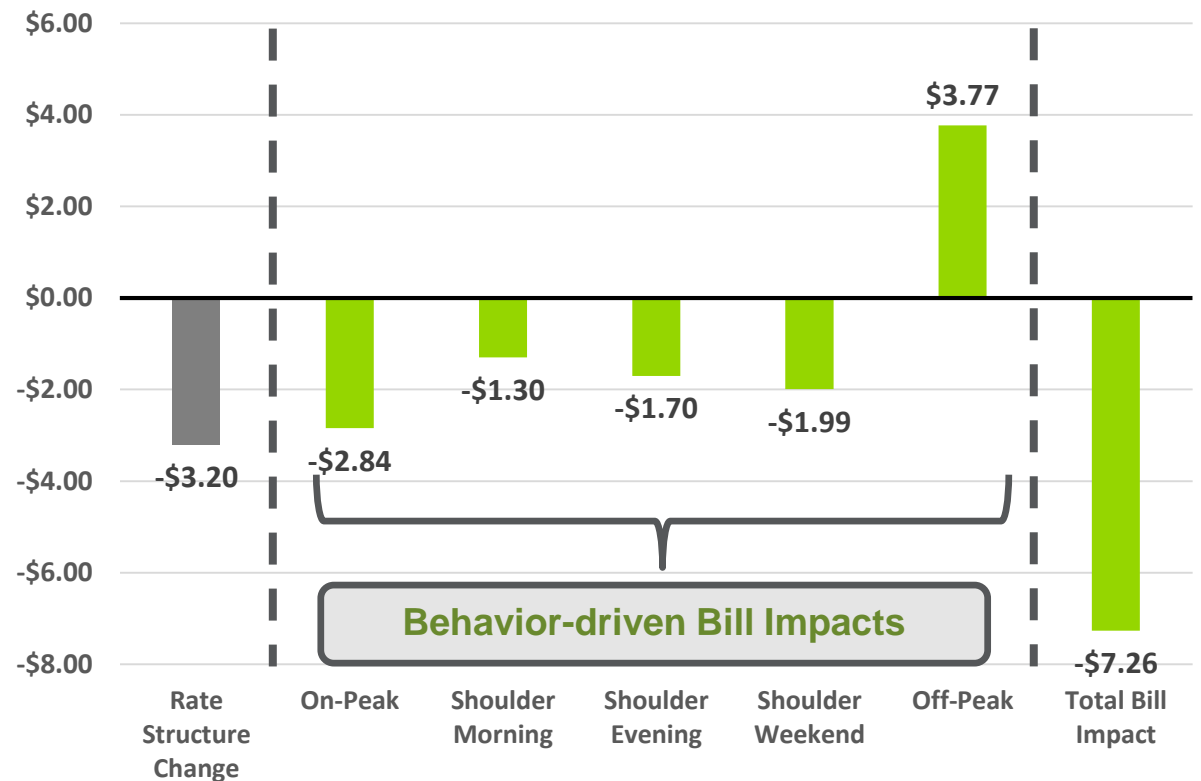
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RE-TOU BILL IMPACTS – ELECTRIC VEHICLES

Bill impacts are a function of the changes in rate structure and customer behavior. The net of these effects is the total bill impact.

Summer RE-TOU Bill Impacts: Electric Vehicles

Winter RE-TOU Bill Impacts: Electric Vehicles

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RE-TOU BILL IMPACTS – ELECTRIC VEHICLES

Annualized bill impacts for customers with the average monthly summer (**1101 kWh**) and monthly Winter (**975 kWh**) consumption is a 7.3% ($100.09) decrease.

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RE-TOU BILL IMPACTS – SOLAR

Bill impacts are a function of the changes in rate structure and customer behavior. The net of these effects is the total bill impact.
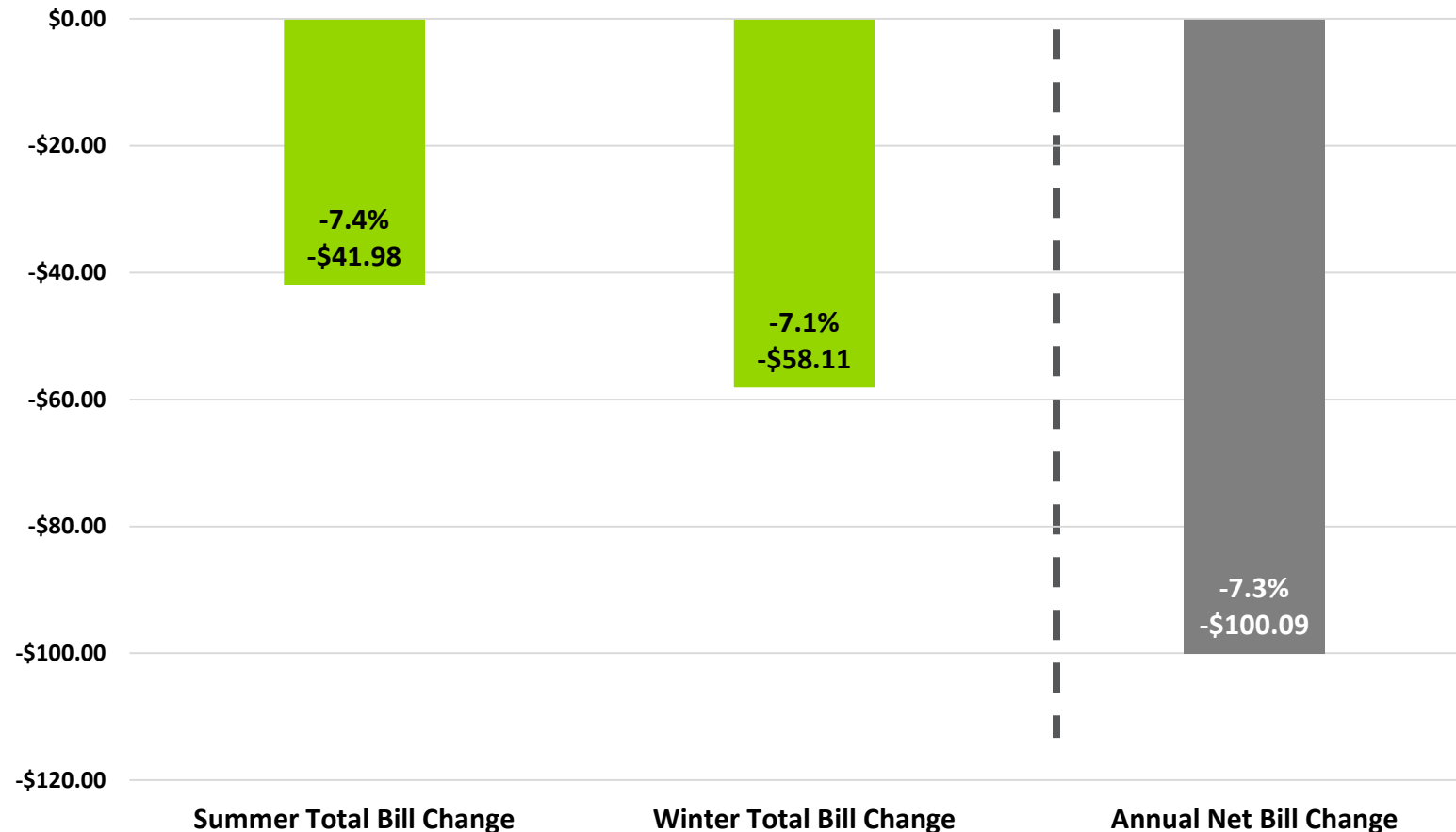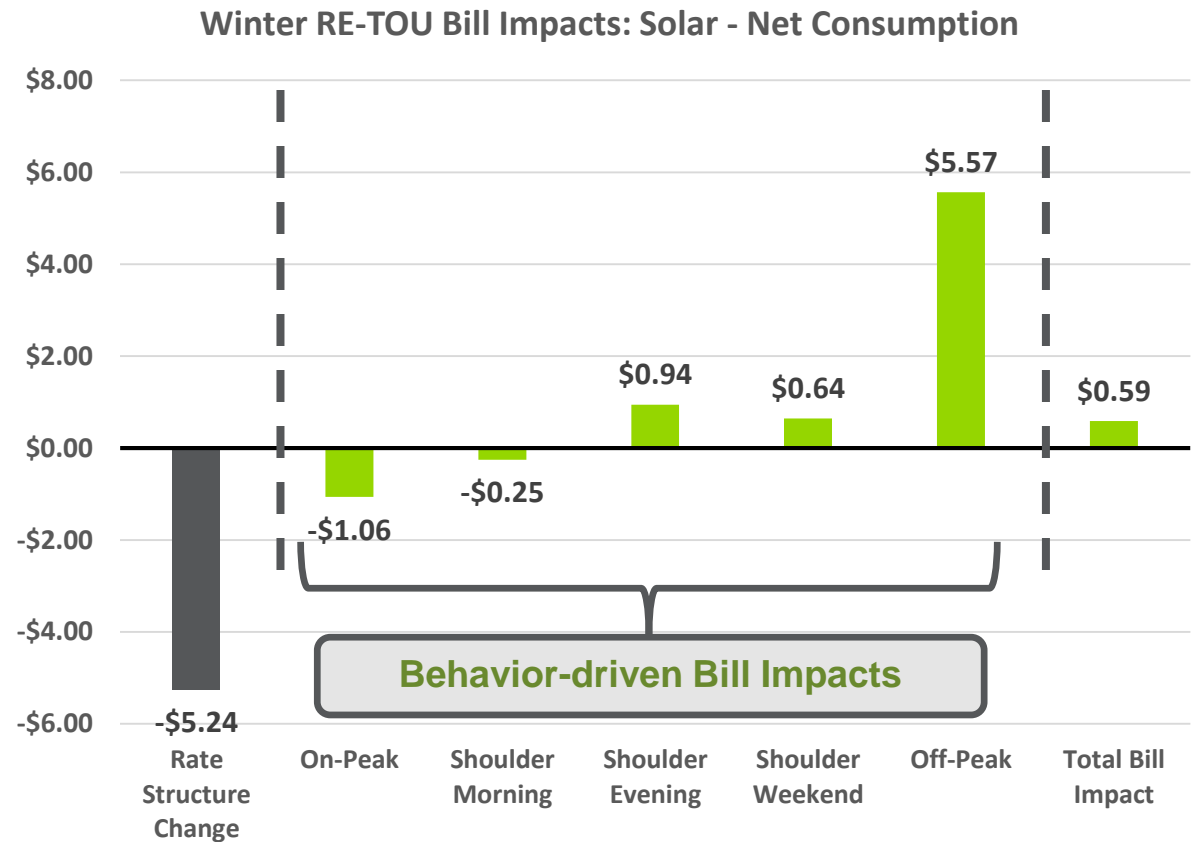

Summer RE-TOU Bill Impacts: Solar - Net Consumption
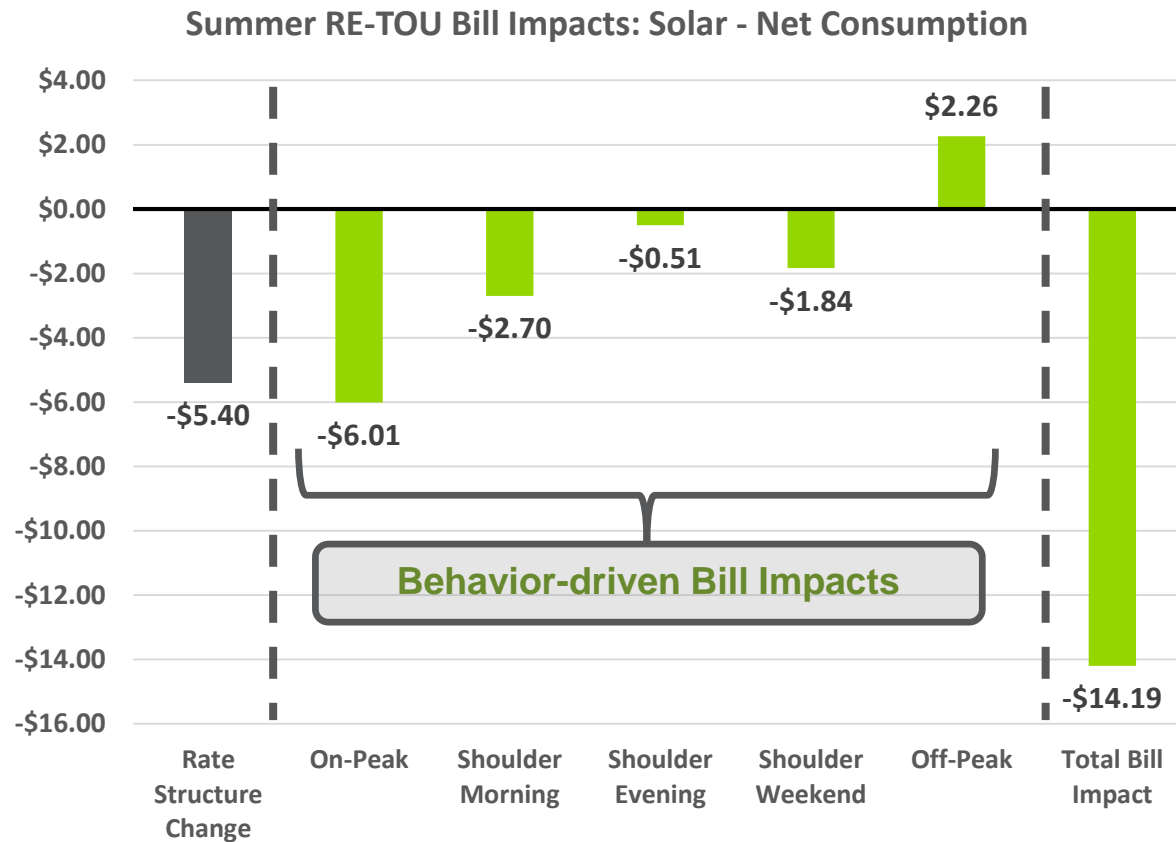
Winter RE-TOU Bill Impacts: Solar - Net Consumption

