PLMA SPRING CONFERENCE

MAY 11-13 / INDIANAPOLIS, IN

Large Scale Residential Time-of-Day Rate Migrations on Long Island

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Introductions

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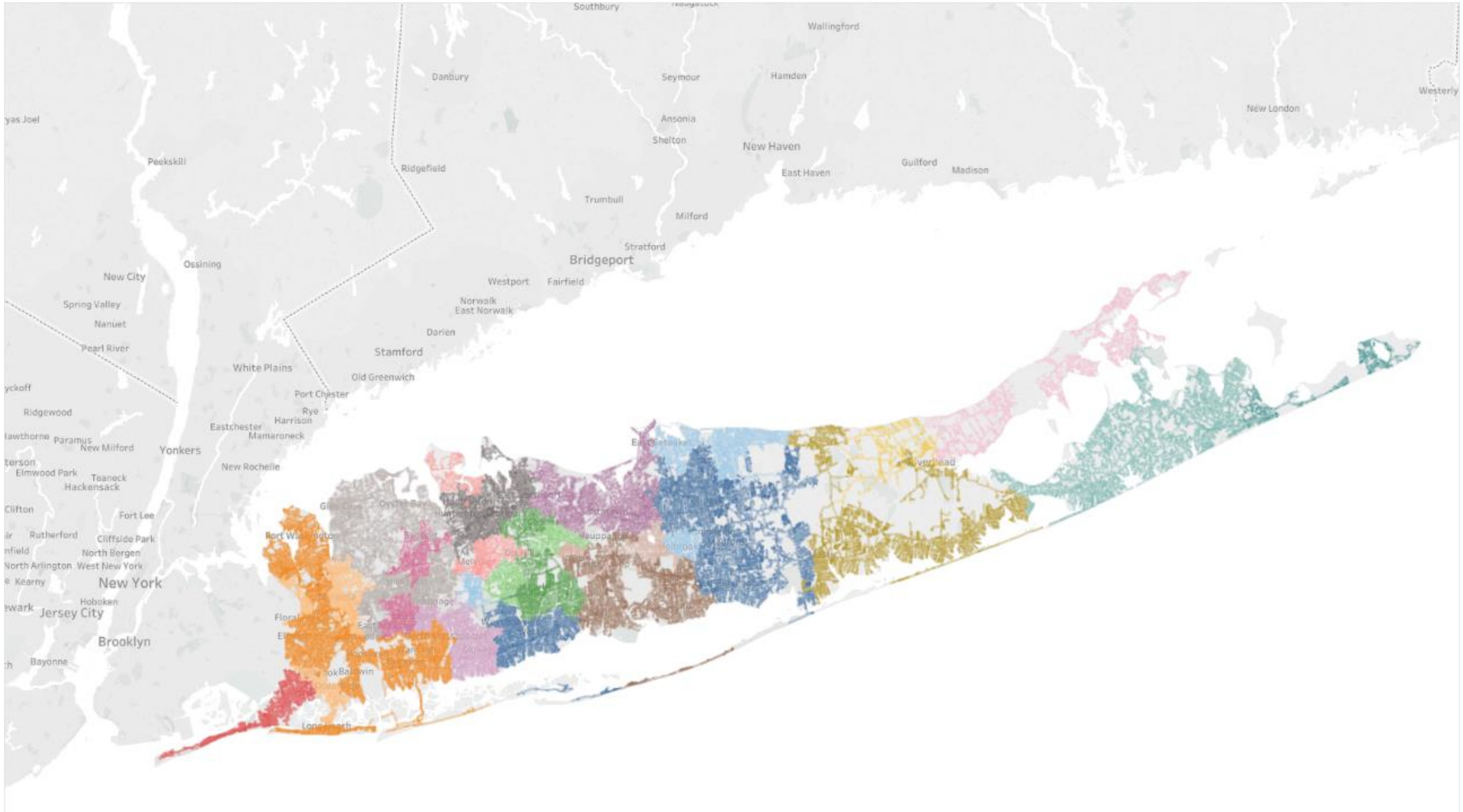
- Population base of ~ 3.0 million
- **~ 1.2 million electric customers**
  - Res + Nonres
- Operates day-to-day for the Long Island Power Authority (LIPA)
- LIPA is a non-profit, state-owned utility that owns the transmission and distribution system



PSEG Long Island was the first New York State utility to adopt standard Time-of-Day (TOD) rates for all residential customers.

Over 900,000 Long Island Residential Customers Are Now on Time-of-Day (TOD) Rates

- Most of these were migrated from the flat rate from June 2024 – Dec. 2025
  - Successful Transition – 97% Participation! Very low opt-out rates
- Fairer rates, also seeing peak impacts and customer bill savings

Smart Meters

LIPA invested in smart meters for residential premises (2019-2021)

Time-Varying Pricing

Voluntary Time of Use (VTOU) rates piloted, promoted to select customers (2022-2023)

New TOD Rates

Off-Peak & Super Off-Peak rates introduced Nov. 2023; Off-Peak became the standard rate in Jan. 2024

TOD Migrations

Over 800,000 existing accounts migrated or opted-In (June 2024 – Dec. 2025)

Residential TOD Rates are the Norm

Over 96% of 1 million Long Island residential customer on a TOD rate

Time of Day – Off-Peak Rate

New Standard Rate from Jan. 2024

Time-of-Day Rate: Off-Peak

New Standard Rate from Jan. 2024

$$	$$$$	$$
Midnight – 3 pm	3 - 7 pm	7 pm – Midnight

No Peak hours on weekends & federal holidays:
All hours are Off-Peak

~ 2-to-1 Peak-to-Off Peak price ratio on both delivery and supply charges

Effective January 1, 2024, the standard residential rate is Rate 194. This rate and optional Rate 195 are Time-of-Day rates. Off-Peak prices offer a discount from Rate 180, 88% of the year. See page 5 for more information.

