SA SmartCharge Report
2025

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Executive Summary

Overview

South Australia's energy landscape is undergoing a shift — and electric vehicle charging must evolve with it. JOLT is working with the South Australian Department of Energy and Mining to construct a series of SmartCharge experiments that attempts to meaningfully shift EV charging behaviour in the hopes of shifting user charging behaviour, which reduces grid pressure and aligns demand with solar generation windows.

This experiment centers around a core thesis:

Can price signals — both incentives and penalties — shift users to charge when it's cheapest for the grid, not just when it's most convenient for them?

Through carefully timed discounts, surcharges, and charger-specific price variation, JOLT aims to uncover whether EV users can be nudged into adopting smarter, lower-impact charging habits without compromising their user experience.

This report outlines the experimental framework, behavioural hypotheses, and baseline observations from which conclusions will be drawn. The stakes are high — not only for energy cost efficiency and infrastructure load-balancing, but for proving that sustainable user behaviour can be engineered through thoughtful price design.

Experimental Summary

As part of JOLT's experimental design process, to preserve user trust and ensure behavioural changes could be measured in a controlled setting, the SmartCharge experiment was launched as a set of opt-in products rather than changes to existing plans.

This allowed users to voluntarily participate in the experiment without being surprised by unexpected pricing changes, while also enabling JOLT to more closely isolate behavioural shifts attributable purely to the pricing mechanisms introduced. This ensured the experiment could maintain both scientific integrity and customer experience stability.

To test the pricing-sensitivity of EV drivers and the potential for demand-shifting, JOLT designed three experiments to be run in South Australia:

1. **Off-Peak Discounting (Experiment 1):**
   Discounted rates are offered to SmartCharge users who initiate charging sessions during newly defined solar-aligned off-peak windows (10am–4pm for Group A users, 7am–4pm for Group B).

   Goal: Increase the share of sessions that occur during grid-friendly, solar-abundant, "off-peak" hours with enticing savings.

   Desirable Outcomes:
   a. A measurable increase in the % of sessions started during off-peak windows
   b. A higher average kWh dispensed per session during off-peak hours
   c. A reduction in sessions occurring during peak (4pm–9pm), suggesting behavioural shift

2. **On-Peak Surcharging (Experiment 2):**
   A moderate price increase is applied for charging between 4pm–9pm, the grid's most constrained hours.

   Goal: Reduce congestion and discourage charging during high-demand periods.

   Desirable Outcomes:
   a. A decrease in the % of sessions during 4pm–9pm
   b. Increased charging before 4pm or after 9pm
   c. Indications that users are price-sensitive enough to respond to disincentives
   d. Minimal loss in total session volume, i.e. behaviour shifts rather than session drop-off

3. **Charger-Specific Pricing (Experiment 3):**
   Surcharges are applied to high-demand chargers, while discounts are offered at less-busy units.

   Goal: Encourage better distribution of charging activity across the network, relieving pressure on premium fast chargers.

   Desirable Outcomes:
   a. A shift in usage from high-demand to less-busy chargers, especially during off-peak windows
   b. Increased utilisation rates of previously underused chargers
   c. Lower energy volumes flowing through high-demand chargers during peak times
   d. Revenue impact that remains neutral or positive despite discounts

Each experiment is designed to isolate the behavioural impact of pricing changes. The overarching aim is to assess which price levers — discounts, penalties, or both — most effectively shift users toward more sustainable charging habits, and to what extent existing product design as part of JOLT's existing offering influenced this shift.

Key directional insights

This study sought to evaluate how time-based pricing and contextual communication could influence electric vehicle (EV) charging behaviour across JOLT's network. The findings reveal meaningful shifts in user habits that have significant implications for grid alignment, charger utilisation, and commercial strategy. The most notable insights include:

- **Time-of-Day Charging is Malleable:** Users are **responsive to time-based incentives**, with a significant increase in off-peak charging observed when discounts were communicated clearly and aligned with solar generation windows. *(Supports Hypotheses H1 & H4)*
- **Surcharges Shift Behaviour:** On-peak surcharges discouraged charging during 4–9pm windows, contributing to improved load distribution across the day without measurable negative impact on session volumes. *(Supports Hypothesis H2)*
- **Network Distribution Can Be Shaped Through Pricing:** Discounts applied to less-utilised chargers increased their usage, reducing congestion at high-demand chargers and improving availability across the network. *(Supports Hypothesis H3)*
- **Communications Matter as Much as Price:** In-app banners, push notifications, and well-timed messaging played a key role in influencing behaviour — highlighting the importance of pairing financial levers with UX and timing strategies. Users changed not only because the price changed, but because they *understood* that it had.
- **Behavioural Shifts are Achievable at Scale:** These experiments represent the first validated proof point that strategic pricing can move behaviour across a large EV user base in a live network setting.

JOLT's operations in South Australia have undergone several key phases of development, each contributing to the infrastructure and product maturity necessary to support this experiment. Below is a breakdown of the evolution of JOLT in SA:

Phase 1a

Initial Network Establishment (Nov 2021 – Nov 2022)

Introduction of JOLT's first chargers across Adelaide with all charging sessions being uniformly priced for users with no subscription model.

The relevance of this phase is that it establishes a behavioural baseline, where users charged opportunistically with no cost-driven motivation to shift time or location. It establishes early user adoption trends, demand patterns, and revenue baselines before higher-speed chargers were introduced.

Phase 1b

Network Expansion + Introduction of fast chargers (Nov 2022 – Mar 2024)

The rollout of faster chargers began during this phase, alongside the continued installation of regular chargers across South Australia. All sessions remained uniformly priced irrelevant of charger speed as subscription models were yet to be introduced.

The relevance of this phase lies in its ability to capture behaviour in a mixed-speed charger environment without pricing differentiation. This phase supports the analysis of user preferences in choosing between speed tiers when cost is not a factor, and helps benchmark charger-specific demand before incentive-based interventions were applied.

More specifically, the first faster charger in Adelaide was launched on 15 Nov 2022.

Phase 2

Subscription Model Introduction (Mar 2024 – Feb 2025)

JOLT introduced tiered subscription, providing users with early pricing exposure. However, pricing remained static across time of day and charger type within South Australia during this phase.

The relevance of this phase is in establishing how steady-usage behaviour formed under a new pricing structure. It provides a controlled view of how subscription users respond to fixed daily entitlements and how their usage patterns evolve without time-based nudges or charger-specific incentives.

Phase 3

SmartCharge Experiments Go Live (Apr 2025 onward)

Coming to the present, opt-in experimental products were introduced with dynamic pricing based on time of day and charger type. As specified above, these included targeted discounts during solar-aligned off-peak hours, surcharges during peak grid times, and differentiated pricing for under-utilised and high-demand chargers. A version of our existing JOLT product was made SmartCharge-friendly and made opt-in to preserve user trust and establish controlled test groups.

The relevance of this phase is in providing the experimental conditions needed to test behavioural responsiveness to pricing levers. It supports analysis of how users respond to both incentives and disincentives, and whether those responses vary based on charger speed, time of day, or subscription entitlements. This phase is essential for drawing causal insights into price-driven behavioural shifts.

Experimental Design

JOLT

Hypotheses

This experiment was structured to evaluate how electric vehicle (EV) drivers respond to different pricing mechanisms aimed at reducing grid pressure and improving infrastructure utilisation. The primary hypotheses being tested are:

H1 Introducing off-peak discounts will lead to a measurable increase in the percentage of charging sessions that occur during "solar-sponge" aligned off-peak windows.

H2 Applying surcharges during peak-demand periods (4pm–9pm) will discourage users from initiating charging sessions during these times and shift behaviour toward lower-demand windows.

H3 Applying surcharges to high-demand chargers and discounts to underutilised chargers will promote more balanced usage across the charger network, reducing over-congestion at high-speed units.

H4 Default JOLT users who have cheap charging rates, may still respond to pricing incentives if communicated effectively and if the potential for cost avoidance or savings is clear.

H5 Group B users, having opted into a paid plan, may be more responsive to time-based price signals due to higher awareness of usage costs and a greater tolerance for plan complexity.

Experiment Breakdown

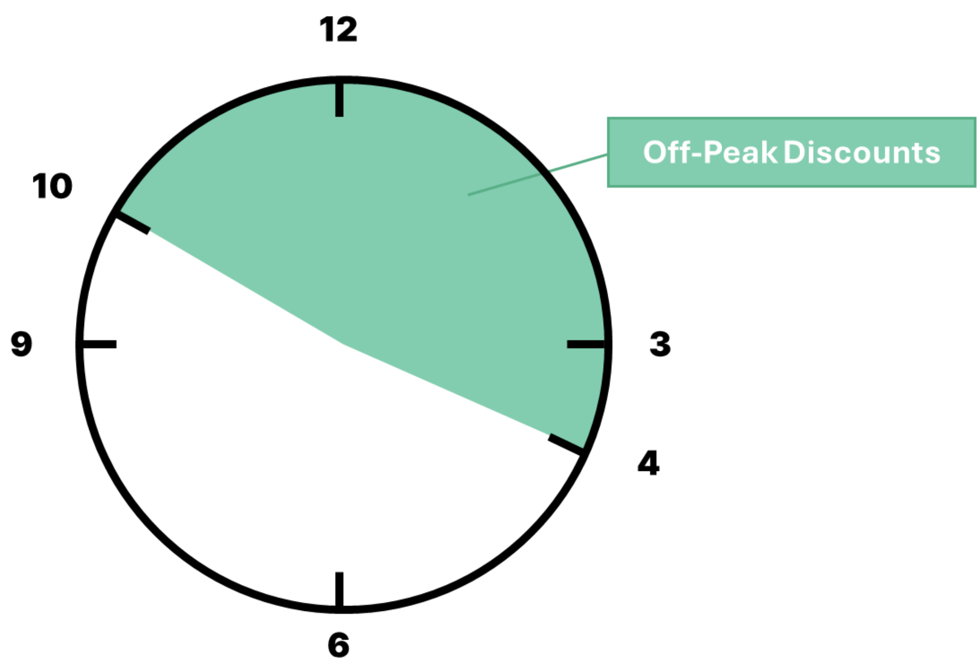
Experiment 1: Off-Peak Discounting

Purpose

To incentivise users to shift their charging activity into solar-aligned daytime hours when the grid is least constrained and electricity is typically cheaper and cleaner.

Mechanism

Time-based discounts were introduced for sessions initiated during the designated off-peak charging window. This window was defined as **10:00 AM to 4:00 PM** for users on the SmartCharge Group A product.



All sessions initiated within these windows were charged at a discounted per-kWh rate. The exact discount percentages varied slightly across charger types (e.g. higher discounts on underutilised chargers, lower on high-demand units), but the pricing was applied consistently during the specified time period each day.

Product Context – SmartCharge Group A

This product is an experimental opt-in version of JOLT's standard product, which already featured pre-existing discounts and savings, creating the need for further incentives to drive measurable change.

Intended Behavioural Outcome

This experiment aimed to increase the proportion of sessions initiated during the off-peak period and to shift aggregate energy demand toward solar hours. It aimed to test whether users would alter their charging time to optimize time-of-day cost efficiency.