RE-TOU BILL IMPACTS – SOLAR

Annualized bill impacts for customers with the average net monthly summer (**261 kWh Net**) and net monthly Winter (**293 kWh Net**) consumption is a $52.09 decrease or -13.0%.
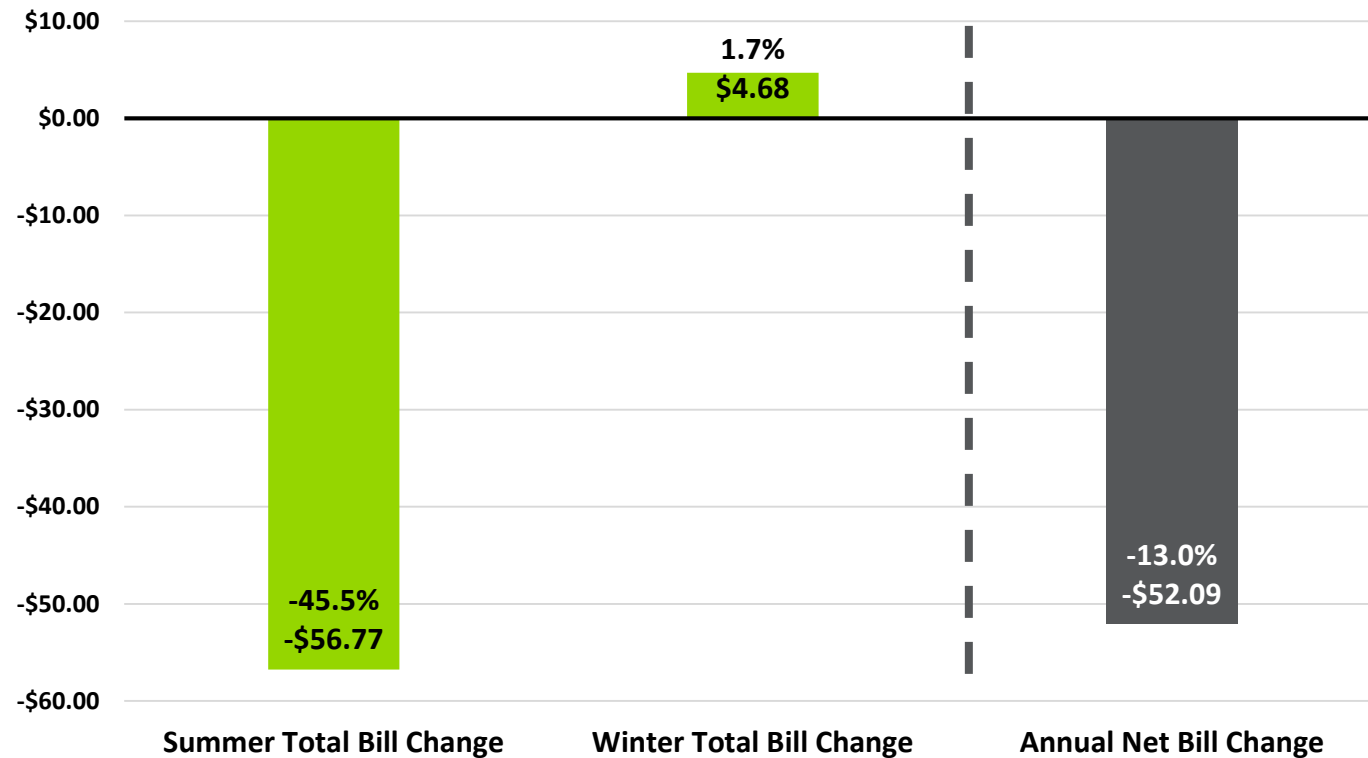

*Net consumption is the customers' consumption net of solar production that is supplied by Xcel Energy

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ENROLLMENT AND ATTRITION

RE-TOU MONTHLY ENROLLMENT AND ATTRITION ANALYSIS

Monthly RE-TOU Participant Enrollment and Attrition
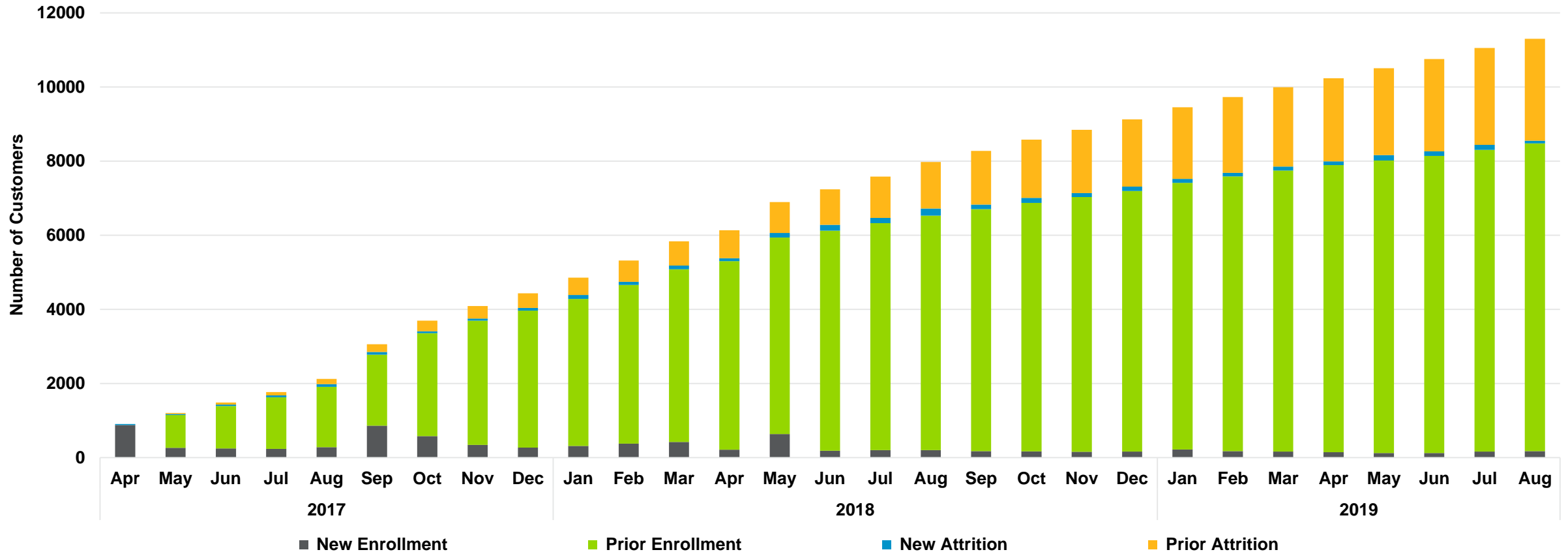
Includes participants and control group customers.

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RE-TOU OPT-OUT ANALYSIS
CUSTOMER OPT-OUT PRIMARILY WEIGHTED TOWARDS LOW CONSUMPTION CUSTOMERS
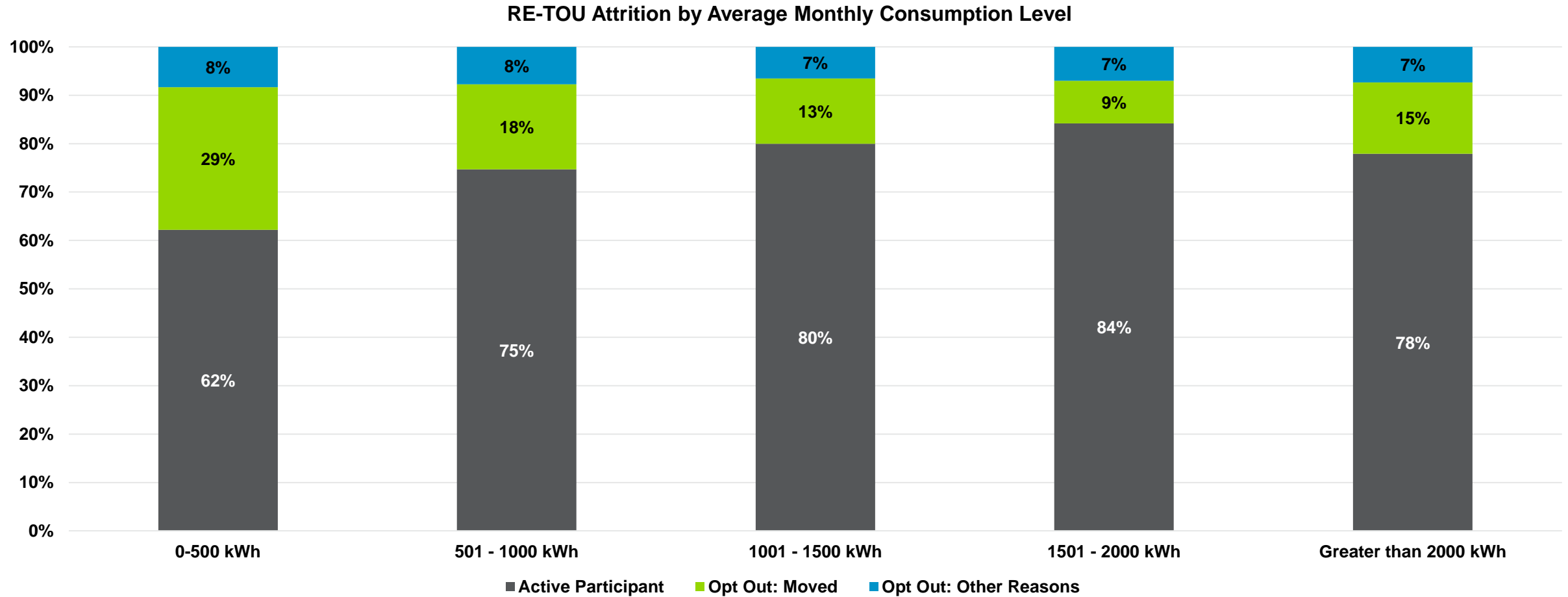
RE-TOU Attrition by Average Monthly Consumption Level

Legend: ■ Active Participant ■ Opt Out: Moved ■ Opt Out: Other Reasons

Includes customers at any point during the trial. (April 2017 through July 2019)

23 /

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RE-TOU MONTHLY ENROLLMENT AND ATTRITION ANALYSIS

RE-TOU Attrition by Customer Age

Includes customers at any point during the trial. (April 2017 through July 2019)