Winter price ratios ~ equal to summer

Rate 194/D194*: Residential, Time-of-Day, Off-Peak

Time Period	June - Sept.	Oct. - May
Off-Peak - All hours outside Peak hours		
Delivery Charge: per kWh	$0.1093	$0.0929
Power Supply Charge: 83% of monthly published rate		
Peak - 3 PM - 7 PM Weekdays (except federal holidays)		
Delivery Charge: per kWh	$0.2217	$0.1885
Power Supply Charge: 195.05% (summer)/213.40% (non-summer) of monthly published rate		

Peak window 3 to 7 p.m. year-round

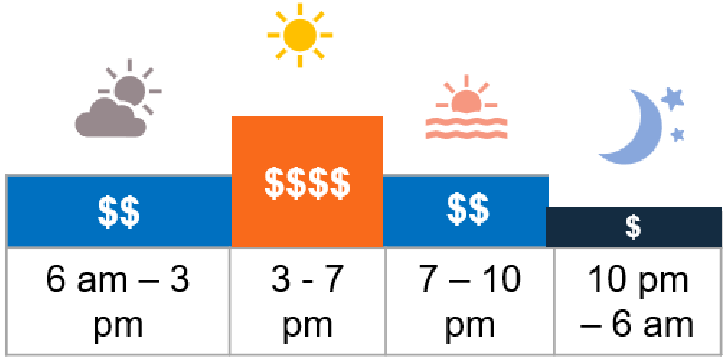
Power Supply Charge adjusts monthly based on energy market prices. Current price can be found online at **psegliny.com/rates**

Time of Day – Super Off-Peak Rate

Optional TOD Rate

Time-of-Day: Super Off-Peak

3-period option



No Peak hours on weekends & federal holidays:
Super Off-Peak 10 pm – 6 am, Off-Peak at all other times

Rate 195/D195*: Residential, Time-of-Day, Super Off-Peak

Time Period	June - Sept.	Oct. - May
Daily Service Charge: (Per Day)	$0.5600	$0.5600
Super Off-Peak - 10 PM - 6 AM every day		
Delivery Charge: per kWh	$0.0452	$0.0450
Power Supply Charge: 60% of monthly published rate		
Off-Peak - All hours outside Super Off-Peak and Peak hours		
Delivery Charge: per kWh	$0.1388	$0.0929
Power Supply Charge: equal to monthly published rate		
Peak - 3 PM - 7 PM Weekdays (except federal holidays)		
Delivery Charge: per kWh	$0.2979	$0.2440
Power Supply Charge: 174.19% (summer) / 196.88% (non-summer) of monthly published rate		

Power Supply Charge adjusts monthly based on energy market prices.
Current price can be found online at **psegliny.com/rates**

Customers Were Migrated to TOD in Groups

- Migration groups were planned to meet company goals for the transition
  - PSEG Long Island & DSA **set up control groups for comparison with Groups 1 – 3** that were later migrated as part of Groups 8 – 10 (after Summer 2025)
  - **Rate impacts were estimated using *Randomized Controlled Trials (RCTs) with > 130,000 treatment and control group customers***
- Planned migrations as of April 2024:

Group	1	2	3	4	5	6	7	8	9	10
Migration Month	Jun 2024	Jan 2025	Feb 2025	Mar 2025	Apr 2025	May 2025	Sep 2025	Oct 2025	Nov 2025	Dec 2025
Target	30,000	50,000	70,000	95,000	95,000	95,000	100,000	100,000	100,000	90,000

Groups 1 – 3 evaluated for impacts

Control groups (for comparison) migrated in Groups 8 – 10

We Drew Treatment/Control Groups within Customer Types & Bill Impact Categories

Customer Types
A. **EV owners**
B. **Net Meter (Solar)**
C. **Low-to-Moderate Income** (LMI)
D. **All Others**

Expected Bill Impact Groups (based on historical hourly usage)
1. **Benefiters:** Expected to gain > $60 on the TOD rate
2. **Neutral Benefiters:** Expected to gain $12 – $60
3. **Neutral**: Expected to gain/lose < $12
4. **Neutral Non-Benefiters:** Expected to lose $12 – $60
5. **Non-Benefiters:** Expected to lose > $60

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Results Weighted by Each Customer's Frequency in the Full Migrated Population (~850,000 Customers)

Number of Accounts in Each Group and Full Migrated Population (Groups 1-10)