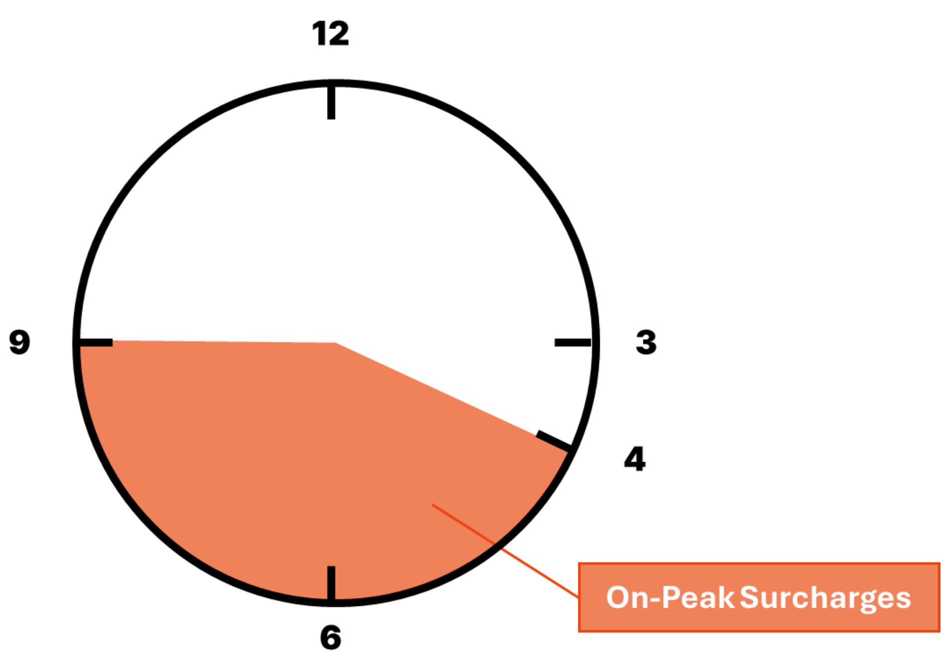
Experiment 2: On-Peak Surcharging

Purpose

To discourage charging during the evening peak hours (when grid demand is highest and renewable supply is lowest), by applying a surcharge to sessions initiated during this time.

Mechanism

Charging sessions initiated during the defined on-peak window of **4:00 PM to 9:00 PM** incurred a higher per-kWh rate. This was intended to make evening charging less attractive relative to off-peak times.



Timing of Rollout

This experiment was applied only during Weeks 6–12 of the 12-week SmartCharge trial period for Group A users, following the off-peak discount phase.

Intended Behavioural Outcome

The primary objective was to reduce the frequency of charging sessions during 4–9 PM and shift those sessions earlier in the day (e.g. to before 4 PM), where electricity is cheaper and grid load is lighter. This experiment also sought to test the effectiveness of disincentives (as opposed to incentives) in altering user behaviour.

Experiment 3: Charger-Specific Pricing

Purpose

To redistribute charging demand across the network by discouraging use of high-demand, high-cost chargers and encouraging the use of lower-speed, underutilised chargers.

Mechanism

Charger-specific pricing logic was introduced that applied:

- A surcharge on all sessions initiated at high-demand chargers
- A modest discount on sessions initiated at identified underutilised chargers

These prices were applied dynamically alongside the time-based pricing logic described above, meaning a session could be simultaneously influenced by charger type and time-of-day conditions.

Charger Context

All SmartCharge products included access to both regular and fast-chargers.

Intended Behavioural Outcome

The goal was to reduce load concentration on high-demand chargers, which are often subject to high congestion, and to improve utilisation across the broader charger network. It also aimed to test whether price alone could override speed preference — particularly in cases where users were not in urgent need of a rapid charge.

Methodology

Overview

High-Level Experimental Plan

To test the effectiveness of time-based pricing in shifting EV user charging behaviour, JOLT ran a series of experiments under the SmartCharge Group A product across South Australia. These experiments aimed to validate whether financial nudges could influence users to charge outside of peak grid hours, improving network efficiency and sustainability.

At a high-level, the execution methodology was as follows:

1. **Out-Reach**: Advertise the opt-in SmartCharge product to our existing JOLT users.
    a. The purpose of the experiment, to encourage environmentally-friendly charging habits, alongside pricing information and a voucher offer was emailed to the user.
    b. They had the option to voluntarily opt into joining the SmartCharge plan.
2. **Plan Subscription**: On 14 Apr 2025, opt-in Group A users were added to the SmartCharge plan.
    a. Users received a confirmation email that they were now on the new plan.
3. **Communications**: SmartCharge Group A users were then privy to SmartCharge-related push notifications, emails, in-app ads and all the general public were shown in-person ads via our JOLT charging screens.
4. **Experiment 1**: From 14 April to 18 May, SmartCharge users were subject to unique off-peak discounts on fast chargers, less-busy chargers and all other chargers as well.
    a. The off-peak period that was discounted was 10 am to 4 pm.
5. **Experiment 2**: From 19 May to 30 June, these users were then subject to on-peak surcharges on the same chargers.
    a. The on-peak period that was surcharged was 4 pm to 9 pm.
6. **Conclusion**: All SmartCharge Group A users were rolled off back onto the default JOLT plan at the conclusion of this experiment.

Key Objectives

- Encourage off-peak charging behaviour among free plan users.
- Reduce peak-hour grid strain by introducing pricing disincentives.
- Measure user responsiveness to pricing changes across time windows.
- Assess communication effectiveness via app and external messaging.

Experimental Phase Summary

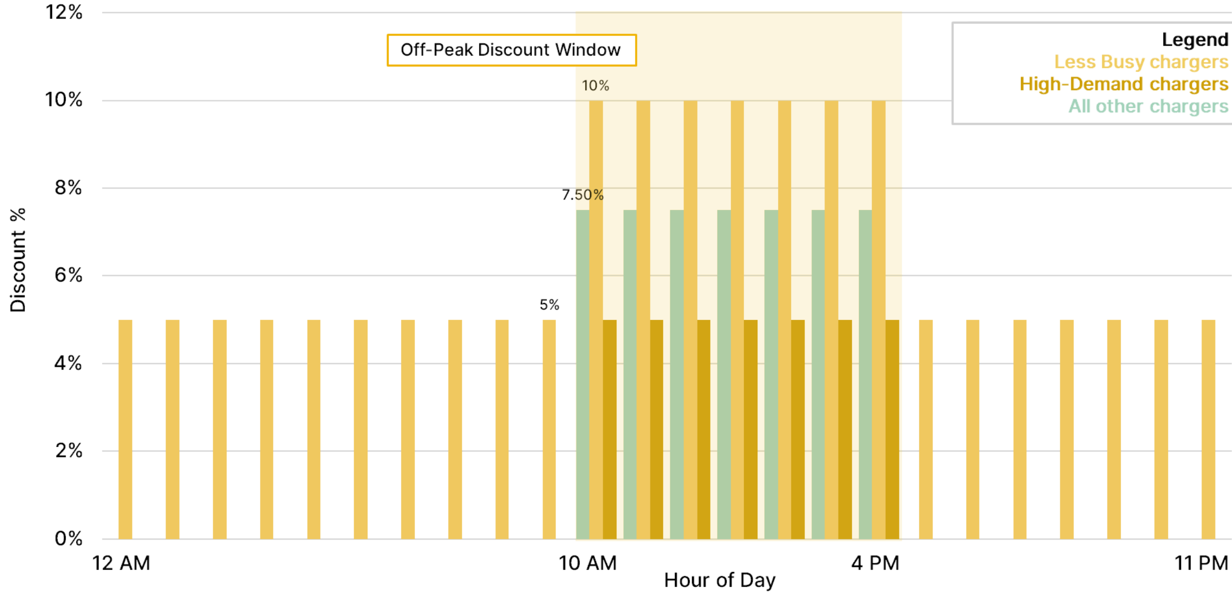
We introduced unique discount and/or surcharge windows based on based on specific times of the day, as referenced in the below table and the graphed schedules:

Phase	Date Range	Strategy	Target Window(s)
3a	14 Apr – 18 May 2025	Off-peak discount	10:00 AM – 4:00 PM
3b	19 May – 30 June 2025	On-Peak surcharge	4:00 PM – 9:00 PM
Control	14 Apr – 30 June 2025	Default Control Group with no new discounts	N/A

Discount Schedule Phase 3a: Off-Peak Discounting

For the first phase of the experiment, we introduced discounts at three different rates across our chargers during the off-peak window:

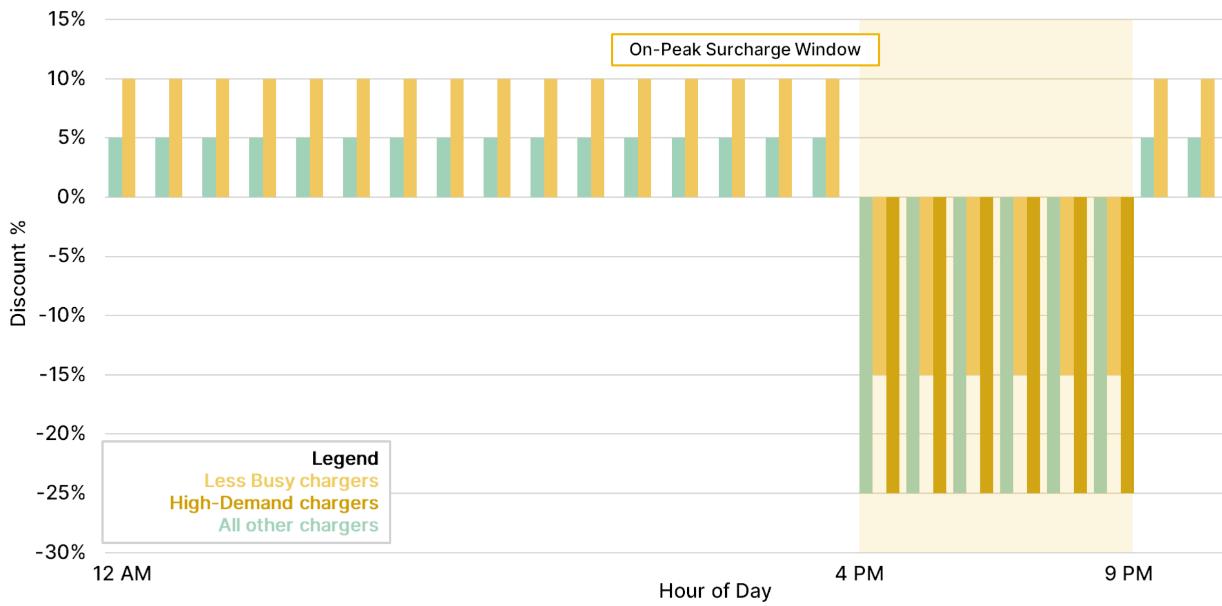
- We introduced general discounts across all chargers specifically during the off-peak window.
- Higher discounts at less busy chargers during the window and consistent discounts outside of the window.
- Lower discounts at high-speed chargers during the window.



Discount Schedule Phase 3b: On-Peak Surcharging

For the second phase of the experiment, we introduced unique surcharges during the on-peak window while also adding consistent discounts outside of that period:

- We introduced general surcharges across all chargers during the on-peak window and a gentle discount all other times
- At less-busy chargers we introduced less intensive surcharges during the same on-peak time while adding more appealing discounts all other times
- The high-speed chargers had the same surcharges as the general chargers with no discounts during all other times.



Design Characteristics

- **User Eligibility:** Only users on the SmartCharge Group A plan, voluntarily enrolled.
- **Backend Implementation:** Pricing changes executed via backend billing, with users being able to see $/kWh pricing in-app.
- **No Behavioural Lock-In:** Users retained full control over when and how they charged.

Analysis Approach

Data Collection

Data was sourced from JOLT's session logging platform and included:

- **Session timestamps** (local start time)
- **Energy dispensed (kWh)**
- **Session success flags**
- **Subscription tier and pricing logic**
- **Location data**: charger LGA, postcode, state
- **Charger type used** (regular or fast)

Metrics

The following metrics were used to evaluate impact:

KPI	Purpose
Avg. energy per session	To track changes in user charging quantity
% of sessions during 10am–4pm	Primary indicator of off-peak charging behaviour
% of sessions during 4pm–9pm	To assess surcharge deterrence
% of energy dispensed at regular and fast chargers	To measure uptake of underutilised infrastructure
Charger LGA/postcode distribution	To identify regional uptake patterns
Session volume and time of session start	To track frequency shifts

Communication Plan

To drive awareness and influence charging behaviour, JOLT executed a multi-channel communications strategy across digital and physical touchpoints. Each channel played a distinct role in guiding users through the behavioural change funnel — from awareness to action. This was done via the following channels:

Push Notifications
Sent contextually, these messages reinforced SmartCharge benefits and nudged users to charge before 4pm. They were short, actionable, and aligned with each experimental intervention phase.