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RE-TOU MONTHLY ENROLLMENT AND ATTRITION ANALYSIS

RE-TOU Attrition by Household Income
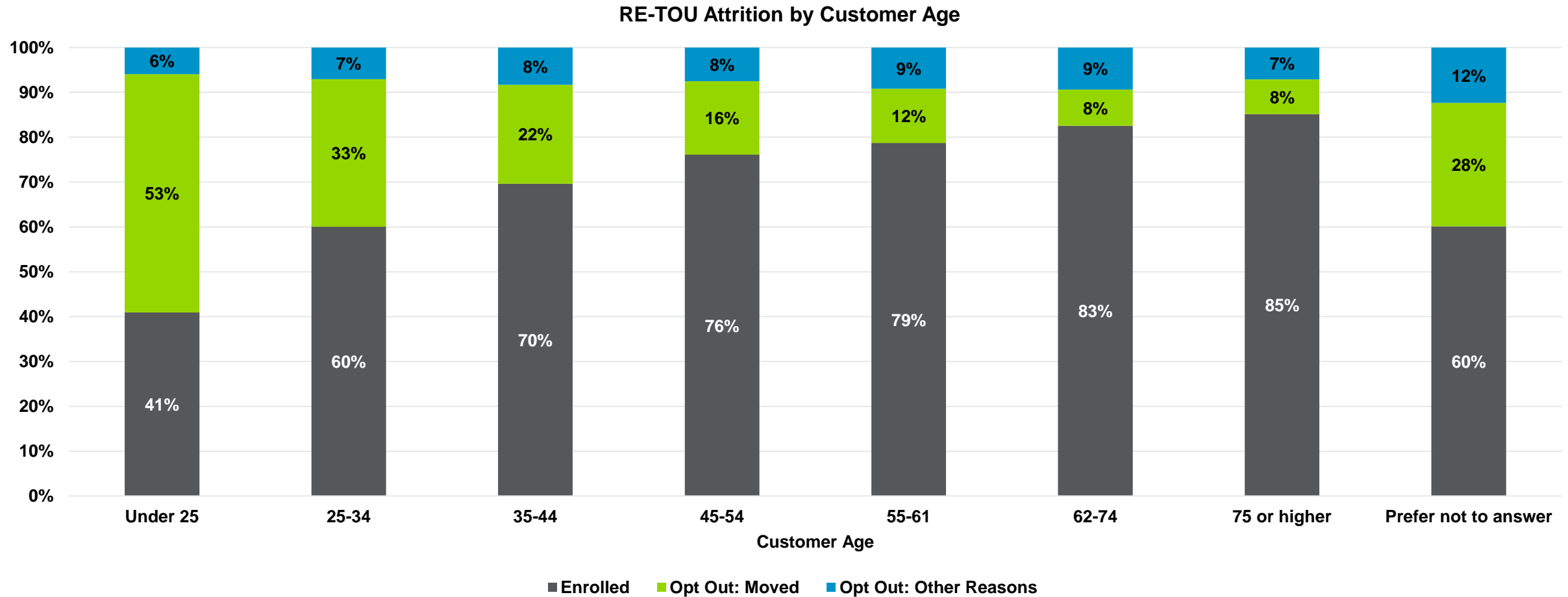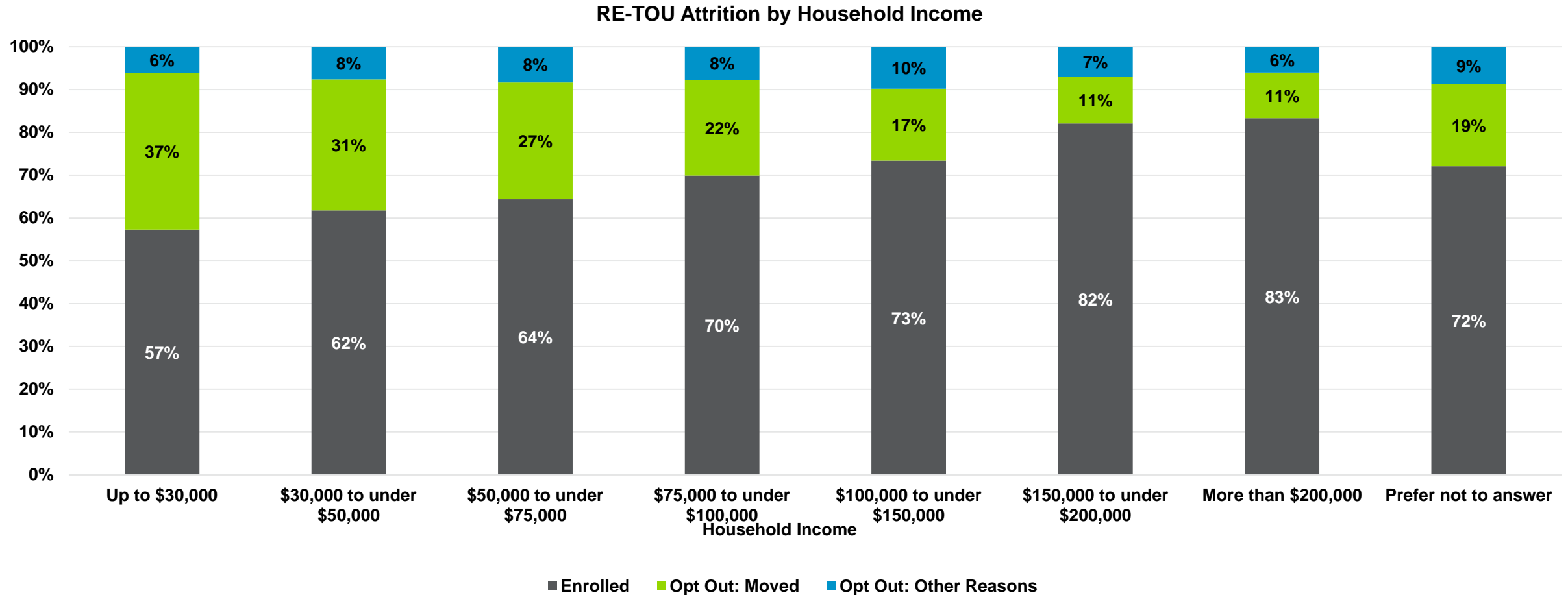
Includes customers at any point during the trial. (April 2017 through July 2019)

CUSTOMER RESEARCH

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TOU TRIAL SURVEYS

Wave 1

Immediately Following Enrollment

7 Rounds
June 2017 – June 2018

Wave 2

After Customer's First Cooling Season

2 Rounds
Dec 2017 & Oct 2018

Wave 3

End of Trial

1 Round
August 2019

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KEY THEMES AND TAKEAWAYS - TOU

Most customers are feeling comfortable / satisfied with the rate plan.

- Most customers (86%) report at least a basic understanding of the bill.
- Most customers report that the rate plan has helped them gain more control over their bill (74%), conserve energy (70%) and save money (68%).
- More customers have smart & programmable thermostats, PEVs, and solar.
  - ➢ A consistently large (84%) proportion of customers are likely to recommend the rate plan to friends and family.

Customer engagement is high but high-impact behaviors aren't prioritized.

- Most customers are taking action to reduce peak energy use (93%).
- Only a small percentage appear to be shifting AC use or making notable changes to thermostat settings.

Opportunity → Enhanced understanding of customer barriers to shifting AC use practices during peak.
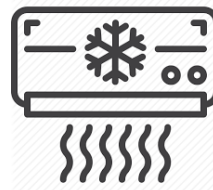
Customers value frequent and diverse communications.

- One-quarter of customers would like more frequent communications.
- Information provided via email and MyAccount is most popular but stickers (prompts) and website are highly valued by some customers.

Opportunity → More targeted and tailored communications approaches may enhance customer engagement and possibly reduce peak period consumption.

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WAVE 3 SUMMARY FINDINGS - TOU

Satisfaction & Perceptions

Satisfaction is high. 84% of customers are likely to recommend the TOU rate to family/friends and 65% indicated a high likelihood to recommend. **Perceptions are positive**. Most customers report bills are in line with or lower than expected (68%) and that they have more control over their bill (74%).

Information & Communications

Electronic communications favored by most but no one-size-fits-all approach. Customers are most likely to use information resources provided MyAccount (84%) and via email (81%) and least likely to find the Call Center a helpful source of information (57%). Stickers & website highly valued by subset of customers.

Customer Knowledge

Customer knowledge appears to increase with experience. A large majority of customers (86%) report at least a basic understanding of the bill while the proportion of customers with a "fairly complete" or "complete" understanding has increased from 34% in Wave 1 to 49% in Wave 3.

Engagement & Behaviors

Customers' behavioral responses leave opportunities for enhanced savings. Most customers are shifting appliance use (93%), some are turning off their AC during peak (26%) or changing thermostat settings (12%); however the difference in average reported temperature during peak and shoulder is <1 degree.

Thermostats & PEVs

Customers increasingly embracing technologies. End of trial findings show a larger proportion of customers have a smart or programmable thermostat (70%), a plug-in electric vehicle (16%), or solar panels (20%) as compared to the post-enrollment period.

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WAVE 3: CUSTOMER SATISFACTION, PERCEPTIONS, AND EXPECTATIONS

- 84% of respondents indicate they would recommend the plan to friends and family.
- Most respondents say their bills have been the same or lower than they expected.

Likelihood of recommending the plan to friends and family? (n=1894)

- Very likely
- Somewhat likely
- Unlikely
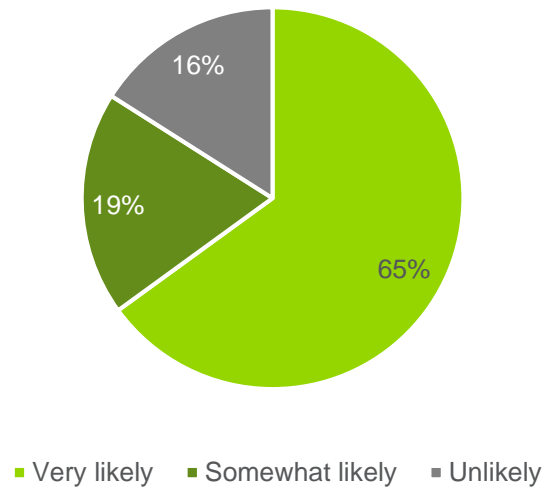
Q9 On a scale of 0 to 10, where 10 is "extremely likely" and 0 is "not at all likely", how likely are you to recommend the TOU pricing plan to friends or family?

Bill expectations since enrolling in pricing plan (n=1889)

Higher	17%
Same	44%
Lower	24%
No expectation	7%
Don't know	8%
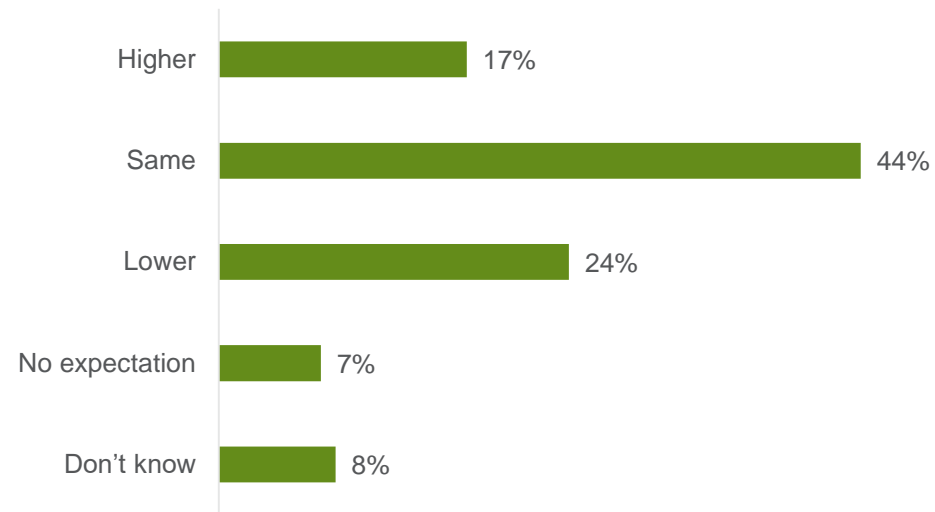
Q7 To what degree has your experience with the TOU pricing plan been what you expected?

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WAVE 3: CUSTOMER SATISFACTION, PERCEPTIONS, AND EXPECTATIONS

- Most respondents believe that the plan has given them more control, and helped conserve energy and save money on their bill.

Perceived Benefits of the Pricing Plan (n=1894)
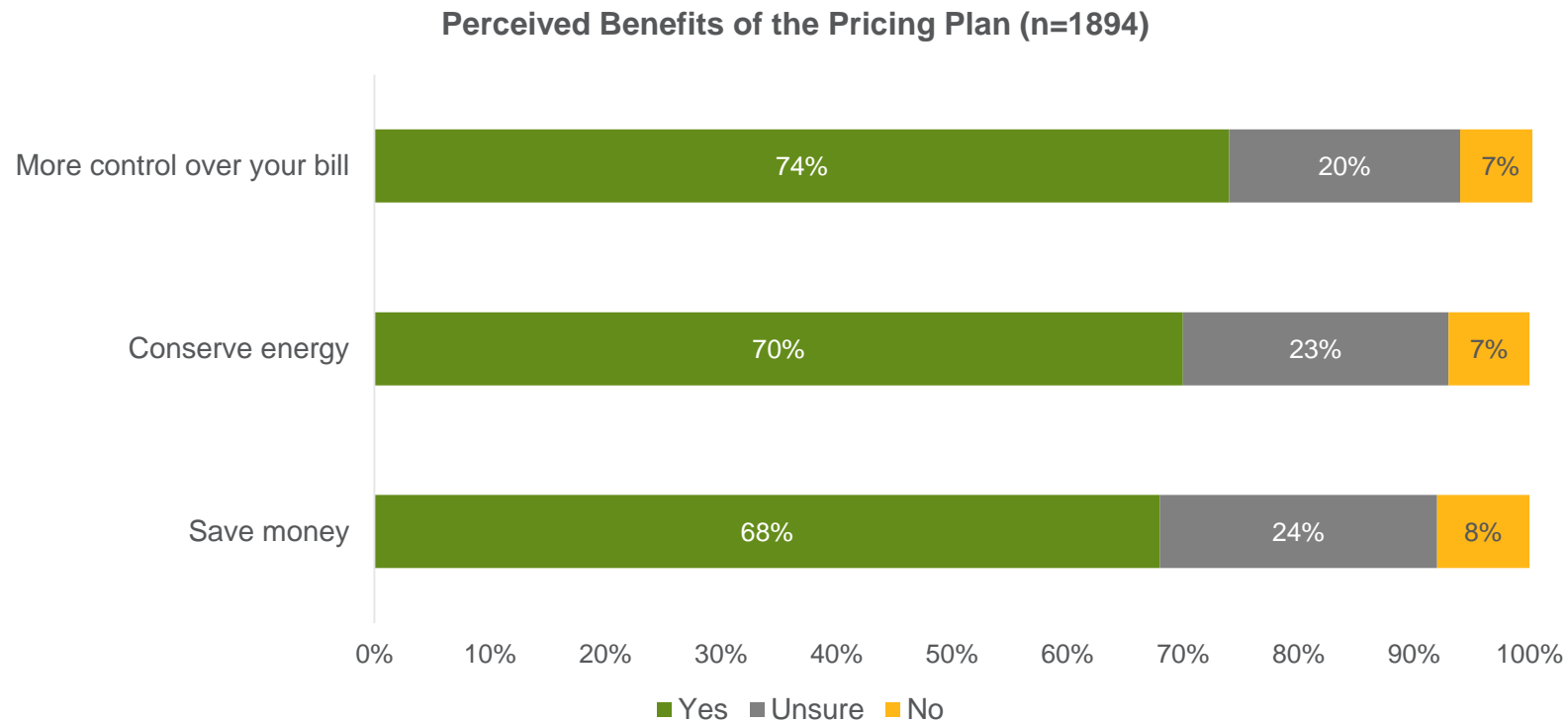
Q10b Has your participation in the TOU pricing plan helped you achieve more control over your electricity bill?
Q10c Has your participation in the TOU pricing plan helped you conserve energy?
Q10d Has your participation on the TOU pricing plan helped you save money on your electricity bill?