Customer Category	Bill Impact Category	Group 1	Group 2	Group 3	Total (Groups 1-10)
01 All Others	01 Benefiter	10,641	-	-	78,557
	02 Neutral Benefiter	4,865	13,792	21,900	184,656
	03 Neutral	2,400	6,606	18,026	218,270
	04 Neutral Non-Benefiter	2,437	2,599	14,685	199,703
	05 Non-Benefiter	-	652	2,849	36,121
02 Solar	01 Benefiter	1,486	-	-	7,826
	02 Neutral Benefiter	1,476	-	-	14,659
	03 Neutral	989	-	-	15,912
	04 Neutral Non-Benefiter	989	-	-	38,623
03 EV	01 Benefiter	738	1,445	574	10,492
	02 Neutral Benefiter	736	582	227	4,502
	03 Neutral	730	253	98	2,698
	04 Neutral Non-Benefiter	739	362	141	3,058
	05 Non-Benefiter	-	339	128	3,145
04 LMI	01 Benefiter	870	-	-	4,650
	02 Neutral Benefiter	577	-	-	11,845
	03 Neutral	564	-	-	15,014
Total		30,237	26,630	58,628	849,731

Some groups (e.g. Benefiters) were oversampled to meet goals for the rollout—these get less weight in the results

Other groups with large populations (e.g. the Neutral categories) get more weight in the results

There is a valid experiment underlying each subgroup's impacts, though

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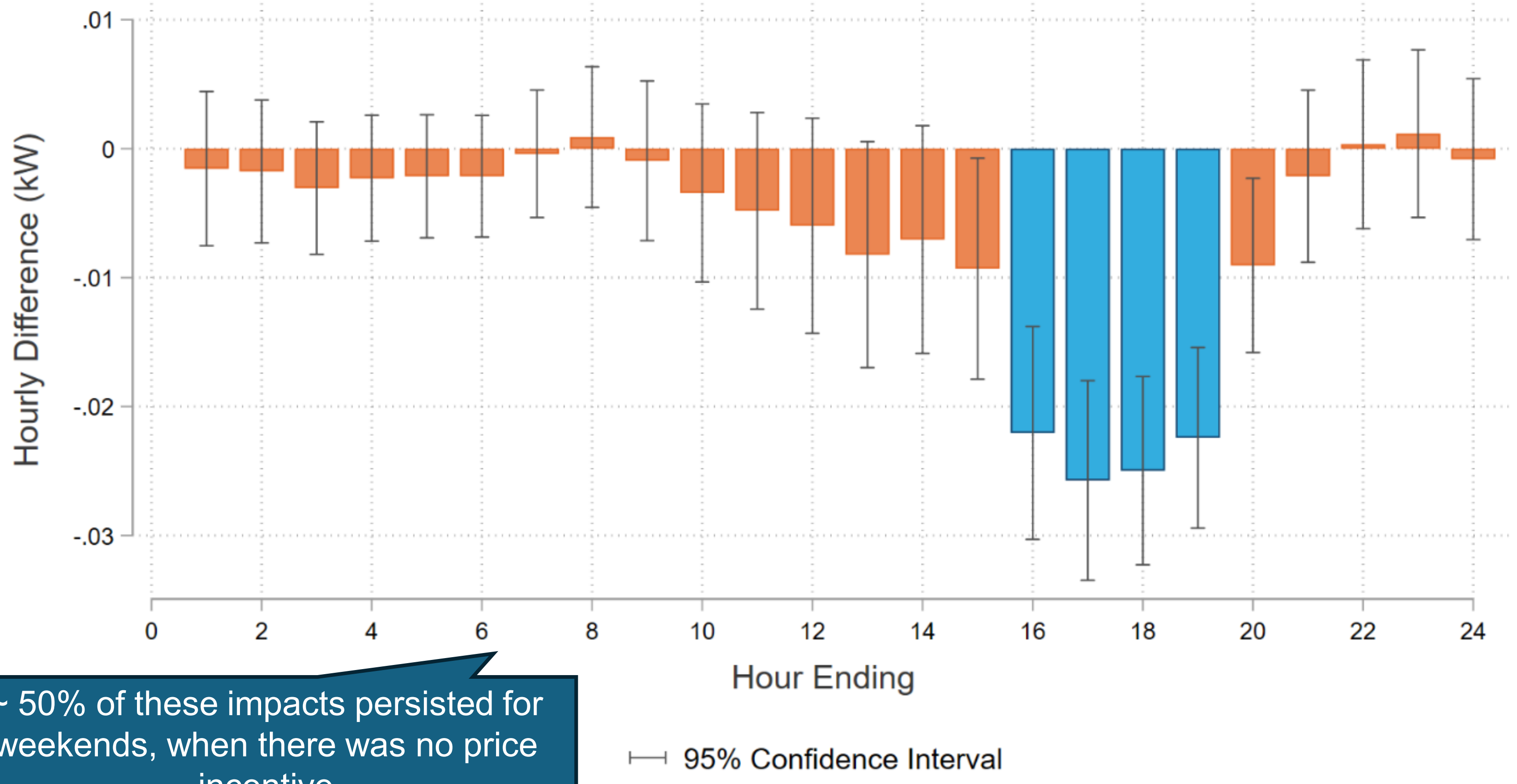
Results