In-App Ads
Within the JOLT app, two ad formats were deployed:

- A **full-screen interstitial ad** (350×600) surfaced during the plug-in flow.
- A **persistent banner ad** (350×100) shown during and after charging sessions. These were designed to increase visibility at high-attention moments within the user journey.

Email Campaigns
Pre-scheduled emails were delivered at key points: experiment launch, mid-phase nudges, and end-of-phase wrap-ups. They aimed to provide deeper educational context and motivate behavioural change at a more reflective level.

Out-of-Home (OOH) Screens
Digital ads were featured on JOLT's charger-mounted display units across Adelaide. These visuals supported ambient awareness of SmartCharge and time-based pricing, particularly for walk-up or incidental users.

Channel Roles Across the Funnel

Stage	Channel(s)	Purpose
Awareness	OOH screens, Email, In-App Ads	Introduce SmartCharge, establish benefit messaging
Engagement	In-App Ads, Push Notifications	Reinforce time-based incentives in context
Action/Conversion	Push Notifications, In-App Ads	Prompt users to start charging before 4pm or avoid 4–9pm surcharges

Results & Analysis

User Segmentation Overview

SmartCharge Product Adoption

As part of this trial, two experimental pricing plans were launched:

- **SmartCharge Group A**
- **SmartCharge Group B**

While SmartCharge Group A achieved meaningful adoption, uptake for the SmartCharge Group B product was minimal. This disparity in participation highlights both the relative appeal of discounted products and the friction commercial or high-usage drivers may feel toward plans that introduce perceived limitations or pricing complexity. This low adoption limits our ability to draw experimental conclusions from this user group, and confirms that the primary insights from this trial will come from the Group A user segment.

SmartCharge Group B Adoption Insights

The SmartCharge Group B product, launched in parallel with the SmartCharge Free plan, received a notably low opt-in rate — with only 6 users enrolling and no recorded charging activity across the 12-week experimental period. While this lack of adoption may initially appear concerning, it is important to emphasize that a null result is still a valid scientific outcome. In fact, it provides valuable insights into user preferences, market pricing sensitivity, and platform constraints — each of which is crucial for informing policy and product development moving forward.

At the core of this outcome lies a fundamental challenge: the SmartCharge Group B pricing structure could not be made more appealing than the default JOLT equivalent that already exists. The SmartCharge Group B plan — built to test government-mandated off-peak shifting between 4pm–9pm — was priced at \$0.49/kWh during off-peak (9pm–4pm) and \$0.64/kWh during on-peak (4pm–9pm). From the perspective of a commercial driver or high-usage user, this structure struggled to offer enough financial incentive to consider joining, and in many cases presented a costlier alternative.

This pricing design was not due to lack of effort but instead a result of compound constraints:

- SmartCharge experimentation goals required us to target the 4pm–9pm grid peak window specifically.
- We built this experiment such that two pricing windows were present per product.
- We limited the ability to offer deeper discounts around time-of-day pricing such that we avoided operating at a loss.

Combined, these limitations left us with little room to offer SmartCharge Group B users a compelling reason to switch from a pricing model that already promotes off-peak charging via pre-established lower overnight rates.

Despite the outcome, this result is informative. It validates that JOLT's existing pricing is already sufficiently well-aligned with grid-friendly charging habits. Additionally, the lack of opt-in suggests that commercial users are acutely price-sensitive and unlikely to volunteer for plans that don’t offer clear savings — reinforcing that future policy-driven interventions should be both more aggressive in price and simpler in design. While no charging sessions were logged, this lack of engagement should not be interpreted as experimental failure, but rather as a signpost indicating the threshold at which pricing ceases to be persuasive for this segment.

Existing JOLT Product Behaviour

The JOLT equivalent of the SmartCharger Group B product has users that already charge in conjunction with off-peak timing windows, even extending earlier into the day. The energy consumed and the significant amount of sessions amassed are during the earlier times of the day, dropping to a definitive drastic low during the 4pm - 9pm off-peak window. JOLT’s existing pricing structure already exists as such an appeal to JOLT users, providing some of the cheapest electricity rates in the market, which, alongside the high charger demand of other subscription plans during on-peak hours, results in a collective shift in charging behaviour to prioritise:

- Cheaper off-peak rates
- More charger availability and vacancy (related to off-peak/inconvenient charging times)
- Longer session durations and energy amounts

SmartCharge Group A Adoption Insights

The SmartCharge Group A product is largely being used by household drivers, rather than high-usage commercial or professional drivers. This supports the experimental hypothesis that pricing interventions aimed at load balancing will need to align with domestic behavior patterns, such as school runs, work hours, and convenience charging.

Strategic Implications

- The success of the experiment hinges on the behavior of personal-use drivers, not professional users.
- Commercial and rideshare driver response will remain an open question until future iterations increase plan adoption.
- Current segmentation supports targeted nudging strategies tailored to predictable, routine charging patterns among household EV owners.

Historical Comparison

It is important to compare the charging behaviour of users enrolled in the SmartCharge experimental plan against historical benchmarks established during prior operational phases of JOLT's network rollout in South Australia. The aim is to contextualize how dynamic pricing and behavioral nudges influenced user charging patterns relative to past usage norms.

For this comparison, we define four key historical phases:

- **Phase 1a (Jan 2022 – Nov 2022):** Initial network establishment, with limited charger availability and static pricing.
- **Phase 1b (Dec 2022 – Mar 2024):** Network expansion, including the introduction of fast chargers and broader user adoption.
- **Phase 2 (Apr 2024 – Apr 2025):** Pre-experiment period, immediately preceding SmartCharge. Charger utilization and demand more stabilized.

- **Phase 3 (Apr 2025 - Jun 2025)**: The experimental SmartCharge period split into three sub-phases to measure unique charging behaviours, as specified in the following section.

By comparing SmartCharge user behavior to the behaviour of JOLT users across each of the phases, we aim to identify shifts in usage patterns, time-of-day preferences, and charger selection that can be attributed to the experimental pricing design.

Current State Comparison

In accordance with the analysis of the historical development of JOLT, the current state default plan needs to also be considered against the performance of the SmartCharge plan. From here onward, we can begin exploring how the performance of the opt-in product has been influenced by the introduced experiments, using the Current State figures as our control group to compare against.

For the purposes of comparison, and in addition to the historical phases defined above, we will introduce the following three phases as points of reference:

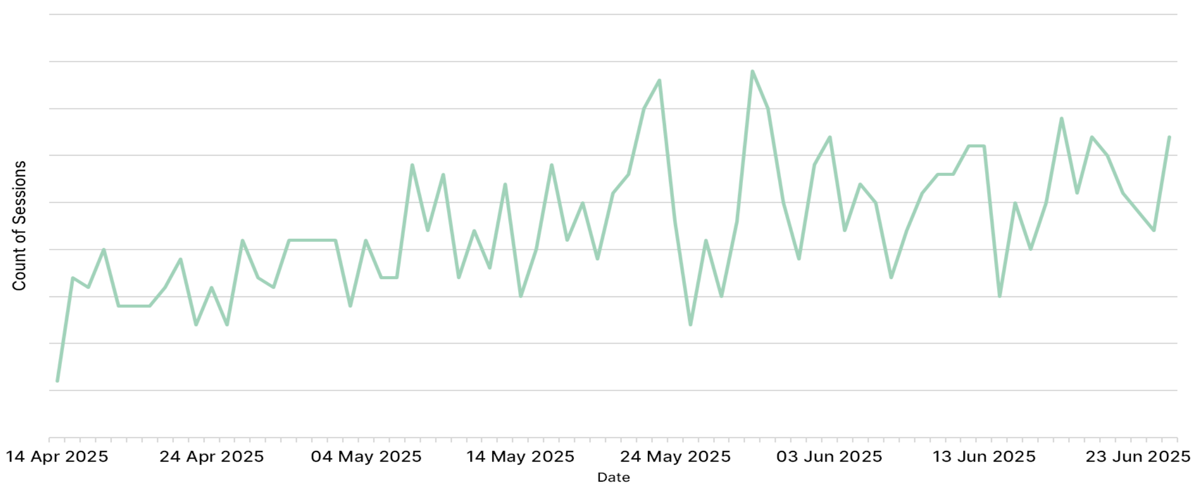
- **Phase 3a (14 Apr 2025 – 18 May 2025):** The time period containing the 'off-peak discounting' Experiment #1, which denotes the first phase of the experiment.
- **Phase 3b (19 May 2025 – 29 June 2025):** The time period containing the 'on-peak surcharging' Experiment #2, which denotes the second phase of the experiment.
- **Phase 3 Control (14 Apr 2025 – 29 June 2025):** The time period of the whole 3-month experiment, recording the performance of the default plan user group.
    - It is important to note that although this is defined as a unique phase, it runs in overlap to Phase 3a and 3b, with the key delineator being that this tracks the Control Group, not the SmartCharge opt-in product.

Experimental Results - Overview

Below is an overview of the charging behaviour observed by the SmartCharge Group A plan across the duration of the experiment 14/04 - 30/06.

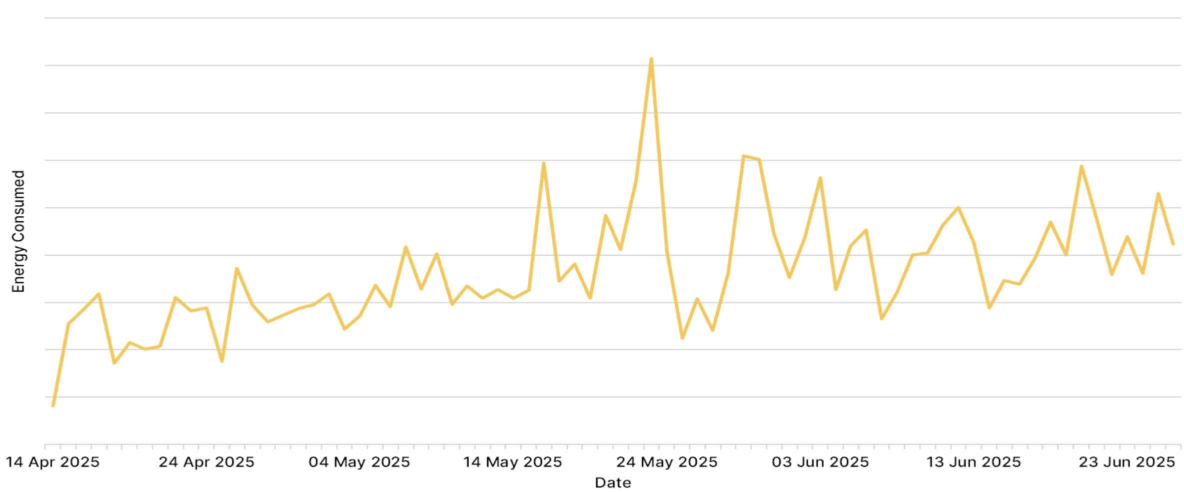
Session Count

Over the course of the experiment, we have observed the following session volume trend for the SmartCharge plan.



Energy Consumption

The following is the energy consumption trend over the same window:



Experiment 1: Off-Peak Discounting

Experimental Summary

Experiment 1 tested whether time-based discounts could shift user charging behavior away from peak grid hours and toward periods of excess renewable supply.

From 14 April to 18 May 2025, users on the SmartCharge Group A plan received a discounted rate between 10am and 4pm. The goal was to evaluate if usage would increase during this midday window and decrease during the expensive 4pm–9pm peak period.