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WAVE 3: CUSTOMER ENGAGEMENT AND BEHAVIOR

Appliance Use

- Customers report a large reduction in appliance use during peak, especially kitchen appliances and dryers.

- One-third of customers with AC avoid using AC during peak.

- EV charging shifted notably with 90% of participants rarely charging during peak

Participants Who Report Rarely or Never Using Appliances During Peak Times

Appliance	After Enrollment	Before Enrollment
EV charger (n=530)	90%	61%
Dishwasher (n=1820)	80%	40%
Hot tub (n=315)	76%	65%
Electric Dryer (n=1726)	72%	27%
Electric oven (n=1620)	68%	42%
Electric range (n=1437)	55%	31%
AC (n=1557)	33%	21%
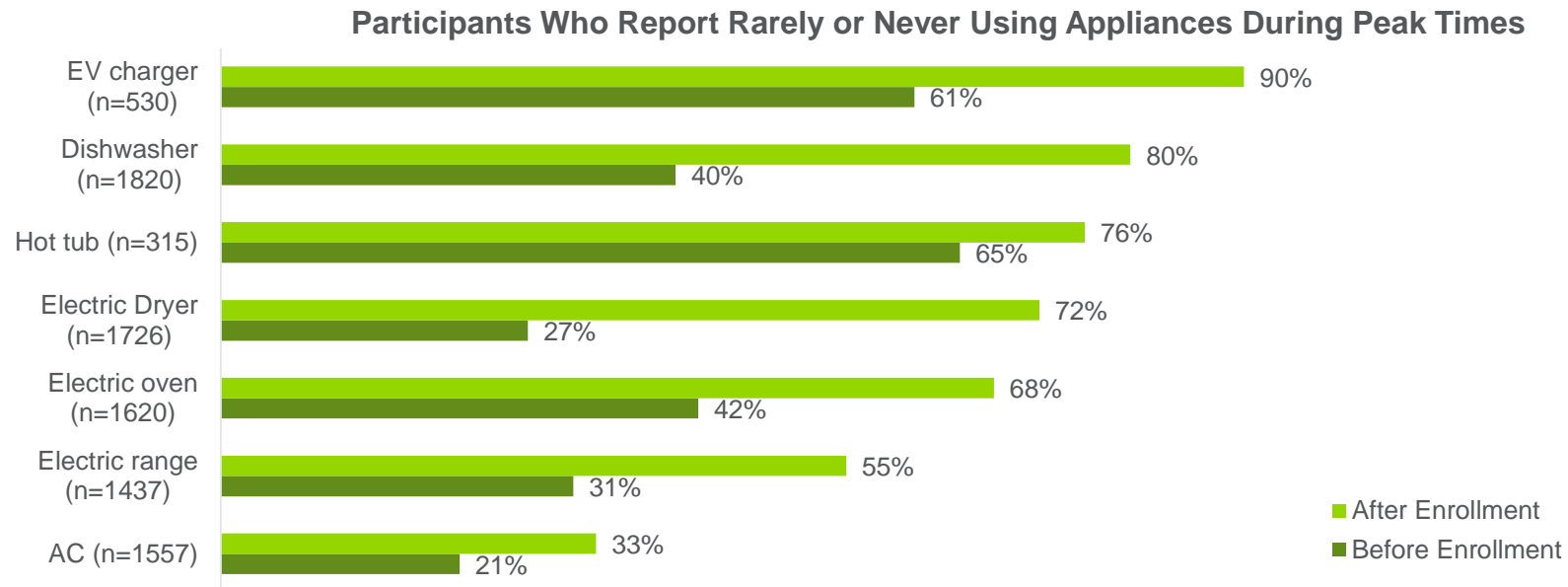
Q12 & Q14 **Before/After** signing up for the TOU pricing plan, how frequently did you run the following appliances during the hours of 2pm to 6pm during the summer months (June – Sept)?

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WAVE 3: CUSTOMER ENGAGEMENT AND BEHAVIOR

Air Conditioning Use Strategies

• Wave 3 results show that customer use of AC varies across households:

  • Setting a constant temperature (41%)

  • Using multiple temperatures (35%)

  • Only using AC when it is really hot outside (27%)

  • Turning off at night (29%)

AC Usage Strategies (n=1389)

Strategy	Percentage
Multiple settings or turned off part of the day	35%
Consistent Temp <78	30%
Consistent Temp 78+	11%
Turned off at night	29%
Only used when hot outside	27%
Turned up between 2 and 6 pm	6%

Consistent Temp Total: 41%
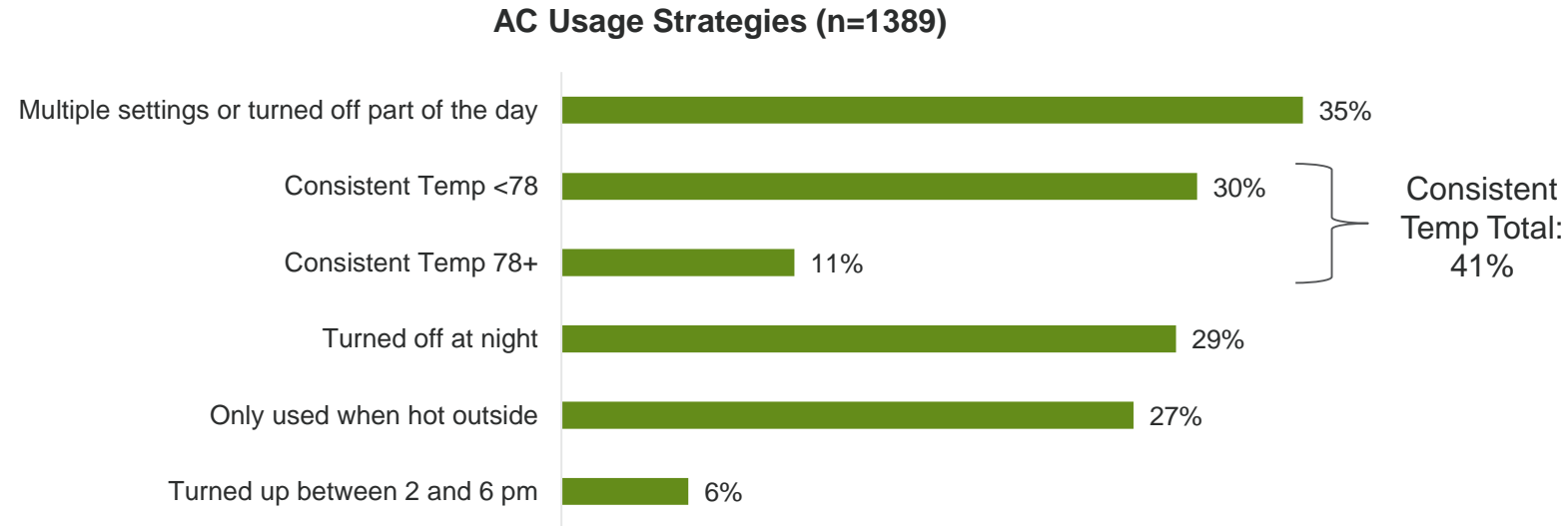
Q15 **After** enrolling in the TOU pricing plan, how would you describe the typical air conditioning settings in your home during the summer months (June-Sept)? *Please select all that apply:*

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WAVE 3: CUSTOMER ENGAGEMENT AND BEHAVIOR

AC Temperature Settings:

- Customer with AC are turning it off during peak (26%), shoulder (20%) periods and when away (40%).

- For customers who run AC during peak and shoulder, average peak settings are approximately 1 degree warmer than during shoulder.
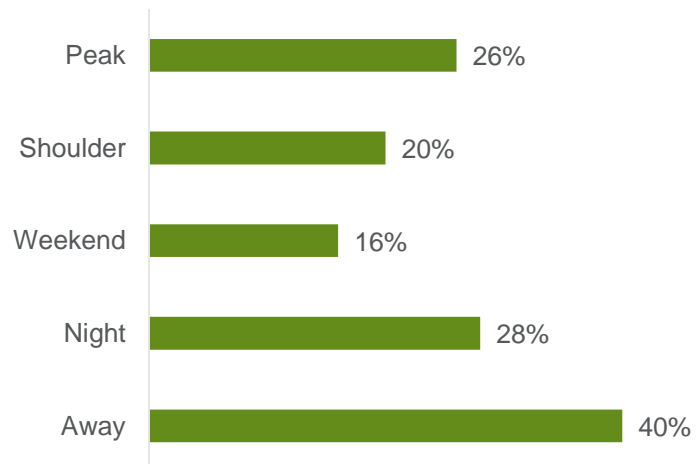
- Customers report slightly *lower* temperature settings at night (73) and slightly *higher* when away (77).

Percent of respondents who turn off their AC during Peak (n=1220)

Category	Percent
Peak	26%
Shoulder	20%
Weekend	16%
Night	28%
Away	40%

Q11 During this past summer, what temperature did you typically set your thermostat to when running your air conditioner... We never/rarely ran the AC during these hours.

Average temperature settings (for those who reported running AC during Peak)
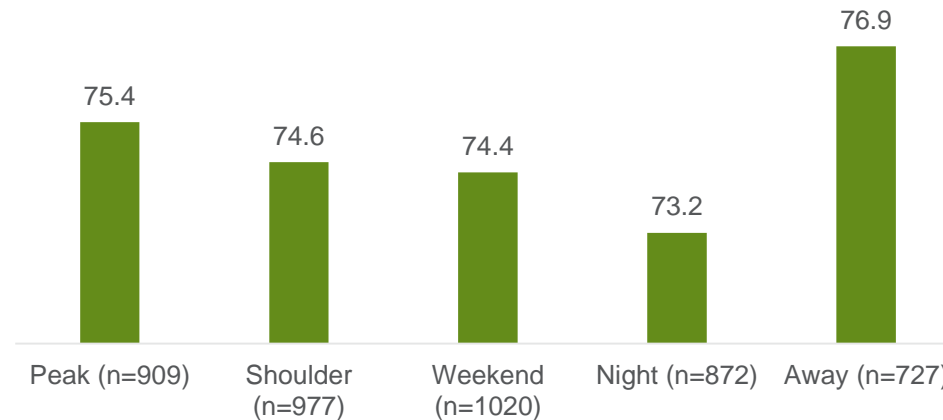
Category	Value
Peak (n=909)	75.4
Shoulder (n=977)	74.6
Weekend (n=1020)	74.4
Night (n=872)	73.2
Away (n=727)	76.9

Q11 During this past summer, what temperature did you typically set your thermostat to when running your air conditioner....