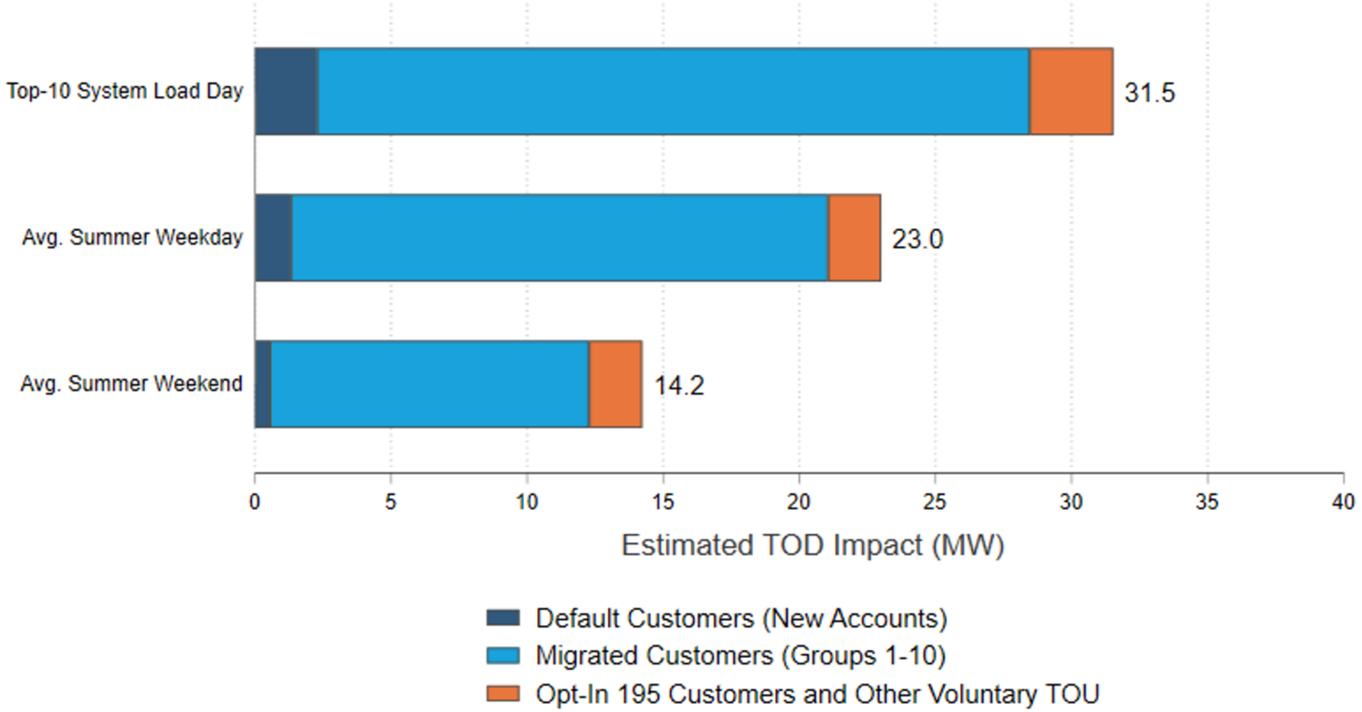
Customers Reduced Peak Loads 1.3% on an Average Summer Weekday



~ 50% of these impacts persisted for weekends, when there was no price incentive

- 1.3% reduction on average from 3 – 7 p.m. on an avg. summer weekday
- ~21 MW reduction for 850,000 accounts on avg. summer weekday
- Greater MW reductions on system peak days
  - But similar percent impacts
- Ranges on bars show 95% confidence intervals
  - Hours outside of 3 – 7 p.m. are generally statistically insignificant (include zero in their confidence intervals)

All TOD Customers Combined (~900,000) Should Generate ~32 MW Reductions on a Top System Day



- Summer impact for all TOD Customers combined, scaled to current population of over 900,000
- Opt-in customers are small in number, but have higher peak reductions per customer compared to those who migrated to Rate 194.