Methodology Recap

Only users who had opted into the SmartCharge Group A plan in South Australia were exposed to the pricing changes. These discounts were clearly communicated via onboarding emails and reinforced through in-app messages. Users on the default JOLT-equivalent plan who did NOT opt-in were treated as our Control group. Behavioral outcomes were measured via:

- % of sessions occurring between 10am–4pm
- % of sessions occurring during 4pm–9pm

To enforce this experiment and entice users to charge within the desired off-peak window, we facilitated the following discount structure:

Experiment 1

Time of Day	Discount %
Off-Peak 10am - 4pm	7.5%
4pm - 9pm	0%
9pm - 10am	0%

Key Outcomes and Insights

Session Overview

The following breaks down the session information exclusively between 10am and 4pm for the duration of Experiment 1 (14 April to 18 May 2025) on the SmartCharge opt-in plan.

Percentage of Daily Sessions by Hour

The following view graphs the percentage of the daily total sessions that were started within each hour of the day, graphing the SmartCharge product against the control product. This averages all the session percentages across the duration of Experiment 1's timeline.

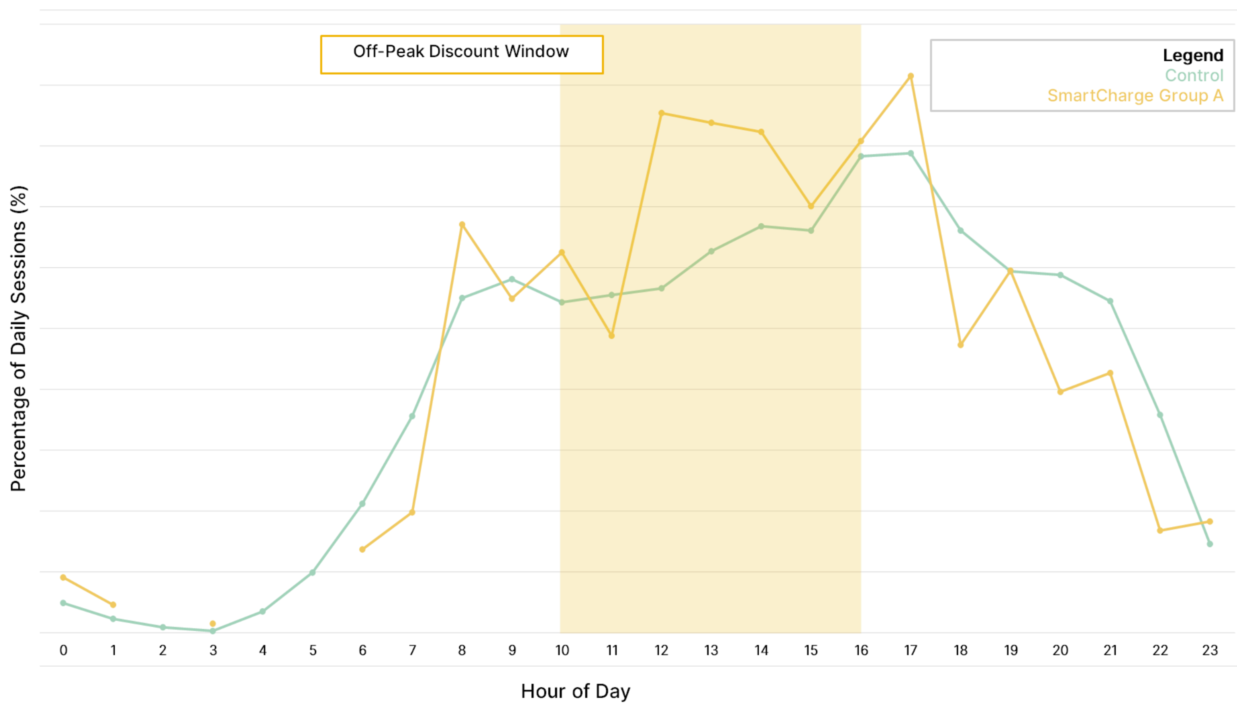


Fig 1.

Key observations

- SmartCharge users show a clear shift in session distribution towards **10am–2pm**, aligning with the discounted window.
- Control users peak slightly later (around 3–5pm), suggesting less incentive to shift earlier.
- Post-4pm session volume drops more sharply for SmartCharge users, indicating partial anticipatory behavior for Experiment 2.
- Overnight and early morning usage is comparable across both plans, suggesting baseline behavior is similar.
- Between 10am–4pm (the discounted off-peak window), SmartCharge users initiated a higher percentage of sessions than control users — most notably between 11am and 2pm, where their session start rates are consistently higher.
- Control user session patterns show a steady increase through late morning and early afternoon, peaking around 4–6pm.
- SmartCharge user session share declines earlier, with a noticeable drop-off after 4pm, suggesting some pull-forward in behavior.
- This suggests Experiment 1's discounts did influence behavior in line with H1: users shifted charging into the solar-sponge window (10am–4pm), aligning with renewable generation hours.

Percentage of Daily Energy Consumption by Hour

Similar to above, this graph shows the average energy consumed per hour as a percentage of the daily total energy consumption graphing the opt-in against the control over the course of Experiment 1.

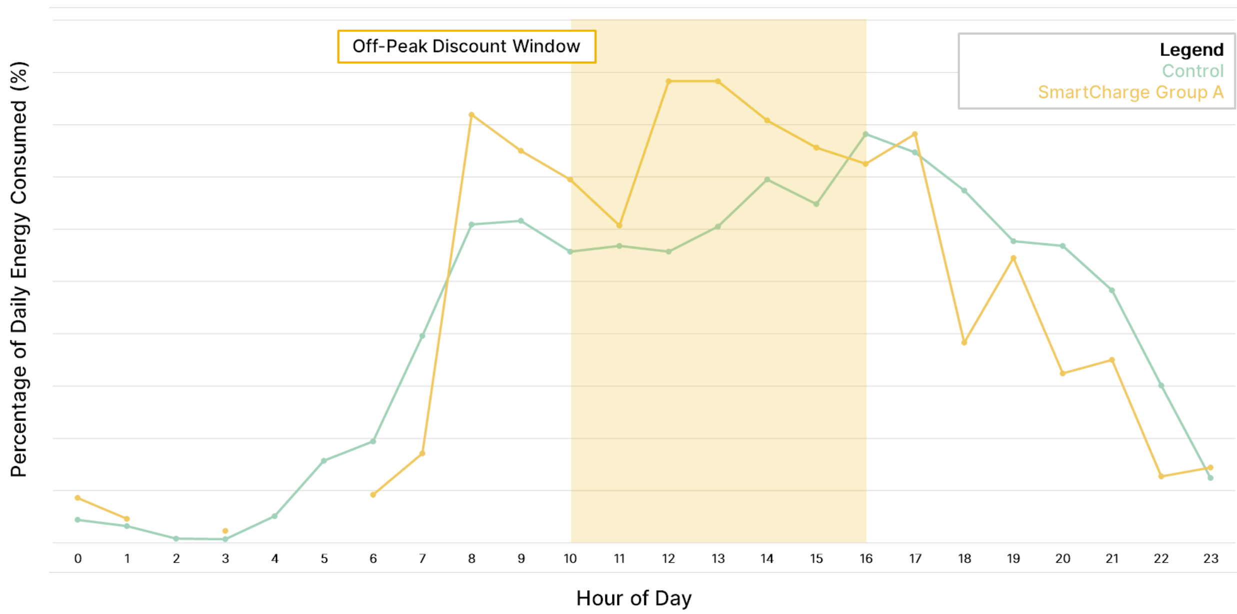


Fig 2.

Key observations

- Energy distribution closely mirrors session distribution, confirming that users are not just initiating sessions, but drawing meaningful energy during discounted hours.
- SmartCharge users consume a higher % of daily energy per hour between 11am–2pm, compared to control.
- Energy usage by SmartCharge users drops faster after 4pm than control, suggesting reduced evening engagement.
- This supports a meaningful behavioral shift, not just superficial session timing.

Average kWh/session as split by the hour of day

The below view charts the average energy (kWh) consumed per session split by the hour of the day that session was started. This graphs the opt-in plan against the control and spans over the course of Experiment 1's timeline.

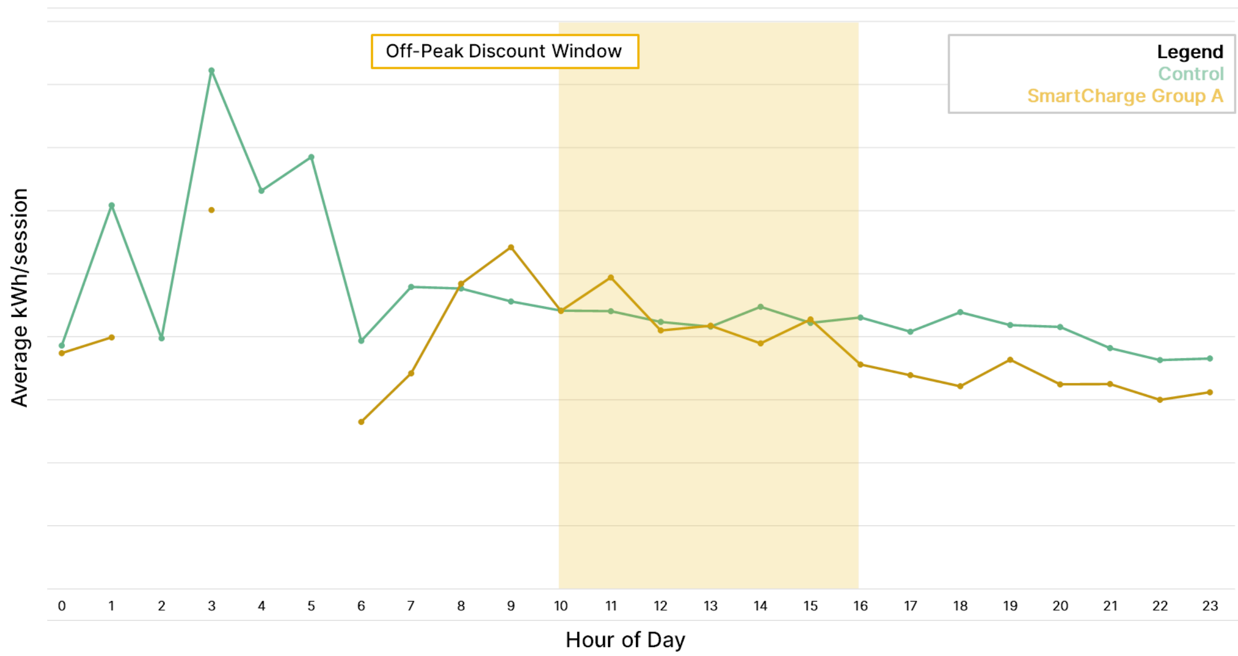


Fig 3.

Key observations

- Energy per session is relatively stable across hours for both groups, but control users show higher variance and more energy per session overall, especially overnight.
- SmartCharge user sessions become slightly more conservative (lower kWh/session) during the 10am–4pm window — potentially indicating shorter, more tactical charges.
- Spikes outside standard windows (e.g. 3am) likely reflect low-volume outliers, especially for the control group.
- Suggests SmartCharge users are modifying not just when, but how much they charge — indicating responsive behavior.

Percentage of daily sessions that occur between the 10 am - 4 pm window

The below graph charts the percentage of total daily sessions that were started between the 10am - 4pm window, which has been defined as the ideal 'off-peak' hours for user charging. The graph displays the average percentage of all sessions occurring within each specific Phase of JOLT's rollout in South Australia. This is an important insight in considering current experimental trends against long-standing historic data.