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APPENDIX

RE-TOU SAMPLE SIZE
PARTICIPANTS AND CONTROLS AT ANY TIME

RE-TOU Cumulative Participation (Including Overlap)

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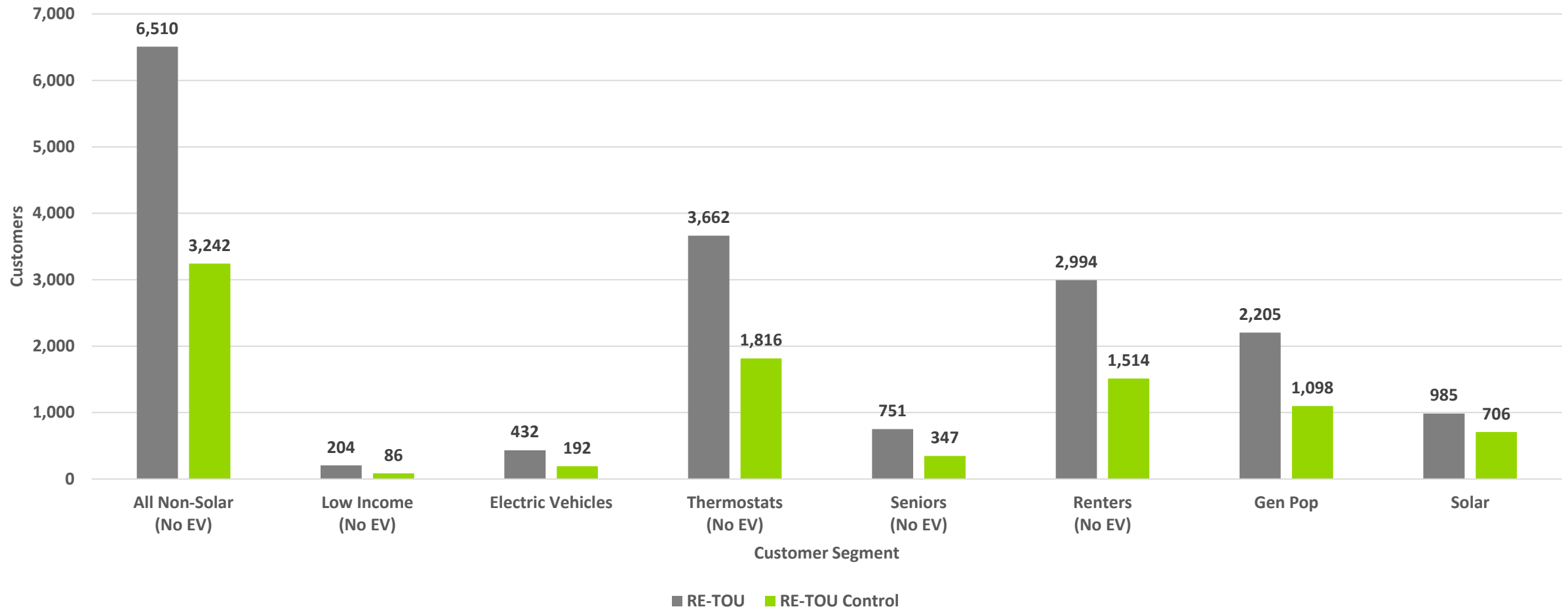
RATE INFORMATION

RE-TOU	Off-Peak	Shoulder	On-Peak	Fixed Charges
Hours	9pm - 9am	9am-2pm, 6pm-9pm on Weekdays, 9am-9pm Weekends	2pm-6pm on Weekdays	Service and Facility
Summer	$0.08/kWh	$0.13/kWh	$0.18/kWh	$5.41
Winter	$0.08/kWh	$0.10/kWh	$0.14/kWh	$5.41
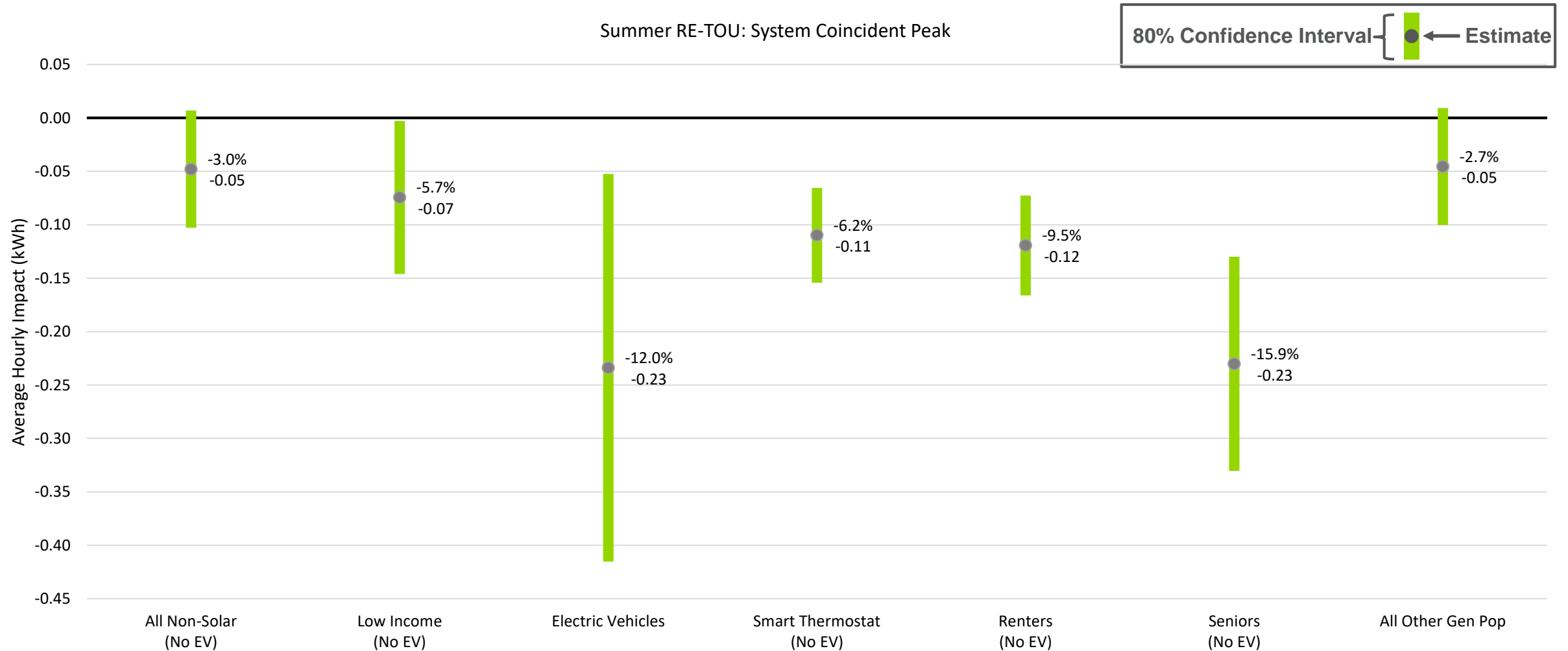
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SUMMER RE-TOU SYSTEM COINCIDENT DEMAND IMPACTS BY CUSTOMER SEGMENT

Summer RE-TOU: System Coincident Peak

SUMMER RE-TOU ON-PEAK IMPACTS BY CUSTOMER SEGMENT

Summer RE-TOU: On-Peak Demand Impact

SUMMER RE-TOU MORNING SHOULDER IMPACTS BY CUSTOMER SEGMENT
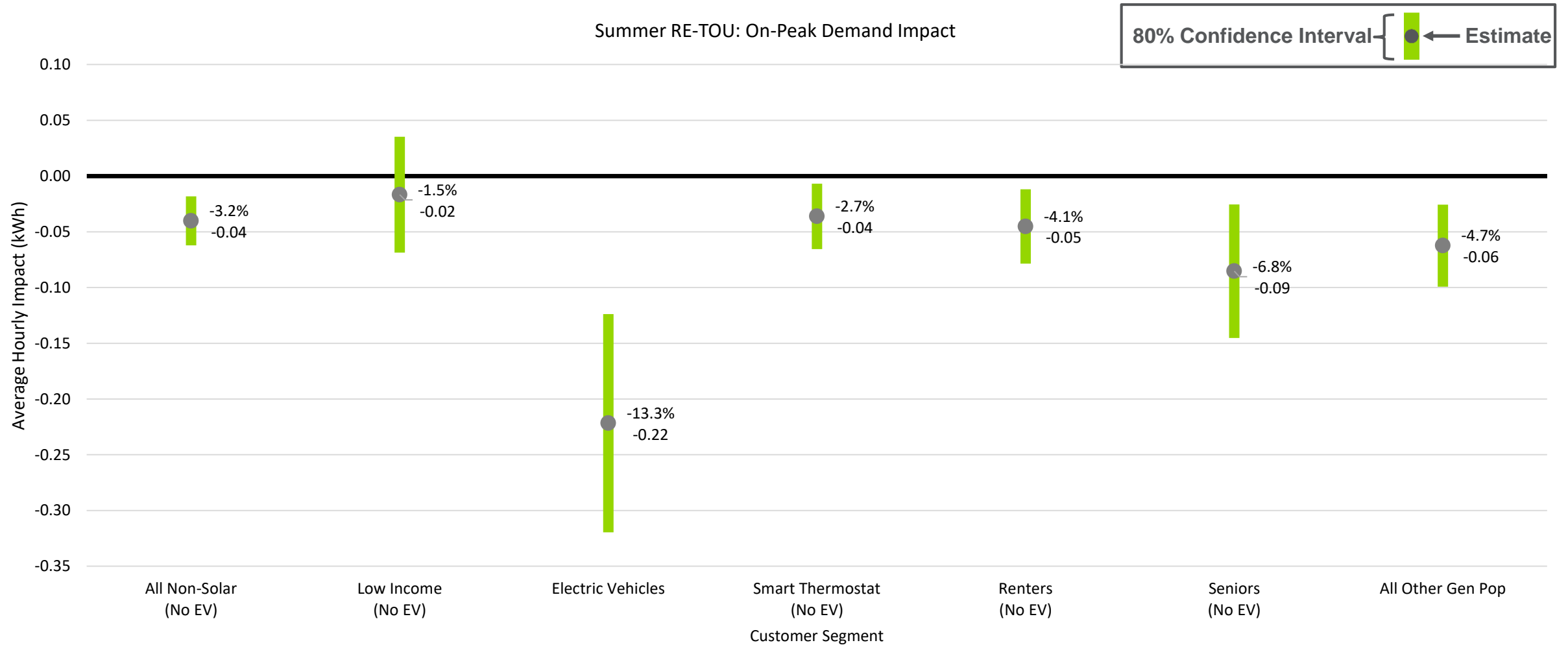
Summer RE-TOU: Morning Shoulder
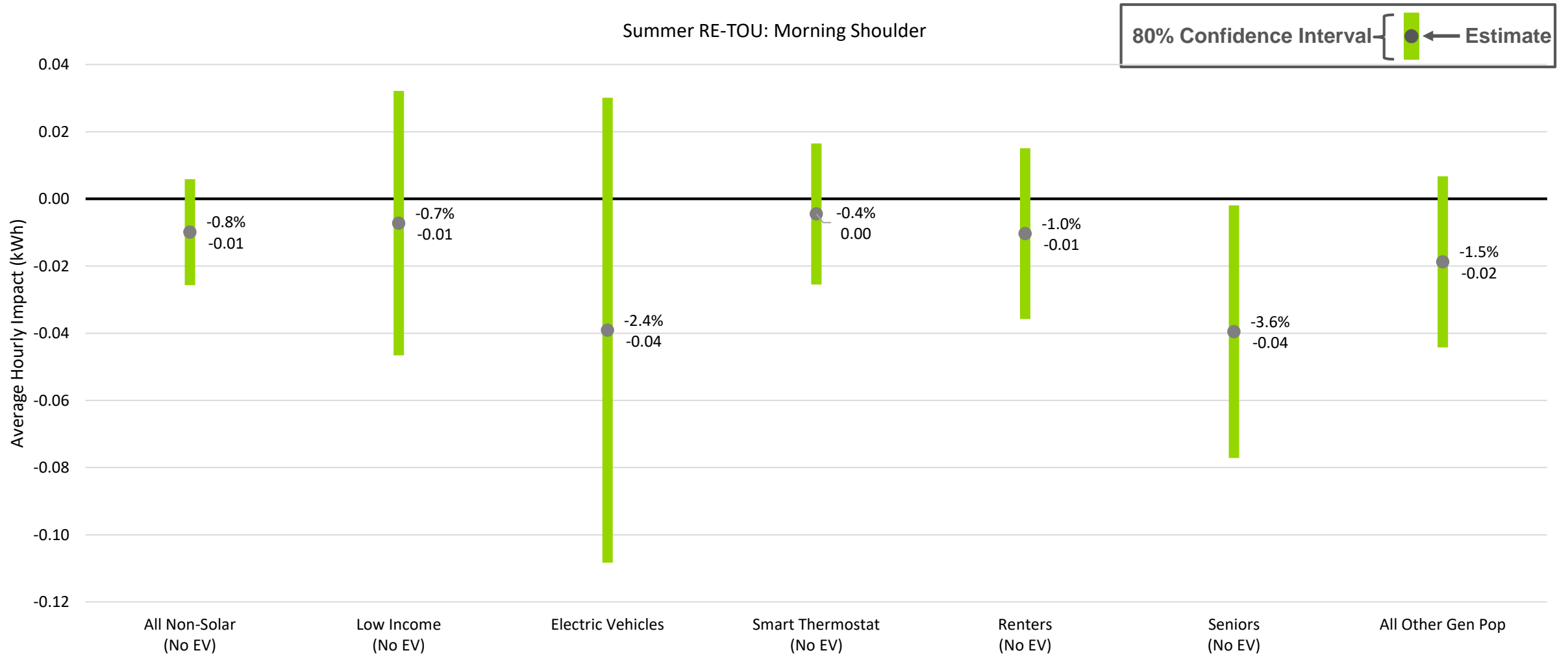
SUMMER RE-TOU EVENING SHOULDER IMPACTS BY CUSTOMER

Summer RE-TOU: Evening Shoulder

80% Confidence Interval — Estimate

All Non-Solar (No EV)	1.6% / 0.02	
Low Income (No EV)	-0.2% / 0.00	
Electric Vehicles	-12.0% / -0.21	
Smart Thermostat (No EV)	2.9% / 0.04	
Renters (No EV)	-1.1% / -0.01	
Seniors (No EV)	-1.0% / -0.01	
All Other Gen Pop	0.6% / 0.01	

Average Hourly Impact (kWh)

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SUMMER RE-TOU WEEKEND SHOULDER IMPACTS BY CUSTOMER SEGMENT

Summer RE-TOU: Weekend Shoulder

80% Confidence Interval — Estimate

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SUMMER RE-TOU OFF-PEAK IMPACTS BY CUSTOMER SEGMENT

Summer RE-TOU: Off-Peak

80% Confidence Interval — ● ← Estimate

Average Hourly Impact (kWh)