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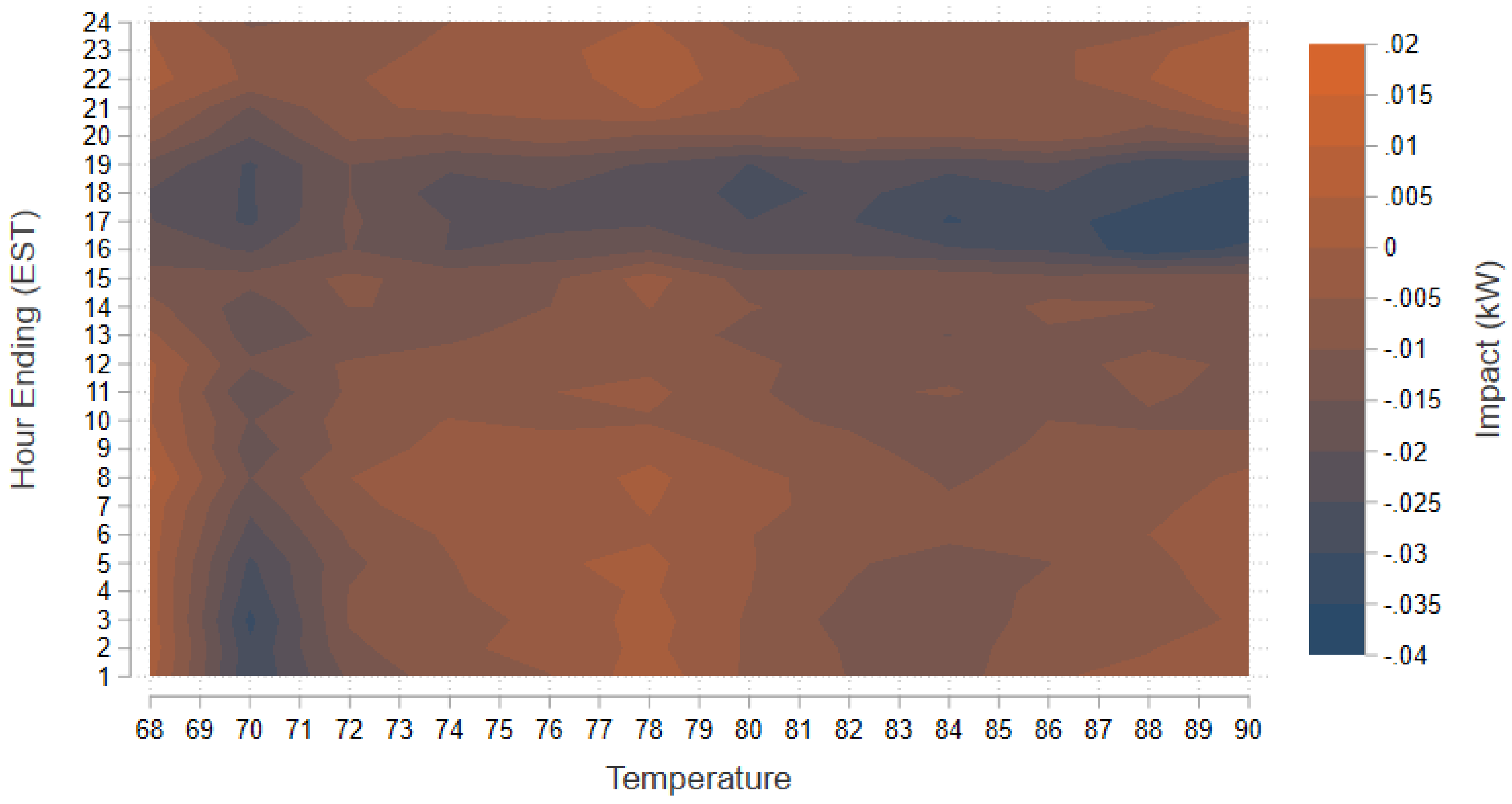
Impacts Increased on Hotter Days

Impacts by Hour and Maximum Daily Temperature



- Clear drops in usage during peak hours (3 – 7 PM)
- Increasing impacts on hotter days

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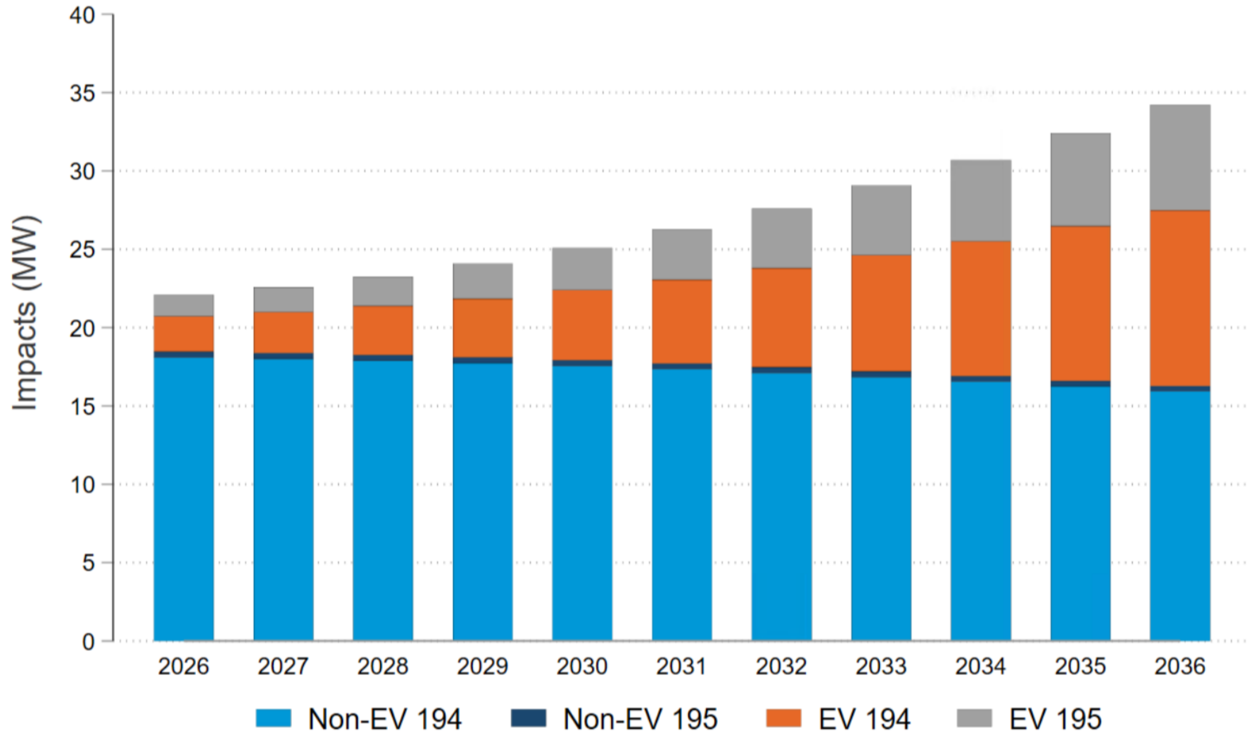
Results Persisted into Second Summer for Group 1