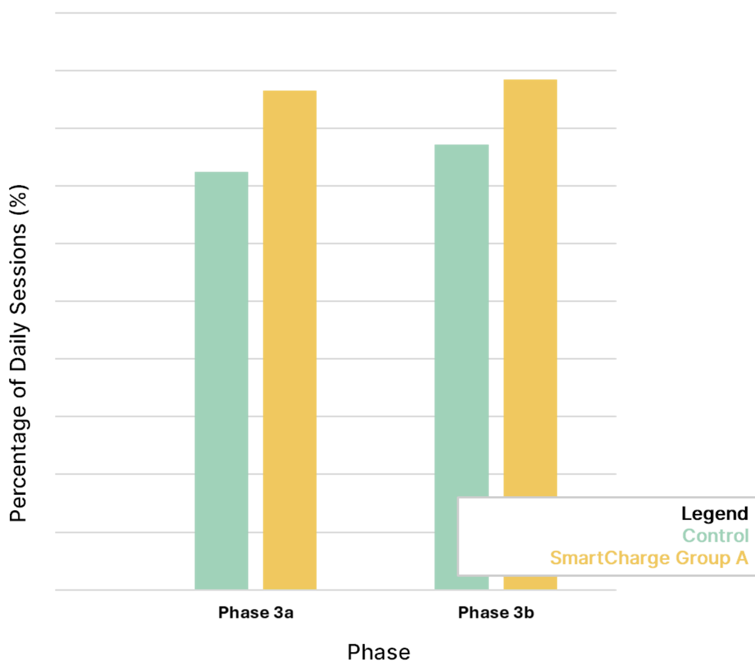


Fig 4.

Key observations

- The highest off-peak session % occurs during Phase 3b for SmartCharge users, validating H1.
- Control users remain lower than SmartCharge users across phases, reinforcing that the observed shift is linked to the experimental intervention.
- SmartCharge behavior in Phase 3b remains elevated, suggesting some persistence of behavior or impact of comms.

Percentage of daily energy consumption that occur between the 10 am - 4 pm window

Similar to above, this graph displays the percentage of the daily energy consumption that was consumed during the 10am to 4pm window, as an average across all sessions that occurred within each specific phase.

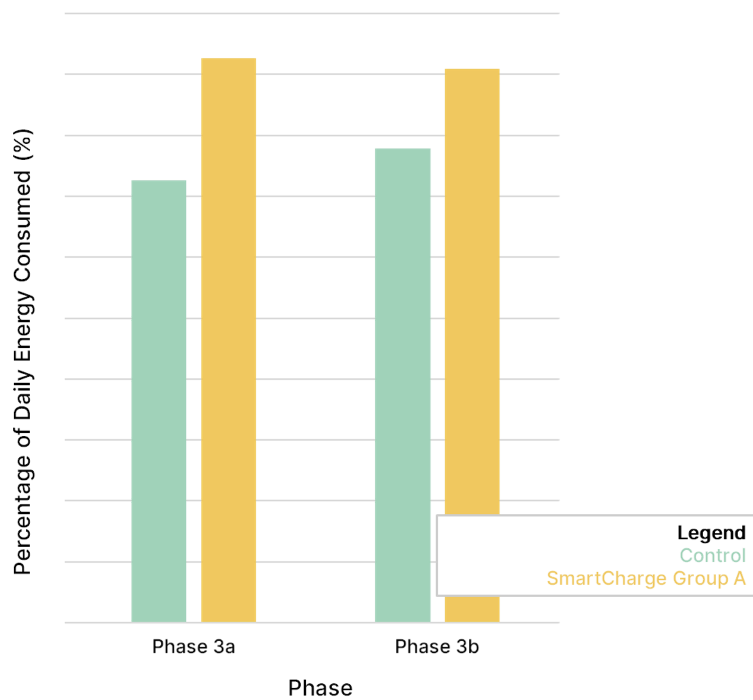


Fig 5.

Key observations

- Energy consumption patterns closely match session patterns from Fig. 4, reinforcing that behavioral shifts are real, not just session gaming.
- SmartCharge users consume a large % of their daily energy in the discount window during Phase 3a — the highest across all cohorts.
- The difference between control and SmartCharge groups is very pronounced during Phase 3a and 3b, aligning with experiment design.

Experiment 1 Insights

The analysis of Experiment 1 reveals several clear patterns in user behavior that align with the intended outcomes of the pricing intervention. These insights offer early validation of key hypotheses around time-based incentives, grid-aligned charging behavior, and the responsiveness of users. While observed shifts vary in magnitude, they collectively demonstrate that well-communicated, targeted pricing mechanisms can drive measurable changes in charging behavior across both session timing and energy consumption. The following insights summarise the most significant behavioral trends observed, along with their relevance to the original hypotheses and their supporting visual evidence.

The following are insights as they've been raised relative to the hypothesis we investigated:

Insight	Linked Hypothesis	Figures
SmartCharge users shifted sessions into the 10am–4pm window more than control users	H1	1, 4
SmartCharge users consumed more energy during 10am–4pm, showing real behavior change, not just session gaming	H1	2, 5
Session frequency and energy per session both suggest engagement increased without overwhelming infrastructure	H1, H4	1, 2, 3
Behavior persisted into Phase 3b (post-experiment), suggesting enduring impact from discount awareness	H1	4, 5
SmartCharge users displayed more consistent midday charging, supporting grid-aligned solar usage	H1	1, 2
Variability in control user behavior (especially at night) suggests less structured or goal-driven charging	H4	3

Experiment 2: On-Peak Surcharging

Experimental Summary

In the second stage of the experiment, conducted from 19 May to 29 June 2025, pricing incentives were inverted: instead of encouraging off-peak use, the system penalized peak-hour usage. SmartCharge Group A users were charged higher rates for charging between 4pm and 9pm, South Australia's evening demand peak. The intent was to observe whether a pricing deterrent could effectively push users away from peak congestion and improve overall system balance.

Methodology Recap

SmartCharge Group A users were informed of the pricing change through a targeted email campaign and in-app messaging. The surcharge was visible within the app interface during the active surcharge window. This period ran immediately after Experiment 1 and affected the same cohort of opt-in users. Behavioral response was again evaluated using:

- Change in % of sessions during 4pm–9pm
- Shift in usage toward non-peak time windows
- Continued engagement during off-peak (e.g. 10am–4pm)

To enforce this experiment and entice users to charge within the desired off-peak window, we facilitated the following discount structure:

Experiment 2

Time of Day	Discount %
7am - 4pm	5%
On-Peak 4pm - 9pm	-25%
9pm - 7am	5%

Key Outcomes and Insights

Percentage of Daily Sessions by Hour

The following view graphs the percentage of the daily total sessions that were started within each hour of the day, graphing the SmartCharge product against the control product. This averages all the session percentages across the duration of Experiment 2's timeline.

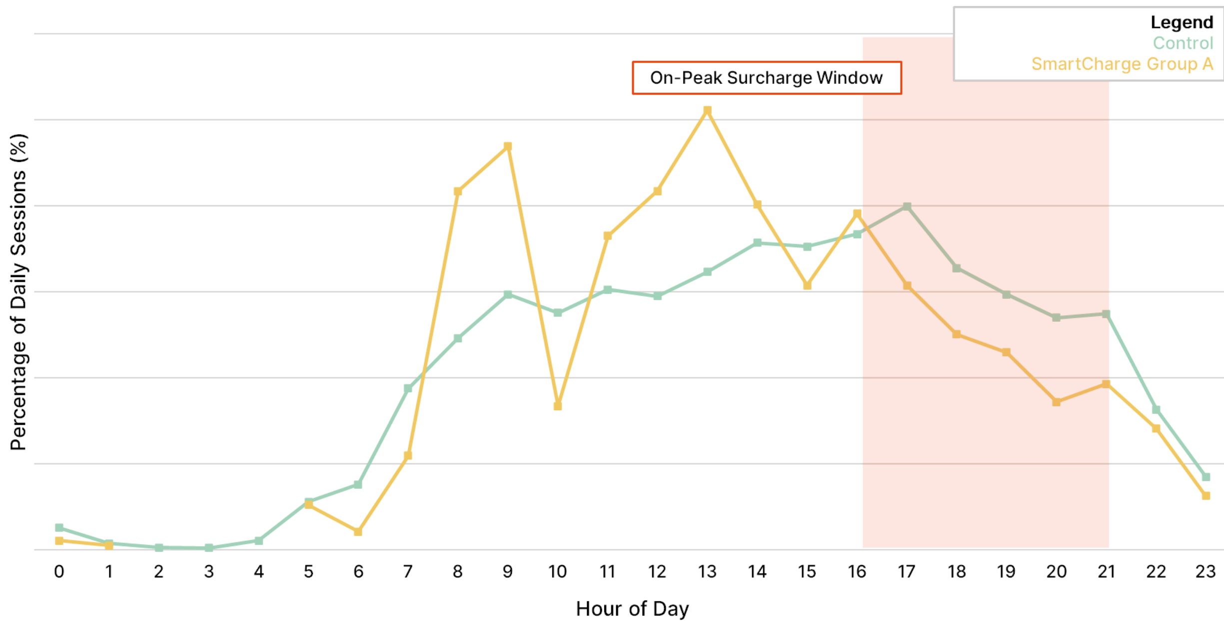


Fig 6.

Key observations

- There is a notable decline in SmartCharge (yellow line) sessions between 4pm–9pm, aligning with the surcharge window, compared to the control group (green line).
- A clear uptick in sessions occurs earlier in the day, especially between 7am–3pm, suggesting a behaviour shift toward off-peak or surcharge-avoidant hours.
- The control group shows a steadier session distribution across the day, with only a slight decline during the surcharge window, reinforcing that the behaviour shift is experiment-driven.

Percentage of Daily Energy Consumption by Hour

Similar to above, this graph shows the average energy consumed per hour as a percentage of the daily total energy consumption graphing the opt-in against the control over the course of Experiment 1.

Fig. 7

Key observations

- Energy consumption patterns mirror the session timing trends from Fig. 6, showing a clear reduction in on-peak energy draw for SmartCharge users.
- SmartCharge users show a sharp increase in energy draw between 8am–3pm, indicating effective load-shifting in response to price signals.
- The control group maintains a flatter energy distribution, with significant energy still consumed during peak hours.

Average kWh/session as split by the hour of day

The below view charts the average energy (kWh) consumed per session split by the hour of the day that session was started. This graphs the opt-in plan against the control and spans over the course of Experiment 1's timeline.

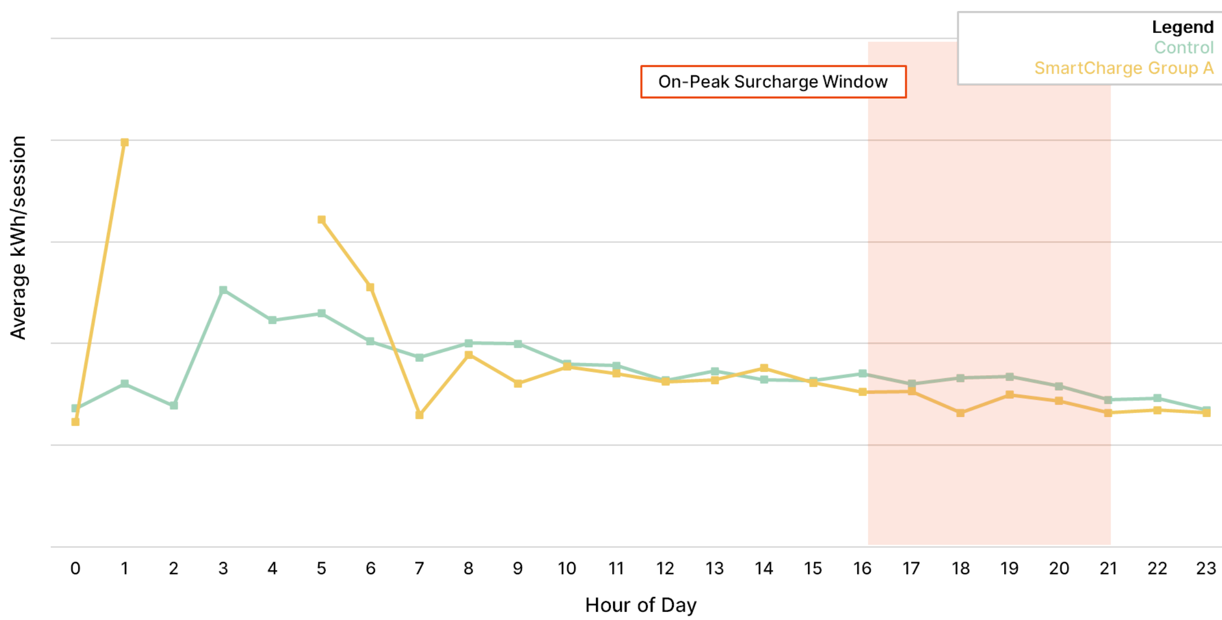


Fig. 8

Key observations

- SmartCharge sessions are consistently lower in kWh/session between 4pm–9pm, due to shorter charging during the high-cost, surcharged period.
- The control group maintains similar session energy averages throughout the day.
- Interestingly, SmartCharge users show some erratic variance in early morning hours, likely due to smaller sample sizes.