Segment	Estimate
All Non-Solar (No EV)	3.7% / 0.03
Low Income (No EV)	3.9% / 0.03
Electric Vehicles	12.2% / 0.17
Smart Thermostat (No EV)	4.0% / 0.03
Renters (No EV)	4.1% / 0.03
Seniors (No EV)	4.2% / 0.03
All Other Gen Pop	2.0% / 0.02

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WINTER RE-TOU SYSTEM COINCIDENT DEMAND IMPACTS BY CUSTOMER SEGMENT

Winter RE-TOU: System Coincident Peak

80% Confidence Interval — ● ← Estimate

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WINTER RE-TOU ON-PEAK IMPACTS BY CUSTOMER SEGMENT

Winter RE-TOU: On-Peak Demand Impact

80% Confidence Interval — Estimate

All Non-Solar (No EV): -3.1%, -0.02
Low Income (No EV): -3.3%, -0.02
Electric Vehicles: -19.5%, -0.23
Smart Thermostat (No EV): -3.2%, -0.02
Renters (No EV): 0.0%, 0.00
Seniors (No EV): -5.4%, -0.04
All Other Gen Pop: -5.2%, -0.04

Y-axis: Average Hourly Impact (kWh)
X-axis: Customer Segment

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WINTER RE-TOU MORNING SHOULDER IMPACTS BY CUSTOMER SEGMENT

Winter RE-TOU: Morning Shoulder

80% Confidence Interval — Estimate

Average Hourly Impact (kWh)

- All Non-Solar (No EV): -2.2% / -0.02
- Low Income (No EV): -3.8% / -0.03
- Electric Vehicles: -8.5% / -0.11
- Smart Thermostat (No EV): -2.8% / -0.03
- Renters (No EV): 0.1% / 0.00
- Seniors (No EV): -4.0% / -0.03
- All Other Gen Pop: -3.4% / -0.03

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WINTER RE-TOU EVENING SHOULDER IMPACTS BY CUSTOMER SEGMENT

Winter RE-TOU: Evening Shoulder

80% Confidence Interval — Estimate

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WINTER RE-TOU WEEKEND SHOULDER IMPACTS BY CUSTOMER SEGMENT

Winter RE-TOU: Weekend Shoulder

WINTER RE-TOU OFF-PEAK IMPACTS BY CUSTOMER SEGMENT

Winter RE-TOU: Off-Peak

80% Confidence Interval — Estimate

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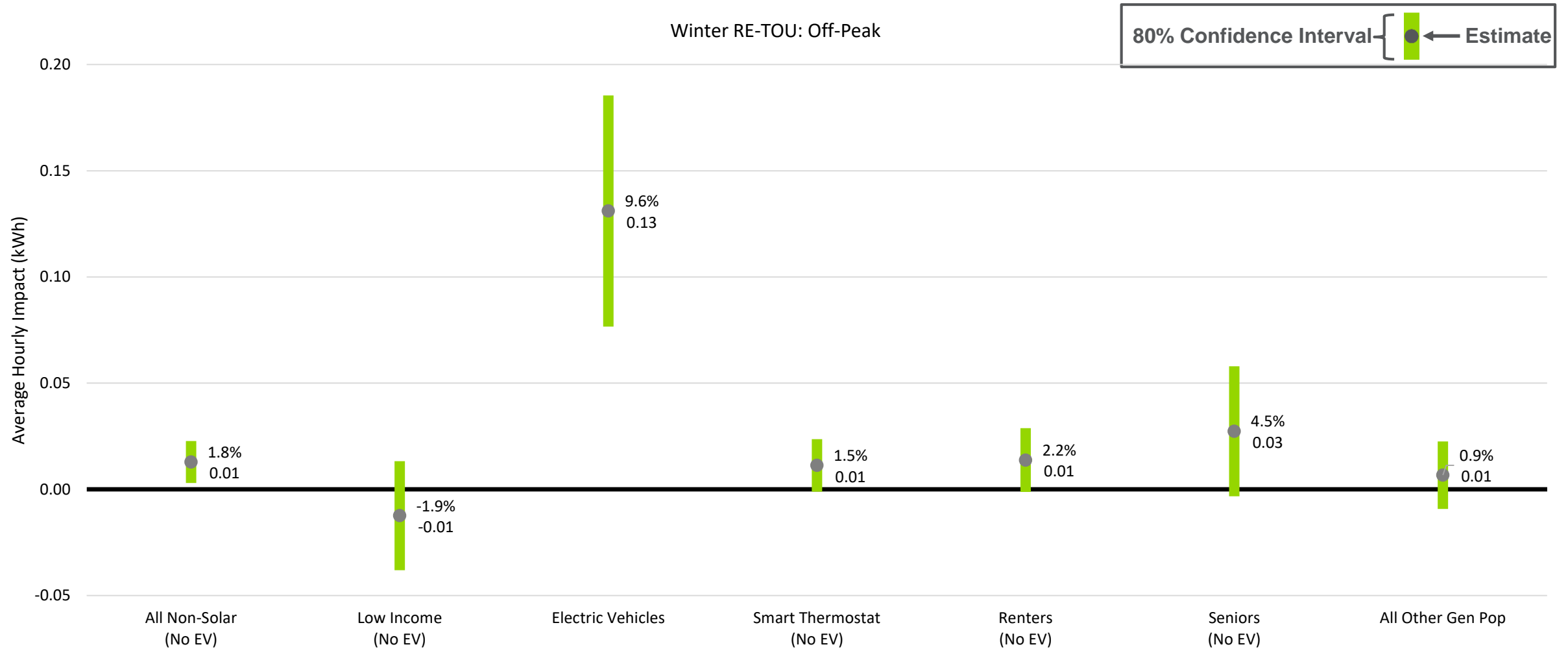
RE-TOU IMPACT ANALYSIS MODELS

Consumption Impact Model

<u>Independent Variable:</u> Hourly Energy Consumption

<u>Dependent Variables:</u> Hour of Day, Weekday, Participant Effects during Pricing Periods, All Customer Effects during Pricing Periods, Cooling Degree Hours (Base 65), Level of Education, Works from Home, Home Type, Home Size, Home Owner or Renter, Occupants by Age Range, Seasonal Peak Demand

$$
\begin{aligned}
kWh_{i,t} = \beta_0 \cdot \sum_{j=1}^{24} Hr_j &+ \beta_1 \cdot Weekday + \beta_2 \cdot Participant \cdot OnPeak + \beta_3 \cdot Participant \cdot ShoulderMorn + \beta_4 \\
&\cdot Participant \cdot ShoulderEve + \beta_5 \cdot Participant \cdot ShoulderWeekend + \beta_6 \cdot Participant \cdot OffPeak \\
&+ \beta_7 \cdot OnPeak + \beta_8 \cdot ShoulderMorn + \beta_9 \cdot ShoulderEve + \beta_{10} \cdot ShoulderWeekend + \beta_{11} \cdot CDH65 \\
&+ \beta_{12} \cdot Education + \beta_{13} \cdot WorkFromHome + \beta_{14} \cdot HomeType + \beta_{15} \cdot Sqft + \beta_{16} \cdot RentOwn \\
&+ \beta_{17} \cdot OccupantsUnder10 + \beta_{18} \cdot Occupants11to18 + \beta_{19} \cdot Occupants19to30 + \beta_{20} \\
&\cdot Occupants31to61 + \beta_{21} \cdot OccupantsOver62 + \beta_{22} \cdot SeasonPeakDemand + \varepsilon
\end{aligned}
$$

Demand Impact Models

<u>Independent Variable:</u> Coincident Demand for Month

<u>Dependent Variables:</u> Participant Effect, Monthly Usage, Works from Home, Home Type, Owner or Renter, Month-specific Effects

$$
\begin{aligned}
kWh_{i,t} = \beta_1 * Participant_{i,t} &+ \beta_2 * Monthly\ kWh_{i,t} + \beta_3 * Work\ from\ Home_{i,t} + \beta_4 * Home\ Type_{i,t} + \beta_5 \\
&* OwnRent_{i,t} + \beta_6 * \sum Month_{i,t} + \varepsilon_{i,t}
\end{aligned}
$$

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WAVE 3 OVERVIEW

Wave 3 Survey: End of Trial Survey (TOU)

Areas of Focus

1) Customer satisfaction and customer experience
2) Access to information resources and perceived value
3) Customer understanding of rate plan
4) Changes in customers' energy use behaviors
5) Opportunities for enhancing customer experience

Wave 3 Response Rate

Round	Timing	Survey Completes	Response Rate
Wave 3	Aug 2019	1894	**36%**

Wave 3 Segment Representation

Segment	Survey Completes	% of Total Responses
Low Income	40	**2%**
Seniors	439	**23%**
Renters	393	**21%**
Smart/Prog. Tstat*	1331	**70%**
EV	303	**16%**
Solar	379	**20%**
Genpop	611	**32%**

*Smart thermostat = 520 respondents, 28% of total; Programmable thermostat = 977 respondents 52% of total. Some customers indicated they had both types of thermostats.

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WAVE 3: INFORMATION RESOURCES

- Customers are most aware of information received via email (64%).
- Most participants (58%) think the frequency of communications about the plan is "just right" although 24% would like more frequent communications.

Awareness of receiving pricing plan information (n=1889)

Frequency of communications about rate plan (n=1889)

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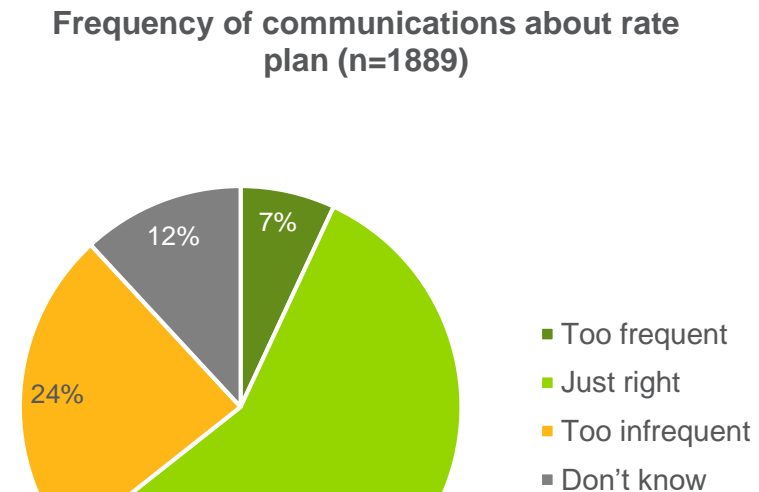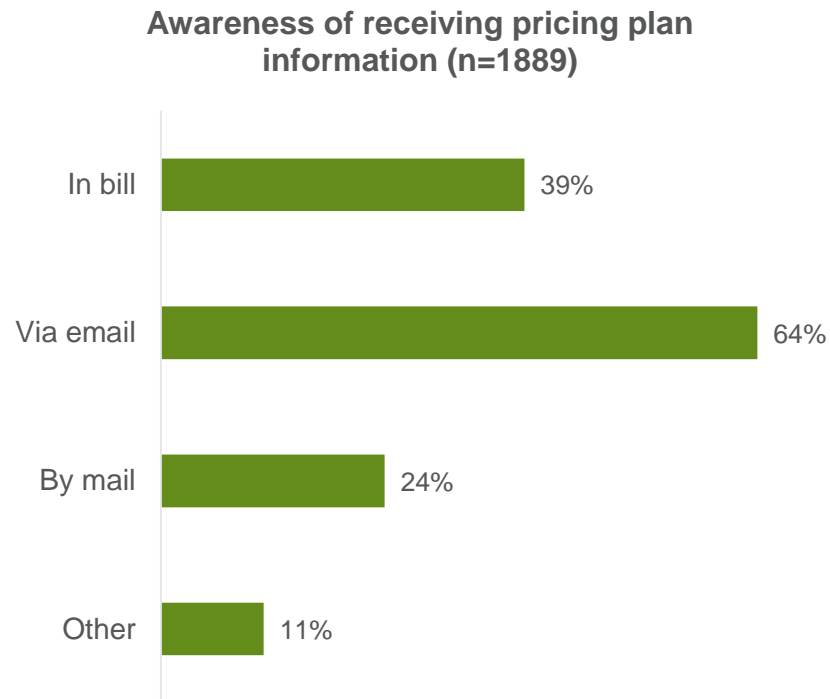
WAVE 3: INFORMATION RESOURCES

- The most helpful information is provided via emails and MyAccount (Call center was least helpful.)
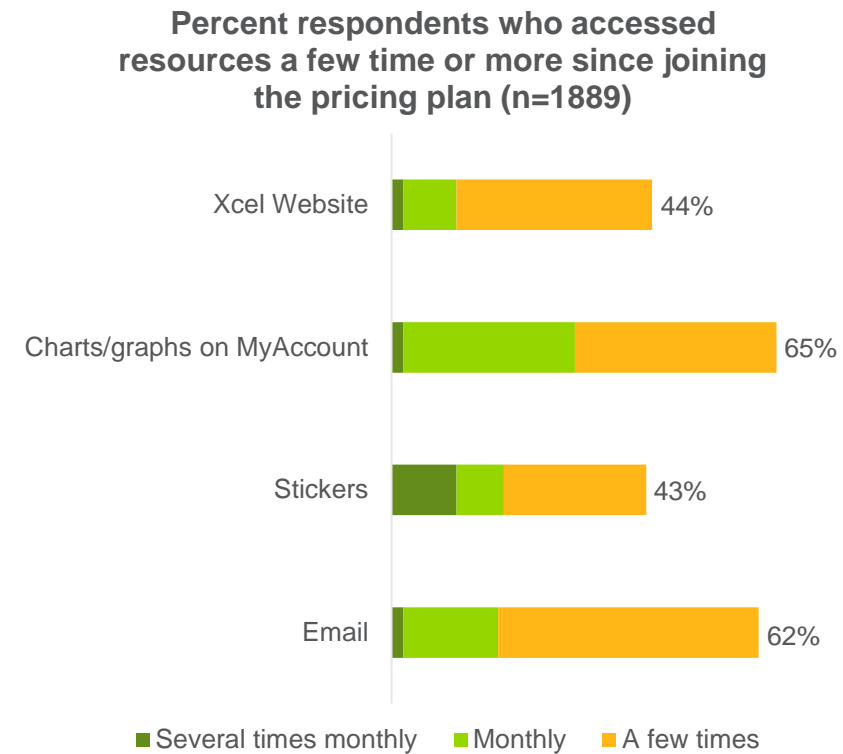
- Information on MyAccount is accessed most often with 31% of respondents using it monthly or more often.