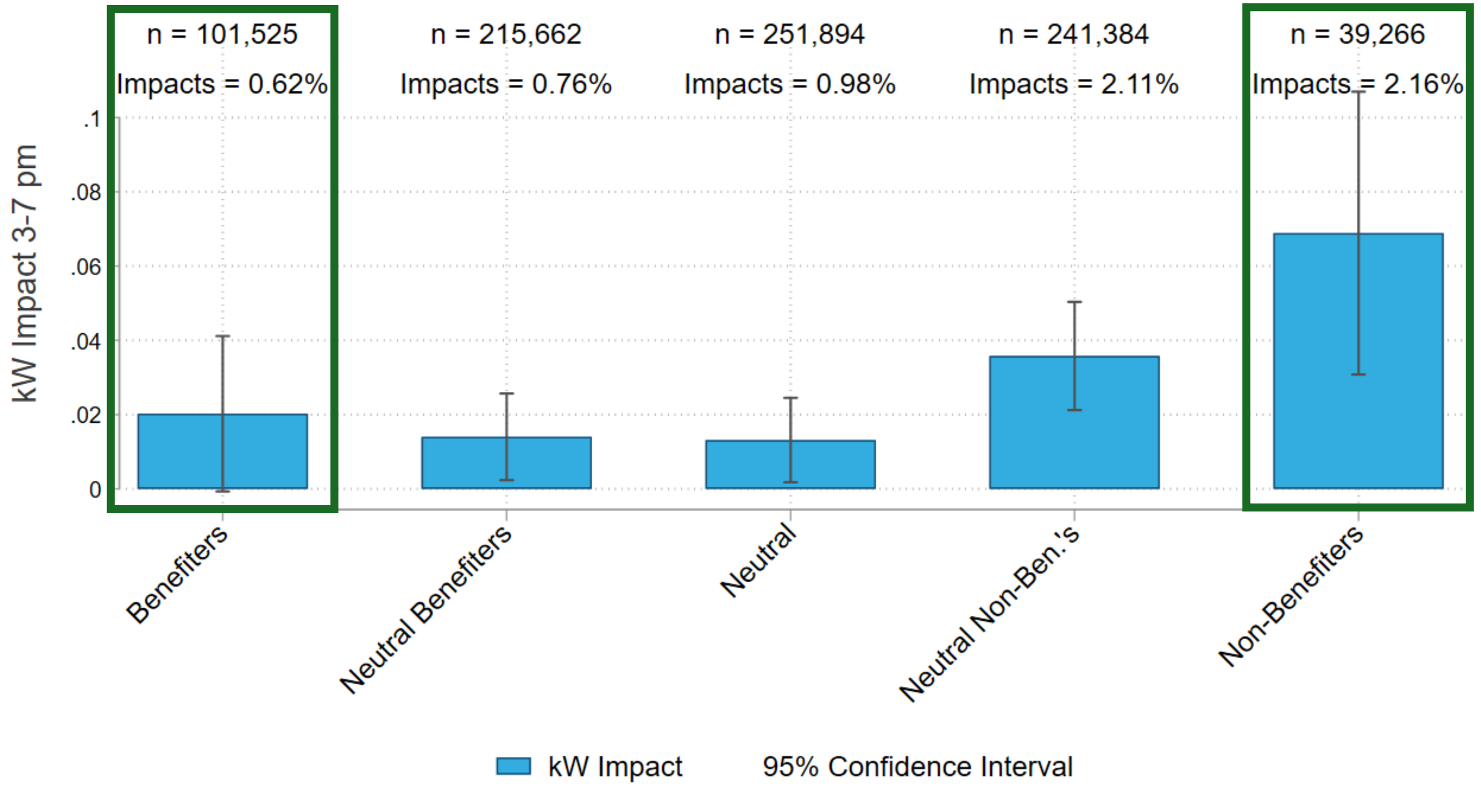
Peak Load Impacts (3 – 7 p.m.) through 2036



- Group 1 had control group withheld for 2 summers
  - Don't often get multiple years of impacts in these studies
- In theory: Impacts might increase, decrease, or stay the same over time
  - Here: Stayed roughly the same from Summer 1 to Summer 2
- We modeled impacts in future years assuming percent impacts are constant within customer groups
- Impacts will grow over time with more EV owners and more opt-in 195 customers