Percentage of daily sessions that occur between the 4 pm - 9 pm window

The below graph charts the percentage of total daily sessions that were started between the 4pm - 9pm window, which has been defined as the least preferred 'on-peak' hours for user charging. The graph displays the average percentage of all sessions occurring within each specific Phase of JOLT's rollout in South Australia. This is an important insight in considering current experimental trends against long-standing historic data.

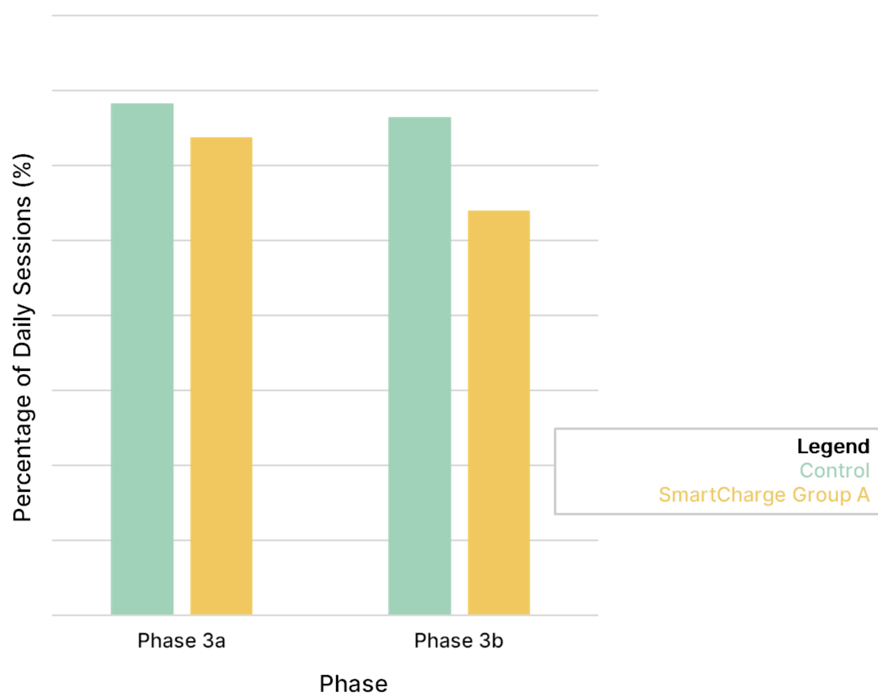


Fig. 9

Key observations

- For Phase 3b, SmartCharge sessions occurring during 4pm–9pm dropped to their lowest of all observed phases, compared toa higher % in the control.
- This marks a clear behavioural shift and is even more pronounced than in Phase 3a.
- Given Phase 3b features on-peak surcharging, it shows that pricing has effectively changed SmartCharge user behaviour to prefer even less on-peak charging than initially in Phase 3a.

Percentage of daily energy consumption that occur between the 4 pm - 9 pm window

Similar to above, this graph displays the percentage of the daily energy consumption that was consumed during the 4pm to 9pm window, as an average across all sessions that occurred within each specific phase.

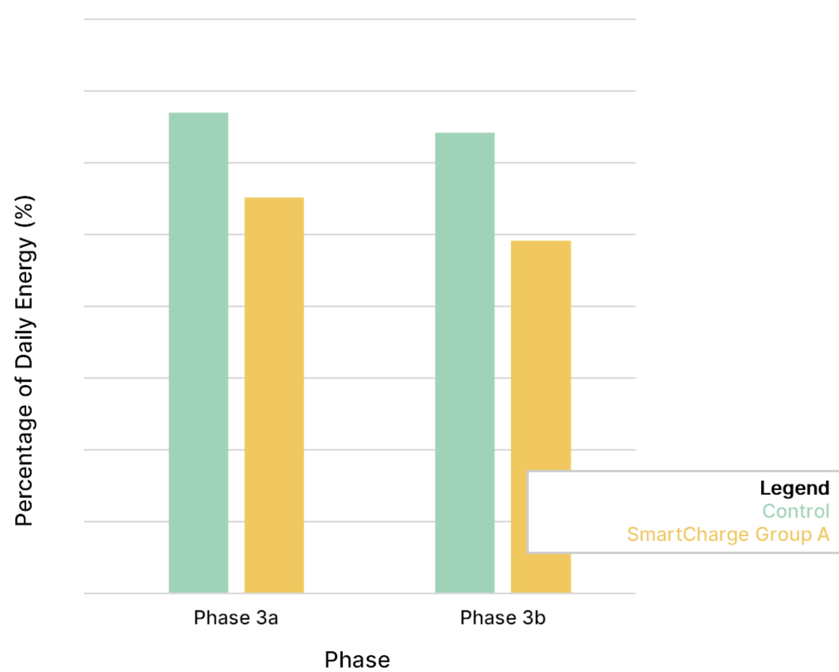


Fig. 10

Key observations

- SmartCharge users consumed a miniscule amount of their daily energy during the on-peak window in Phase 3b, a steep decline from the percentages seen in earlier phases and the control group.
- This aligns precisely with the goal of reducing energy drawn during high grid strain periods, and supports the above Fig. 9 too as it shows that the session volume and frequency has decreased in Phase 3b, with even more SmartCharge user-behaviour trending away from on-peak periods.

Experiment 2 Insights

The analysis of Phase 3b reveals clear evidence that time-based price signals, specifically, surcharges applied during the 4–9 pm peak window—successfully altered user behavior among SmartCharge participants. Users not only shifted session start times earlier in the day to avoid the surcharge but also reduced session duration and energy consumption during the penalized hours, as shown by lower kWh per session. These behavioral changes were not mirrored in the control group, reinforcing the idea that pricing visibility and incentive awareness played a key role. This supports the hypothesis that well-communicated pricing can drive behavioral efficiency and demand distribution even among users with capped usage, thereby validating both H2 and H4.

The following are insights as they've been raised relative to the hypothesis we investigated:

Insight	Linked Hypothesis	Figures
SmartCharge users shifted sessions outside of 4–9 pm surcharge window more than control	H2, H4	6, 9
SmartCharge users consumed less energy during 4–9 pm, suggesting real behavioral change not just shorter sessions	H2, H4	7, 10
Users shortened or avoided sessions during surcharge window, reducing kWh/session significantly	H2	8

Surcharges visibly suppressed late evening/nighttime charging among SmartCharge users	H2	6, 7
Charging patterns indicate conscious adaptation in timing and duration to price signals	H4	6, 7, 8
Even steady-usage users showed adaptive charging behavior in response to price signals	H4	6, 8
Clear visual dip in both session frequency and energy use during surcharge window across multiple figures	H2	6, 7, 8, 9, 10

Experiment 3: Charger Pricing

Experimental Summary

Experiment 3 was layered on top of Experiments 1 and 2, aiming to shift demand from high-demand infrastructure to underutilized assets. Specifically, it introduced stronger incentives for charging at less-busy chargers and reduced or removed incentives for high-demand chargers. The strategy was active across the full experiment window (14 April to 29 June 2025) and built on the assumption that users could be nudged to redistribute load through charger-type-specific pricing signals.

Methodology Recap

The aim of Experiment 3 was to distribute charging sessions toward less-busy chargers and away from high-demand chargers alike. Thus, pricing variations were introduced in addition to the existing discounts of Experiment 1 and 2 that favoured less-busy chargers and opposed high-demand, high-speed chargers. Pricing variations surfaced in the app UI and were clearly documented in the launch and mid-phase communication plans. All users in the SmartCharge Free group were eligible. The effectiveness of charger-type nudging was measured using:

- % of sessions on less-busy chargers vs high-demand
- Trends over time between early (off-peak only) and late (on-peak surcharge) phases
- Comparison against control group charger preferences across the same periods

The discounting strategy for these unique charger types was as follows for Experiment 1 and 2:

Experiment 1 Discount %'s

Time of Day	General Chargers	Less Busy Chargers	High-Demand Chargers
Off-Peak 10am - 4pm	7.5%	10%	5%
4pm - 9pm	0%	5%	0%
9pm - 10am	0%	5%	0%

Experiment 2 Discount %'s

Time of Day	General Chargers	Less Busy Chargers	High-Demand Chargers
Off-Peak 10am - 4pm	7.5%	10%	0%
4pm - 9pm	0%	-15%	-25%
9pm - 10am	0%	10%	0%

Key Outcomes and Insights

Less Busy Chargers

Below we examine outputs describing the usage of these less-busy chargers over the course of both Experiment 1 and 2. The intended behaviour being that we want to balance the load on the grid and increase utilisation of these chargers.

Percentage of Total Sessions

Here graphs the percentage of all sessions initiated by users on the less-busy chargers out of all sessions conducted over the experimental period.

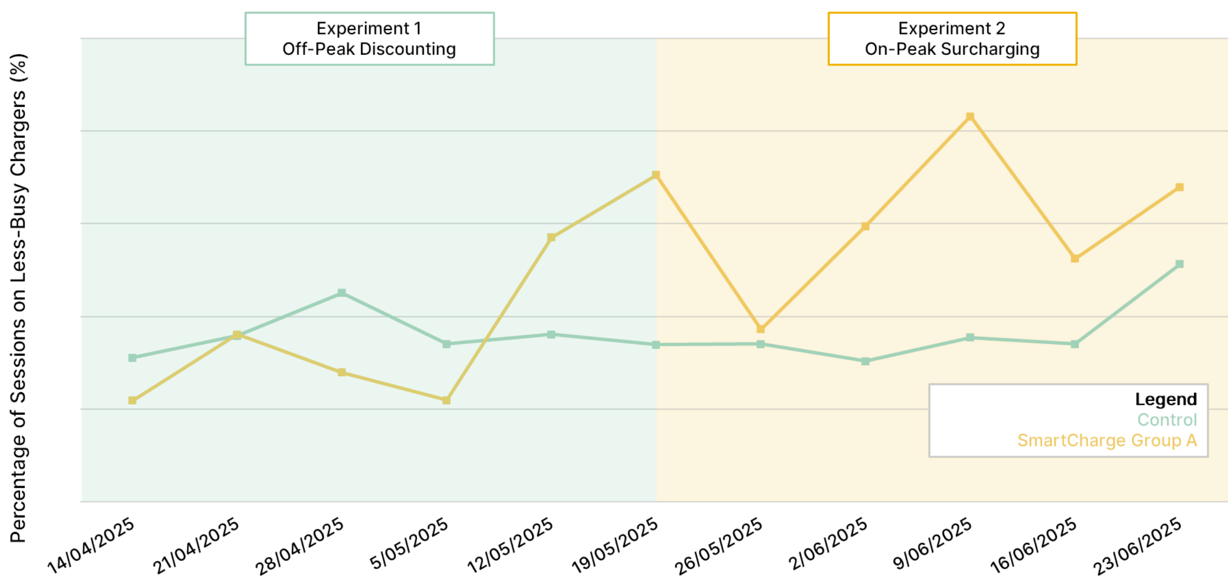


Fig. 11

Key Observations

- **Visible Behavior Shift During Experiment 1**: SmartCharge users show a clear upward trend in usage of our chargers starting late April, peaking mid-May.
    - Control users (green line) remain relatively flat.
- **Sustained Differential in Experiment 2**: SmartCharge usage increased again post-May 20, peaking mid-June, suggesting continued responsiveness.
    - Daily users show only a modest uptick, maintaining a consistent gap compared to SmartCharge users.
- **Responsive to Incentives**: The significant gap between cohorts implies a behavioral response to pricing interventions specific to SmartCharge users.
- **Volatility and Spikes**: Short-term spikes in SmartCharge usage indicate high responsiveness, possibly linked to communication prompting charger selection.