Percent respondents rating the following resources as helpful

- Charts/graphs on MyAccount (n=1165): 77%
- Email (n=1185): 76%
- Stickers (n=1008): 66%
- Xcel Website (n=995): 63%
- Call Center (n=609): 33%

■ Very helpful ■ Somewhat helpful

Percent respondents who accessed resources a few time or more since joining the pricing plan (n=1889)

- Xcel Website: 44%
- Charts/graphs on MyAccount: 65%
- Stickers: 43%
- Email: 62%

■ Several times monthly ■ Monthly ■ A few times

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WAVE 3: KNOWLEDGE AND UNDERSTANDING

• Nearly half of customers (49%) report a fairly complete or complete understanding of the bill.

Participant self reported understanding of energy bill (n=1894)

Understand completely	13%
Fairly completely	36%
Basic understanding	37%
Don't really understand	8%
Don't look at the bill	5%

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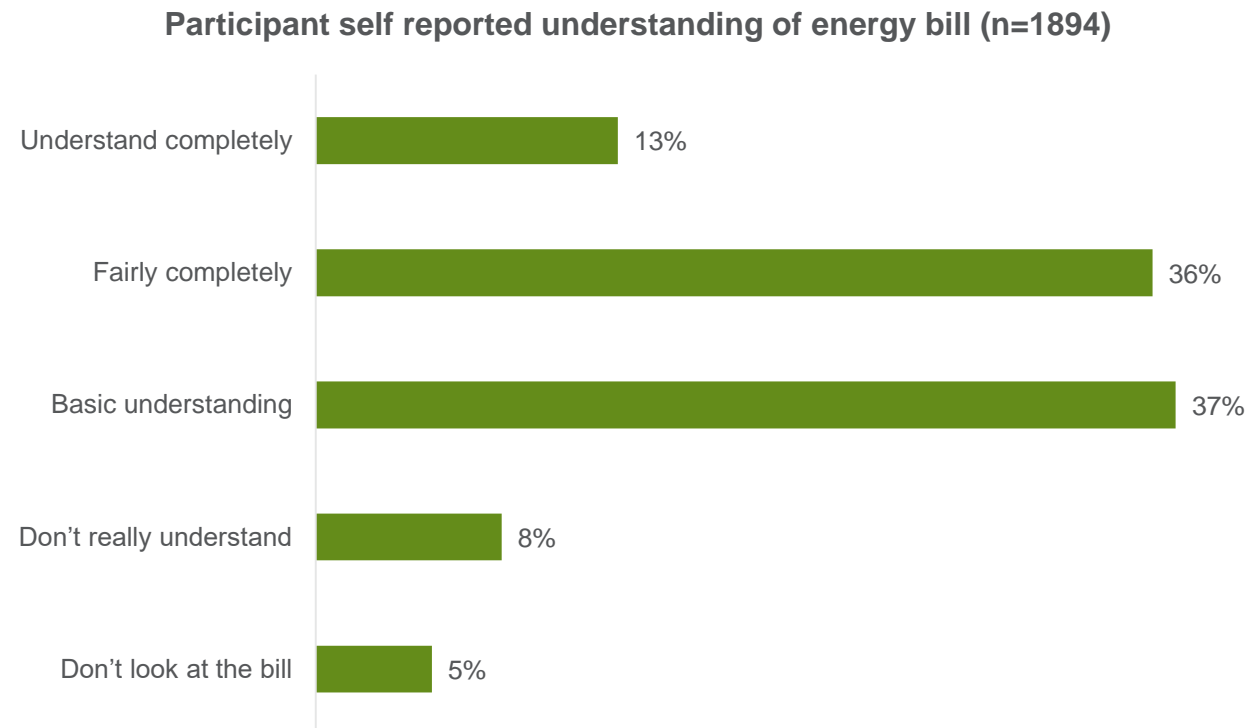
WAVE 3: KNOWLEDGE AND UNDERSTANDING

- Customer understanding of the key elements of the rate plan is high (80%) and appears to have increased from 72% in Wave 2.

Participant reported accuracy of the following statement: "Under the TOU pricing plan, there are three different prices for electricity on any given weekday (unless it is a holiday)." (n=1894)

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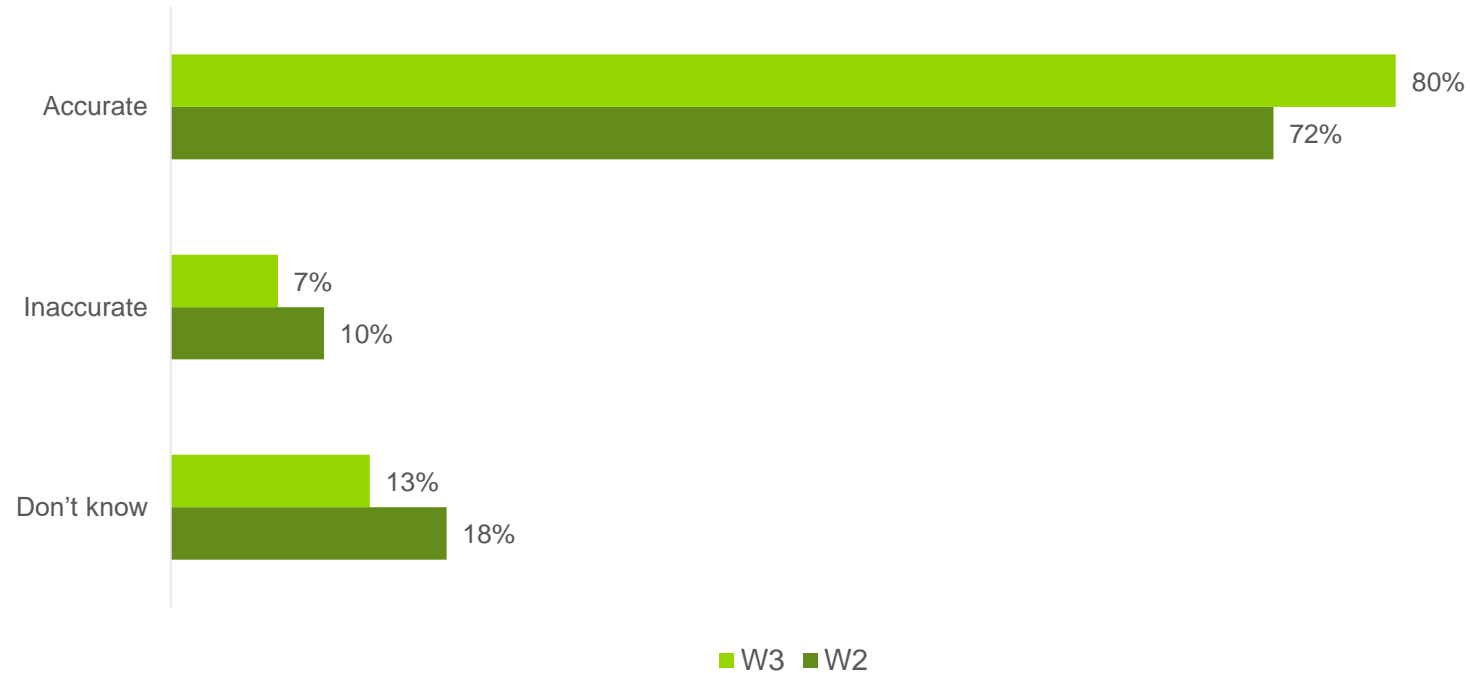
WAVE 3: CUSTOMER ENGAGEMENT AND BEHAVIOR

- A large proportion of customers report spending at least several minutes reviewing their bill in Waves 2 (49%) and Wave 3 (44%) compared to earlier findings from Wave 1 post-enrollment surveys (39%).
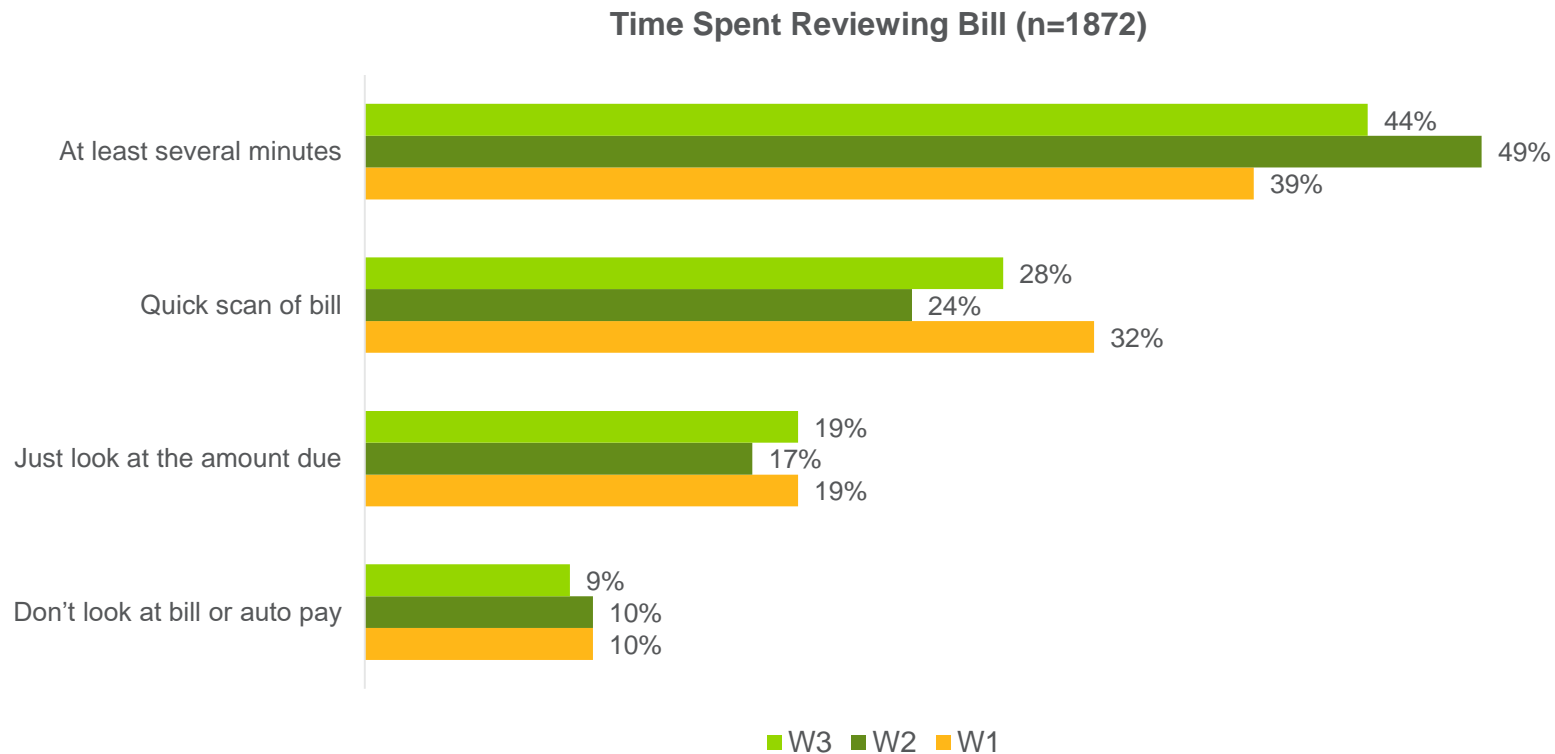
- Time spent reviewing the bill may decline as customers become more comfortable with the rate plan.