Non-Benefiters Shifted the Most Peak Load

- Peak load reductions are largest for Non-Benefiters
  - Customers with least favorable load shapes for TOD rates.
  - These customers drive higher capacity needs for the utility
- Two extreme groups (Benefiters and Non-benefiters) are fewer in number
  - But higher total electric usage so larger peak reductions in kW



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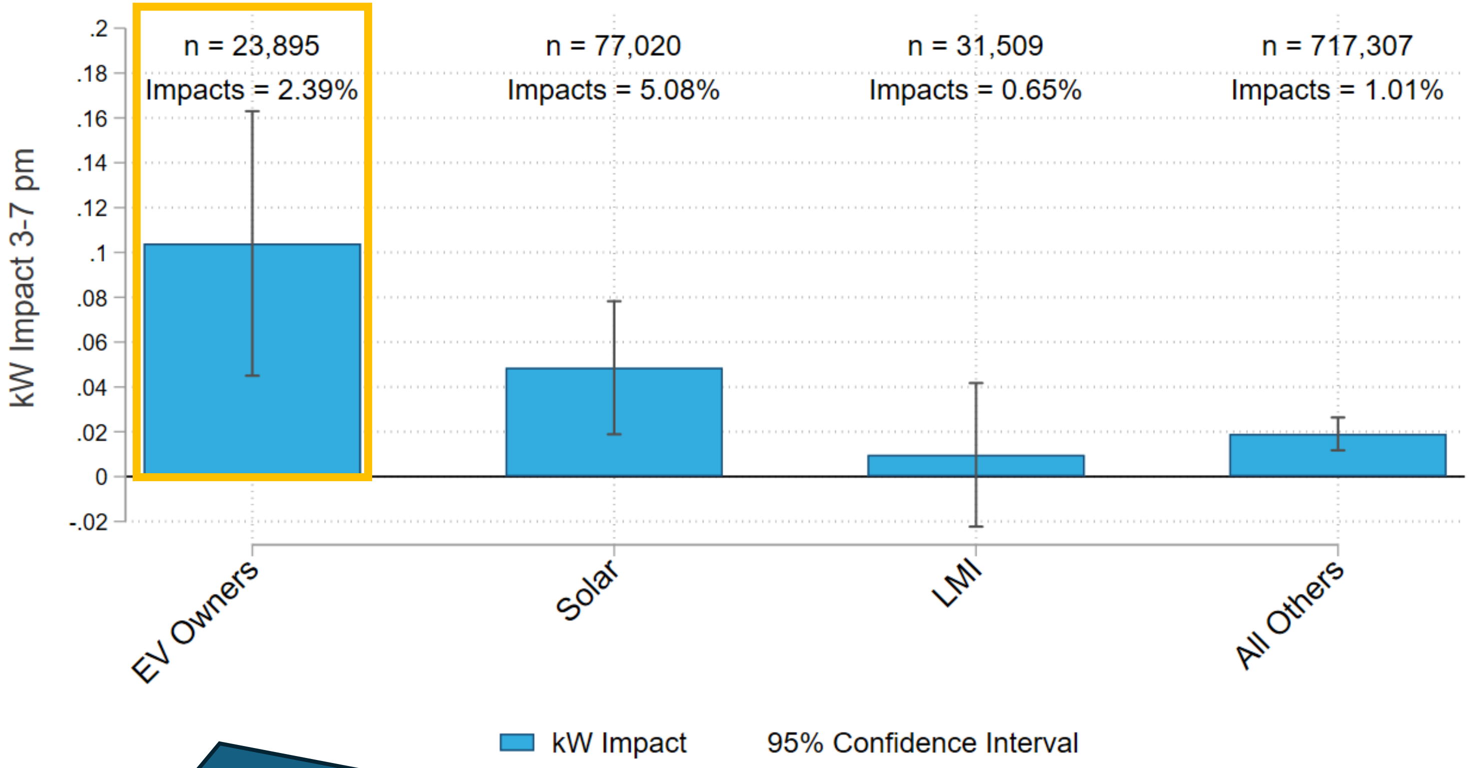
EV Customers Shifted More in kW and in Percentage Terms



- EV customers had the largest loads and the largest reductions (0.10 kW impacts per customer, 2.4%).
- EV Non-benefiters achieved largest reductions of 4.0% (0.21 kW per customer.
- LMI customers had small loads and insignificant impacts.