Average Energy per Session

This graph explores the average energy per session of sessions conducted on the less-busy chargers over the experiment period.

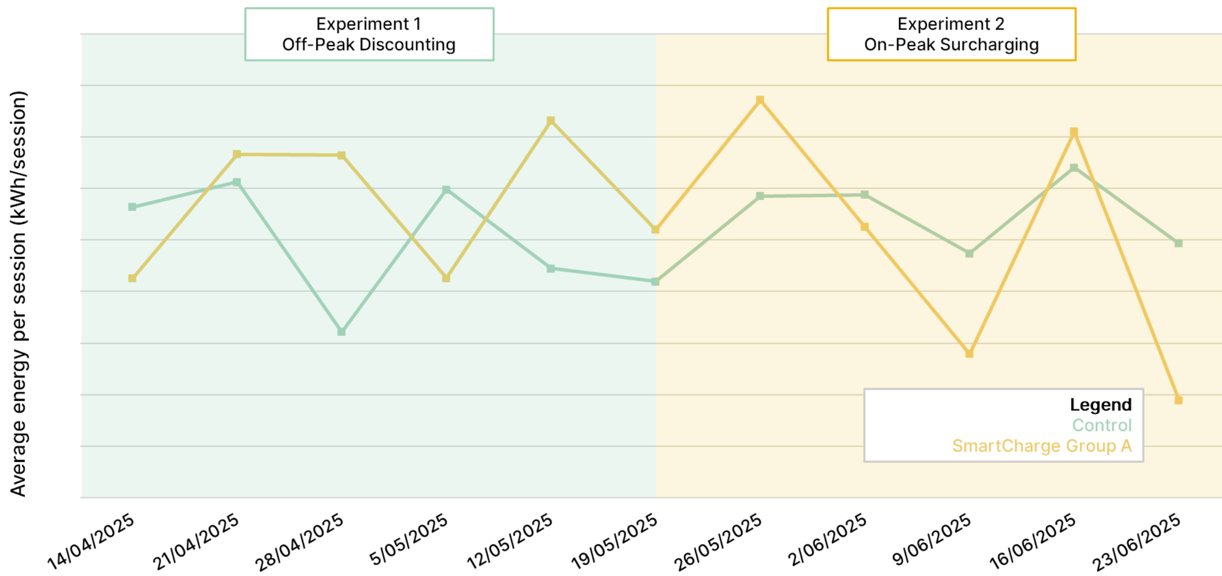


Fig. 12

Key Observations

- **SmartCharge Usage Consistently Higher During Incentives**: In both phases, SmartCharge users maintain slightly higher average energy per session than control users.
    - Suggests users aren't just plugging in briefly to “game” discounts—they’re fully utilizing the sessions.
- **Resilient Through Phase Shift**: Despite a drop around early June (coinciding with surcharge changes), SmartCharge users rebound quickly, showing a second peak mid-June.
- **Control Group Flatter, Lower**: Control users hover consistently per session, showing little variance or reaction to changes in pricing dynamics.
- **Insight into Infrastructure Load**: Despite higher session percentages and energy uptake, average energy per session for SmartCharge users stabilizes in a healthy range, suggesting infrastructure isn’t overloaded.

High-Speed Chargers

The below outputs explore the usage of the high-speed chargers over the course of Experiment 1 and 2. The intended behaviour being that we want to discourage the usage of these chargers.

Percentage of Total Sessions

Here graphs the percentage of all sessions initiated by users on the high-demand chargers out of all sessions conducted over the experimental period.

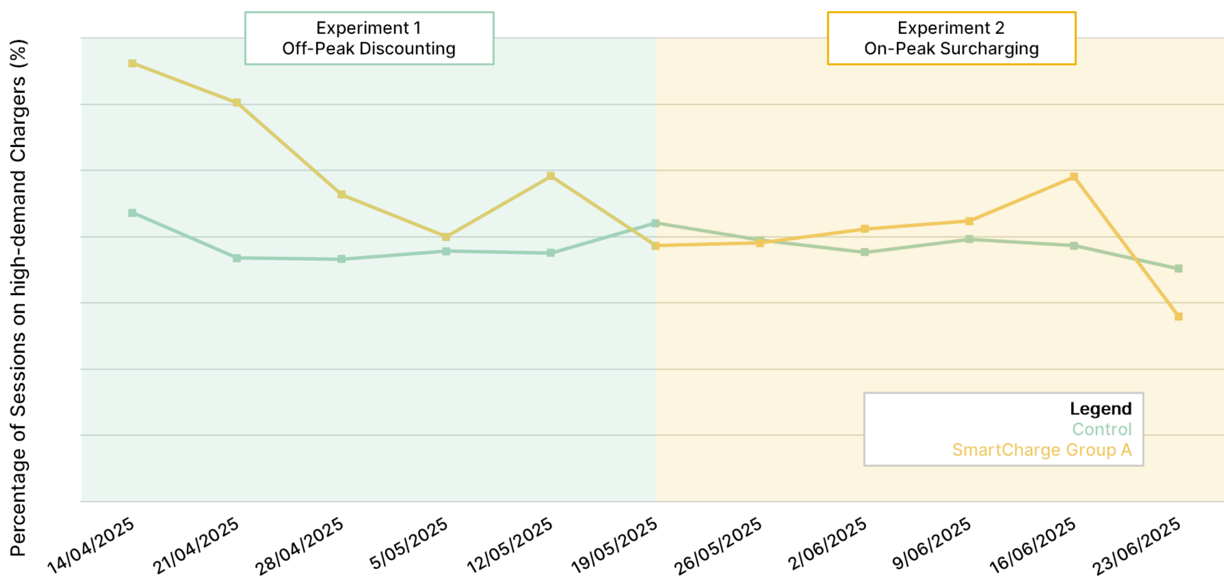


Fig. 13

Key Observations:

- **Initial Preference Gap**: At the start of Experiment 1 (14–21 Apr), *SmartCharge users* had significantly higher usage of high-demand chargers compared to Control users, indicating a strong preference for faster charging.
- **Sharp Early Drop**: Following the start of Experiment 1, SmartCharge user reliance on high-demand chargers fell quickly in the first two weeks. This suggests early responsiveness to the changed discount structure.

- **Flattening Pattern**: After this initial drop, SmartCharge usage plateaued between, aligning more closely with Control group usage, indicating potential behavioral convergence.
- **Control Group Stability**: Control users showed minimal variation, serving as a behavioral baseline.
- **Comparable Usage**: From this graph alone, we can see that both user groups equally value the high-demand fast charger speaking to the strong value offering from faster charging.

Average Energy per Session

This graph explores the average energy per session of sessions conducted on the less-busy chargers over the experiment period.

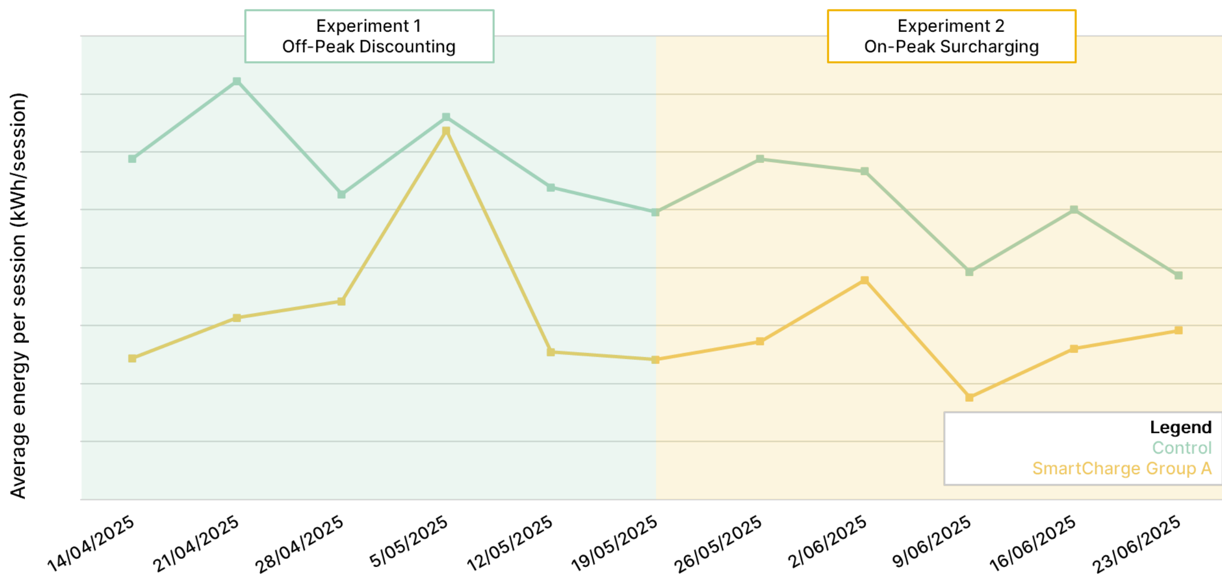


Fig. 14

Key Observations:

- **Higher Initial Usage by Control Group**: Control users consistently drew more energy per session than SmartCharge users throughout most of Experiment 1 and 2, peaking in late April.
- **SmartCharge Volatility**: Between mid-April and early May, SmartCharge users gradually increased average energy per session, possibly due to initial experimentation with pricing.
    - From ~12 May, energy draw dropped sharply and remained low across Experiment 2.
    - This trend suggests that SmartCharge users became more cost-conscious or strategic in response to evolving discount/surcharge patterns.
- **Gap Widens in Experiment 2**: Control group energy per session remained stable, while SmartCharge users consistently averaged lower rates, reinforcing the insight that the surcharges have directly affected user charging.

Experiment 3 Insights

Experiment 3 was designed to influence charger selection behavior by modifying the pricing structure of both high-speed and regular chargers. These pricing changes occurred concurrently with Experiments 1 and 2, targeting both SmartCharge and control users. During the Experiment 1 timeframe, high-demand charger discounts were reduced while less-busy chargers received stronger discounts. During Experiment 2, this shifted to include surcharges on high-demand chargers and even deeper discounts on less-busy chargers. The goal was to encourage users to shift away from congested, high-speed infrastructure in favor of underutilized, lower-speed options. The following insights highlight user responsiveness to these pricing cues, indicating that SmartCharge users—who had visibility into these changes—demonstrated clear behavioral adjustments aligned with cost signals.

Insight	Linked Hypothesis	Figures
SmartCharge users increased their share of sessions on regular chargers, especially during discount phases	H3	11
Control users remained flat in charger usage, while SmartCharge users showed clear upward response to price	H3	11
SmartCharge user energy per session on regular chargers was slightly lower, suggesting more distributed usage	H3	12
High-demand usage among SmartCharge users dropped significantly in response to reduced discounts and later surcharges	H3	13
SmartCharge users consistently drew less energy per session from high-demand chargers, indicating conscious effort to reduce cost	H3	14
Control users showed steady charger usage patterns across both charger types, reinforcing SmartCharge responsiveness	H3	11, 12, 13, 14

SmartCharge Comms Insights

To support the behavioural goals of Experiment 1, 2 and 3, JOLT deployed a multi-channel communication strategy designed to raise awareness of the SmartCharge program and drive engagement with time-based charging incentives. This strategy was intentionally broad in format but targeted in timing and message relevance, aiming to meet users where they were — both digitally and physically. The plan included a coordinated rollout of:

- Push notifications
- Email campaigns
- In-app ads and creatives
- On-site advertising on our charging screens

These consistently highlighted off-peak discounts and changes to peak-hour pricing. Together, these touchpoints formed a layered communication approach intended to maximise visibility, build user understanding, and ultimately drive participation in more grid-aligned charging behaviour, by specifically highlighting off-peak savings and discouraging peak hour charging.