Time Spent Reviewing Bill (n=1872)

At least several minutes — W3: 44%, W2: 49%, W1: 39%

Quick scan of bill — W3: 28%, W2: 24%, W1: 32%

Just look at the amount due — W3: 19%, W2: 17%, W1: 19%

Don't look at bill or auto pay — W3: 9%, W2: 10%, W1: 10%
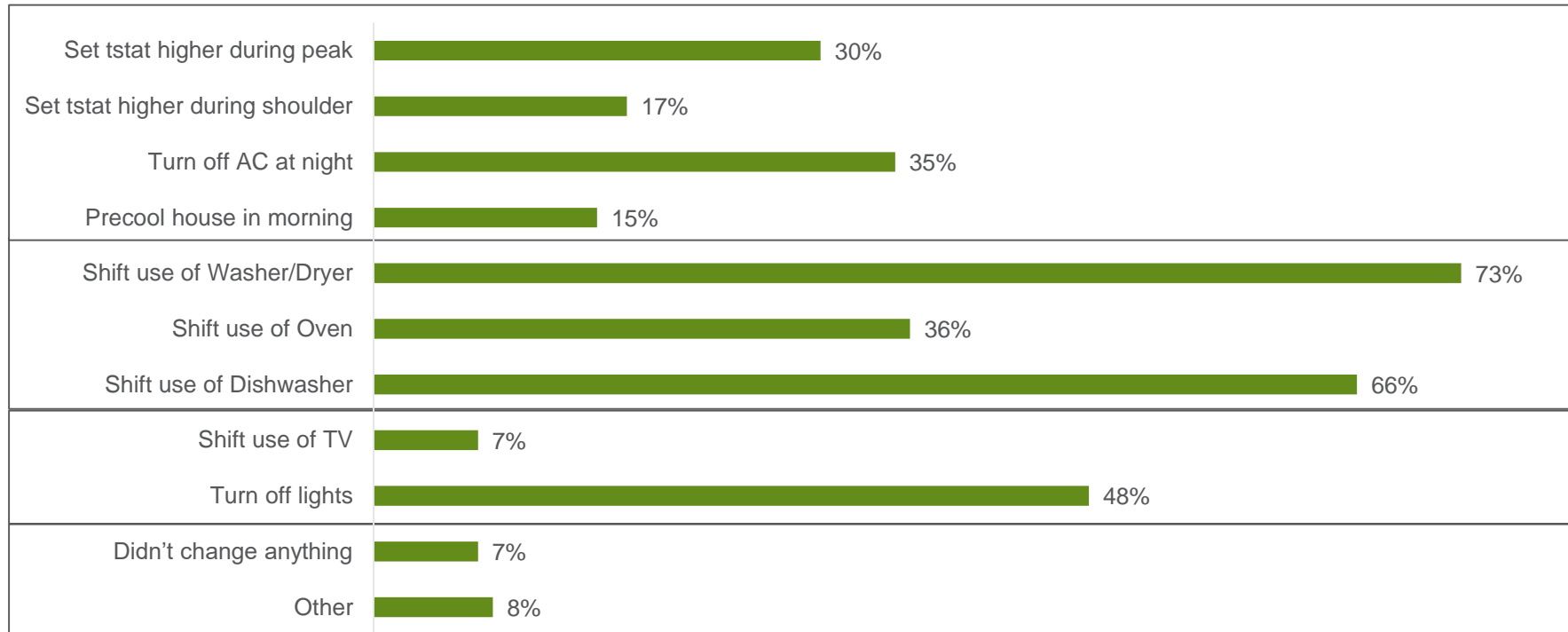
■ W3 ■ W2 ■ W1

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WAVE 3: CUSTOMER ENGAGEMENT AND BEHAVIOR

New AC Strategies – Customers report that they are:

- Increasing thermostat settings during peak (30%) and shoulder (17%) periods
- Shifting their use of appliances (especially dishwasher and clothes washer/dryer)

New behaviors adopted after enrollment (n=1889)

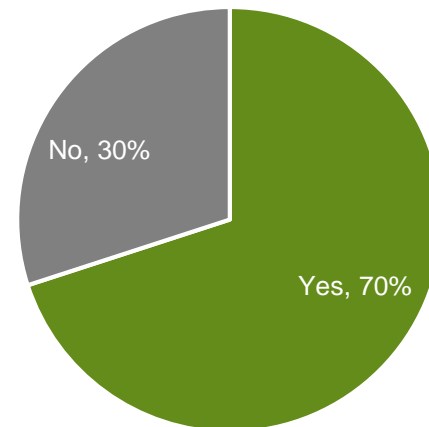| Behavior	Percentage
Set tstat higher during peak	30%
Set tstat higher during shoulder	17%
Turn off AC at night	35%
Precool house in morning	15%
Shift use of Washer/Dryer	73%
Shift use of Oven	36%
Shift use of Dishwasher	66%
Shift use of TV	7%
Turn off lights	48%
Didn't change anything	7%
Other	8%

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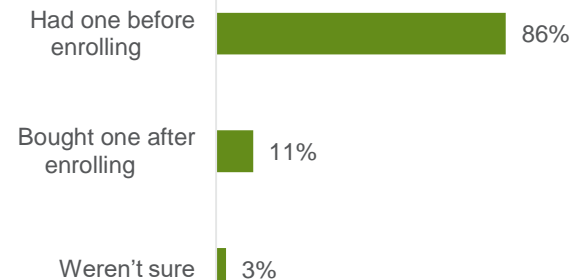A Guidehouse Company

WAVE 3: CUSTOMER ENGAGEMENT AND BEHAVIOR

Thermostat Saturation and Use

- Roughly 70% of respondents currently have a smart or programmable thermostat.

- 11% of households installed a smart or programmable thermostat after enrolling.

- 80% of customers with a smart/programmable thermostat reported that they had programmed it.

- Of those who had not programmed or reprogrammed their thermostat after enrolling, 42% said they would be interested in having Xcel program/optimize their thermostat settings.

**Respondents who have a
smart/programmable thermostat (n=1889)**

No, 30%

Yes, 70%

**When participant purchased
thermostat (n=1331)**

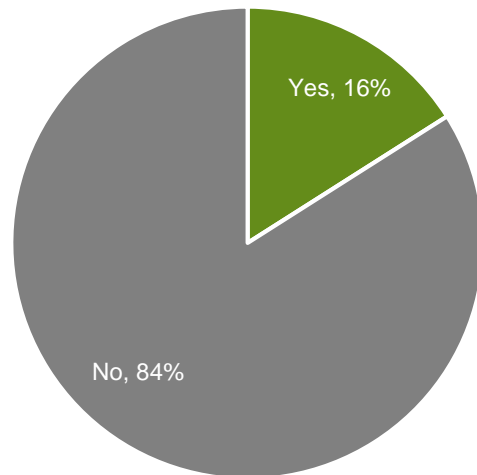|	
Had one before enrolling	86%
Bought one after enrolling	11%
Weren't sure	3%

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WAVE 3: CUSTOMER ENGAGEMENT AND BEHAVIOR

Electric Vehicle Saturation and Use

- 16% of respondents (303 customers) reported having a plug-in EV (up from 6% in Wave 1)

- 57% charge nightly; 36% charge as needed

- 75% always use a scheduler when they charge at home; 10% never use a scheduler

Respondents who have a plug-in EV (n=1889)

Yes, 16%

No, 84%

When respondents charge EV (n=264)

Nightly	57%
On a schedule	6%
As needed	36%
Other	<1%

How often a scheduler is used when charging at home (n=250)

Always	Frequently	Sometimes	Rarely	Never
75%	9%	2%	3%	10%

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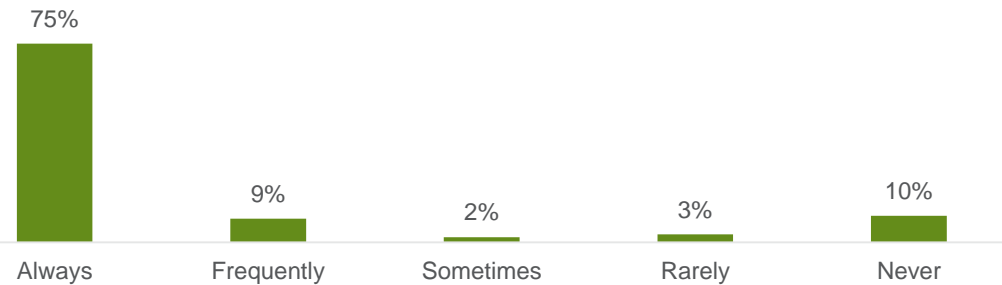
WAVE 3: HOW IMPORTANT IS CUSTOMER "TIME SPENT WITH BILL"?

The amount of time that customers spend with their bill is significantly correlated with several measures of behavior change as shown below.

Time Spent with Bill	Several Minutes or More	Glance or Less
Set their tstat higher (Avg. settings)		
During peak*	**75.6**	75.2
At night*	**73.4**	73.0
When away*	**77.2**	76.6
Never/rarely use appliance during peak		
Dishwasher	**82%**	78%
Clothes Dryer	**76%**	69%
Change in mean frequency of appliance use during peak (before and after enrollment)		
AC***	**0.505**	0.308
Electric Oven***	**0.656**	0.498
Dishwasher**	**1.060**	0.900
Clothes Dryer***	**1.160**	0.971

***Significant at .001   *Significant at .05 (one-tailed test)

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WAVE 3: HOW IMPORTANT IS CUSTOMER UNDERSTANDING OF THE BILL?

Customer understanding of the bill is related to several measures of behavior change as shown below.

Understanding of Bill	Higher	Lower
Never/rarely use appliance during peak		
Air conditioner	**36%**	30%
Dishwasher	**84%**	75%
Clothes Dryer	**78%**	68%
Use more effective AC strategies		
Set AC higher during peak	**33%**	28%
Set AC higher during shoulder	**19%**	16%
Precool	**17%**	13%
Set their tstat higher (Avg. settings)		
During peak***	**75.8**	75.1
Shoulder**	**74.9**	74.3
Weekend**	**74.7**	74.2
At night**	**73.5**	72.9
When away**	**77.3**	76.5

***Significant at .001   **Significant at .01   *Significant at .05 (two-tailed test)

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WAVE 3: HOW IMPORTANT IS CUSTOMER UNDERSTANDING OF THE RATE?

Customers understanding of how the rate plan works is related to several measures of behavior change as shown below..

Understanding of Rate Plan	Higher	Lower
Never/rarely use appliance during peak		
Dishwasher	**81%**	77%
Clothes Dryer	**75%**	69%
Use more effective AC strategies		
Set multiple thermostat settings per day	**38%**	27%
Less likely to lower AC settings btwn 2-6	**6%**	11%
Set their tstat higher (Avg. settings)		
During peak***	**75.7**	73.9
Shoulder**	**74.7**	73.7
Weekend**	**74.6**	73.3
Away*	**77.2**	75.8
Difference Peak/Shoulder*	**1.02**	0.35

***Significant at .001   **Significant at .01   *Significant at .05 (two-tailed test)

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WAVE 3: ARE THE ACTIONS OF SENIORS DIFFERENT THAN OTHERS?

Seniors appear to be different from other participants as shown below.

Segment of Interest	Senior	Others
Never/rarely use appliance during peak		
Dishwasher	**83%**	79%
Clothes Dryer	**76%**	71%
Use certain AC strategies		
Set AC higher during peak	**31%**	26%
Turn AC off at night	**39%**	26%
Precool	10%	**16%**
Use multiple thermostat settings	31%	**36%**
Set their tstat higher (Avg. settings)		
During peak**	**75.9**	75.3
Shoulder***	**75.6**	74.3
Weekend***	**75.7**	74.1
At night***	**74.8**	72.8
When away**	**77.7**	76.6
Difference Peak/Shoulder***	0.4	**1.0**

***Significant at .001   **Significant at .01   *Significant at .05 (two-tailed test)

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WAVE 3: ARE THE ACTIONS OF RENTERS DIFFERENT THAN OTHERS?

Renters appear to be different from other participants as shown below.

Segment of Interest	Renters	Others
Never/rarely use appliance during peak		
Air Conditioner	30%	**34%**
Dishwasher	73%	**81%**
Clothes Dryer	64%	**74%**
Use certain AC strategies		
Use multiple thermostat settings	28%	**37%**
Turn AC off at night	19%	**31%**
Use AC only when really hot outside	**32%**	26%
Set their tstat lower (Avg. settings)		
During peak***	74.2	**75.7**
Shoulder***	73.6	**74.8**
Weekend***	73.3	**74.7**
At night***	72.1	**73.5**
When away***	75.5	**77.2**
Difference Peak/Shoulder	0.62	**0.94**

***Significant at .001   **Significant at .01   *Significant at .05 (two-tailed test)

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WAVE 3: ARE THE ACTIONS OF CUSTOMERS WITH SMART/PROGRAMMABLE THERMOSTATS DIFFERENT THAN OTHERS?

Customers with Smart/Programmable thermostats appear to be different from other participants as shown below.

Segment of Interest	TStat	Others
Never/rarely use appliance during peak		
Air Conditioner	33%	33%
Use certain AC strategies		
Set AC higher during peak	**35%**	19%
Set AC higher during shoulder	**20%**	12%
Precool	**16%**	12%
Use multiple thermostat settings	**40%**	22%
Turn off AC at night	**30%**	24%
Use AC only when hot outside	26%	**32%**
Set their tstat higher (Avg. settings)		
During peak***	**75.7**	74.3
Shoulder***	**74.8**	73.8
Weekend***	**74.7**	73.5
At night***	**73.4**	72.2
When away***	**77.2**	75.5
Difference Peak/Shoulder*	0.96	**1.0**

***Significant at .001   **Significant at .01   *Significant at .05 (two-tailed test)

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