Migrations also successfully moved most EV accounts on Long Island to TOD rates (most EV owners had not previously enrolled in a TOD rate)

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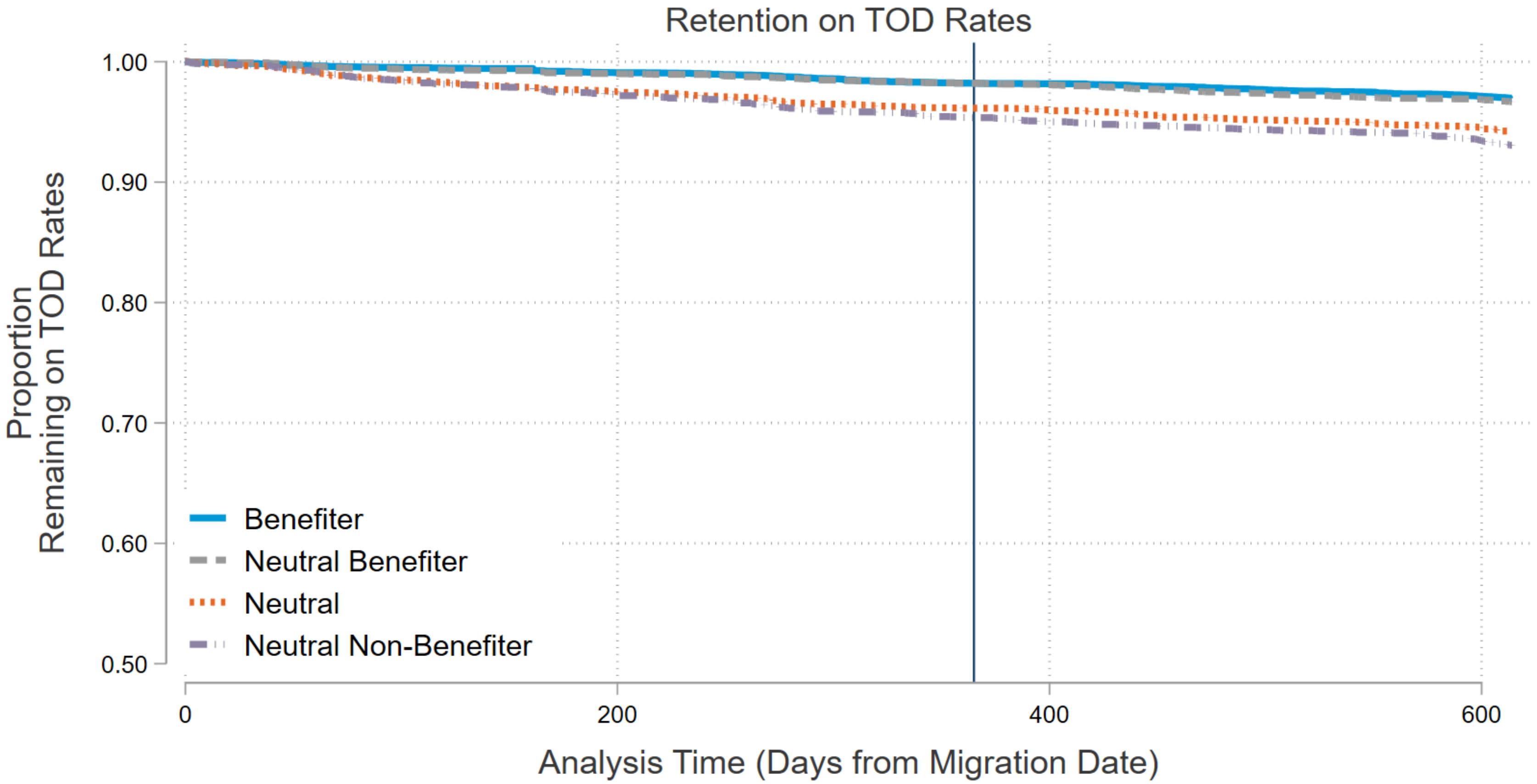
Over 95% of Customers Still on a TOD Rate after 1 Year



- Bill protection ends after 1 year – less than 5% have opted out even after this point
- Graph: Group 1 Has been on Rate 194 for 1.5 years – Most customers are still on a TOD Rate
- Graph is weighted by customer types in full TOD population

Balanced Billing customers Shifted Loads by the Same Amount as Other Customers

Balanced Billing	TOD Impact (kW)	TOD Impact (%)	t-Stat of Difference	Statistically Significant Difference?
No	-0.023	-1.2%	-	-
Yes	-0.026	-1.3%	-0.14	No

- Almost half of PSEG Long Island customers have balanced billing plans
- Since bills don't adjust immediately, the price signal from the TOD rate could be delayed
  - We see no difference in impacts, however

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Key Findings

1 **1.3% peak-hour reductions** (3 - 7 pm) on summer weekdays for the default rate (194), translating to 21.4 MW for the 850,000+ migrated accounts

2 **32 MW reductions** estimated for top system load days with all TOD combined (900,000+ accounts, including new accounts and Rate 195 opt-ins)

3 **Impacts increased on hotter days**, with the greatest reductions on days with temperatures over 90 degrees.

4 **Results persisted** into the second summer for first group of migrated customers.

5 **Low opt-out rates** after 1 year: Over 95% have stayed on TOD rates even after bill protection ended.

6 **Opt-In Rate 195** customers (3-part rates) had 4% peak hour reductions on summer weekdays.

7 **High peak users** shifted more: “Non-Benefiters” decreased peak usage by more than 2.2%.

8 **EV owners** decreased peak usage by 2.4%. “Non-Benefiters” with EVs decreased peak usage by 4%.

9 **Balanced billing** customers shifted similar amounts despite no volatility in their monthly bills.

10 **Customers saved** on both summer and winter bills on average ($23 total), with EV owners and customers with less peak usage saving more.

Questions?

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