Push Notifications

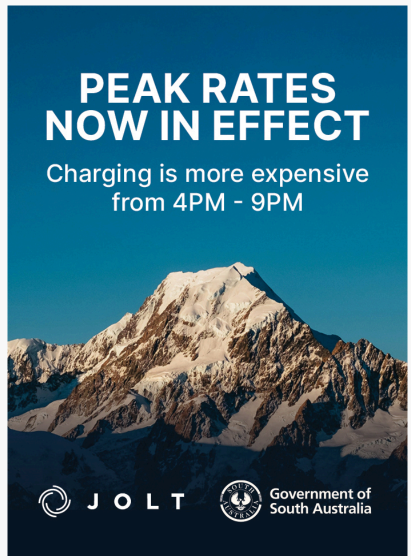
Push notifications were a key real-time engagement tool used throughout the experiment periods to guide user behaviour in response to evolving pricing incentives. These notifications were timely and tactically framed, nudging users to charge during off-peak and providing warnings ahead of peak-time surcharges. Messaging aligned with each experimental phase, helping reinforce awareness of discounts or surcharges while nudging users toward grid-aligned charging habits.

In-App Ads

To further embed awareness within the app experience, JOLT deployed a mix of in-app ad formats, surfacing these contextually during a user's charging session with the intention to drive visibility of SmartCharge benefits and time-based pricing. Performance data from Google Ad Manager — including impressions and click-throughs — are provided to help quantify reach and user engagement, alongside a sample creative to demonstrate visual execution.

Specifically, JOLT ran two in-app ad formats during the SmartCharge campaign, strategically positioned within the app experience to maximise contextual relevance and visibility during key user touchpoints. The following table outlines the performance of each ad unit:

A sample creative of both formats has been attached below:

Ad	Sample Creative
Full-Screen Cover Page	
Persistent Banner	

In-Person Ads

JOLT's physical charger screens served as high-impact, contextually-placed digital out-of-home (DOOH) assets throughout the experiment. While direct impression counts are not available, effectiveness is quantified using each screen's MOVE score — a nationally standardised measure of outdoor media visibility and exposure provided by the Outdoor Media Association (OMA). This allows for an industry-validated estimate of audience reach per charger location. The ad schedule and corresponding charger sites will be included to map the exposure window for each screen-activated message.

Limitations

While the SmartCharge experiments yield compelling directional shifts in user charging behaviour, it is crucial to acknowledge a number of limitations that may have influenced the interpretation and generalisability of the results. These limitations span structural, behavioural, and data design elements. Importantly, while each limitation presents a potential bias, they do not invalidate the results but instead offer context for how closely the experiment approximates ideal, controlled testing conditions. Where relevant, we outline the ideal mitigation scenario and explain how closely our methodology aligned to it.

- **Self-Selection Bias**: Unlike a randomised control trial, users opted into SmartCharge voluntarily. This group is likely more engaged and price-sensitive, potentially exaggerating response to pricing changes. In an ideal scenario, cohorts would be randomly assigned or matched based on historical usage to isolate price effects. We have approximated this by comparing it to a well-established control group with equivalent charger access and plan type.
- **Session Volume Differences**: The raw session volume for SmartCharge users was lower than the broader Control cohort, meaning small absolute changes can appear larger in percentages. This could lead to over- or under-estimation of change magnitude. Ideally, cohorts would be size-matched or analysed using normalised metrics. We've employed percentage-based metrics to partially account for this and have presented both average and relative changes to show robustness.
- **Non-Visible Control Pricing**: The control group received no visual indication of any price difference in-app, potentially reducing their responsiveness to backend changes. Ideally, both groups would receive mirrored UI structures with only pricing logic differing. Our structure maintains real-world realism by preserving the actual user journey.
- **Concept of Surcharges**: The introduction of surcharges added more complexity than discounts alone and could have introduced confusion. In practice, we simplified communications and used large time blocks (e.g., "avoid 4–9pm") to help users adapt easily but given surcharges are new to JOLT, these may have been overlooked by SmartCharge users who tend toward routine charging behaviour.
- **Seasonal Influence**: Additionally, given this experiment ran into June, seasonal factors like winter sunset and heating load may influence usage patterns. We

attempted to mitigate this by benchmarking against a similar control group over the same calendar period.

- **Experiment Overlap**: Experiment 3 ran concurrently with both other experiments, meaning changes to less-busy and high-demand pricing occurred alongside off-peak and on-peak incentives. Ideally, these variables would be tested in isolation. However, running them together allowed us to observe realistic, multi-factor behavioural shifts, and our data analysis segmented out each charger type specifically to mitigate overlap effects.
- **High Volatility**: Daily usage on regular chargers are naturally more volatile due to lower session counts. Weekly averages help reduce this volatility, but in an ideal setting, we would sample larger user bases over longer periods of time or use smoothing algorithms to increase confidence in short-term trends. Our report uses both daily and weekly visualisations to show consistency across metrics.
- **Charger Tier Awareness**: Users may not fully understand or notice the difference in charger type or pricing. An ideal experiment would include A/B messaging or UI distinctions to test user awareness. While this was not included, the pricing differences were made visible in the in-app prior to starting a charge, during the charging session screens and reinforced through proactive user prompts.
- **Charger Location Bias**: Many chargers may be situated in lower-traffic areas, so shifts to usage may be constrained by location convenience rather than price appeal. Ideally, all users would have equal physical access to all charger types. Our analysis includes only sessions from users who had access to both charger types to reduce geographic skew.

Across all three experiments, we have worked to approximate ideal experimental conditions under real-world operational constraints. While limitations in self-selection, control UI visibility, and overlapping interventions are present, these have been mitigated where possible through careful segmentation, comparative analysis, and clear user-facing communication. Our reporting draws on both absolute and percentage-based metrics and considers temporal smoothing and cohort tracking to ensure the robustness of findings. The SmartCharge experiment delivers clear, directionally valid insights into EV user price sensitivity and charging flexibility, within the context of public infrastructure optimisation.

Discussion and Next Steps

This series of experiments has demonstrated, with greater clarity than anticipated, that well-structured and timely price signals — when paired with strong, discount-centric communications — can effectively influence user behaviour in a manner that supports both grid resilience and business objectives. The combination of off-peak discounts and on-peak surcharges proved particularly powerful, enabling a redistribution of energy demand across both time (off-peak hours) and space (less-busy chargers). These shifts align directly with JOLT's core goals: reducing congestion at high-usage chargers, supporting solar-aligned charging, and maintaining a viable revenue model.

The most notable behavioural shifts were observed in:

- **Increased usage of less-busy chargers** (Fig. 11), showing the impact of targeted charger-level incentives.
- **Reduced reliance on high-demand chargers** (Fig. 13), particularly during periods when surcharges were in effect.
- **Improved alignment of charging to off-peak time windows** (Fig. 6), suggesting users can be nudged toward grid-supportive behaviours with well-timed cues.
- **Sustained behavioural change** across multiple weeks, not just a one-off response to short-term discounts.

These outcomes mark a significant pivot point for JOLT. Prior to these trials, it was unclear whether our user base would respond to micro-incentives at all, given their access to our competitive pricing. The responsiveness observed here across both free and SmartCharge users has upended this assumption. Users are not only price sensitive, but also flexible, and will adjust their behaviour when the incentive is clear, well-timed, and communicated effectively.

The implications for our business are substantial. From a product and comms standpoint, these results affirm the importance of dynamic messaging and app-based nudges. We now plan to invest in scaling in-app message delivery, refining UI elements to enable multi-layered discounting campaigns, and further explore how session timing and charger selection can be shaped by strategic UX and price mechanisms.

Finally, it's worth noting that while our results are strong, they must be considered in light of known limitations (self-selection, behavioural spillover, and cohort skew), as documented in the report. However, every effort has been made to structure controls, phases, and metrics in a way that maintains confidence in the directional validity of these findings.

Next Steps

JOLT Strategy Evolution

As a direct result of these experiments, JOLT's pricing and product strategy will shift in the following ways:

- We now consider all users as responsive to price stimuli, including control users. This reframes our approach to experimentation and product-tier design.
- We will pivot away from static pricing models, instead embracing dynamic, time-based incentives and disincentives embedded into our user experience.
- In-app messaging and user interface improvements will become a critical delivery channel for future price experiments, allowing for faster deployment and targeted testing.

Future Experiments

To validate and extend these findings, we plan to run the following experiments:

- Longitudinal testing of behavioural durability, to understand whether price-sensitive charging patterns sustain beyond initial exposure or require continued reinforcement.
- A/B testing of message framing, e.g., environmental benefit vs. personal savings vs. grid impact.
- Churn sensitivity experiments, to understand whether surcharges increase attrition risk or if behavioural shifts occur without penalty.
- Experiments with real-time dynamic pricing, to test the responsiveness of users to fluctuations aligned with grid availability (e.g., high solar output vs. high grid strain periods).

Additional Behavioural Metrics to Track

While our current analysis focuses on spatial and temporal usage shifts, further insight is needed into:

- User churn as a function of price elasticity and behavioural disruption.
- Session stacking behaviour, where users may delay or combine sessions in anticipation of off-peak periods.
- First-time vs. returning user behaviour, to evaluate how new users learn and respond to price signals versus established habits.
- App engagement levels, to understand whether price responsiveness correlates with UI interaction frequency.

Implications at a Higher Level

This trial offers valuable insights not only for JOLT's operational strategy but also for broader energy policy and EV infrastructure planning. As Australia and other markets accelerate toward high-penetration renewables and mass EV adoption, these findings help define how dynamic, user-responsive pricing can play a practical role in balancing grid loads and optimising public charging networks.

Broader learnings for policy and energy planners

- Well-structured price signals, especially when coupled with consistent user communication, can reliably shift demand to better match renewable generation windows, which validates dynamic pricing as a lever for integrating EV's with the grid.
- Introducing time-based and location-based price adjustments offers a scalable, market-friendly alternative to hard infrastructure caps or usage restrictions, helping avoid congestion at high-demand sites without compromising user satisfaction.
- Policy frameworks that encourage or even require transparent pricing signals can accelerate the commercial adoption of similar experiments, reducing reliance on public subsidies to build out excess capacity.
- Energy retailers and distributors must ensure their own wholesale or network tariffs are structured to encourage off-peak charging, enabling EV charging

networks to create meaningful retail price differences that align with renewable generation windows.

- Without corresponding off-peak energy cost reductions for networks, downstream operators like JOLT risk having to absorb costs or offer minimal margins to drive behaviour, undermining long-term commercial sustainability.
- Dynamic or tiered wholesale pricing windows that better reflect midday solar abundance or low overnight demand would allow charging operators to pass on savings transparently, supporting environmentally conscious consumer charging habits without destabilising operator financials.

Lessons for other jurisdictions and charging operators

- Effective trials should design pricing windows aligned with clear grid objectives (e.g. absorbing midday solar, reducing evening peak) and avoid overly complex schemes that risk user confusion.
- Segmentation isn't just about commercial plans as messaging and pricing may need to flex differently for habitual commuters, rideshare drivers, or occasional recreational users to fully capture behavioural potential.
- Future experiments should incorporate longer observation windows to understand how sustained or decaying the behavioural shifts are, and also measure second-order effects like churn, cross-location spillover, or clustering at alternative times.

Considerations for scaling SmartCharge-style programs

- Regional or national incentives could be designed to support dynamic, locally-responsive tariffs that mirror demand conditions, with clear guardrails to protect user fairness.
- Partnerships between network operators, energy retailers, and governments can co-fund larger pilots that leverage both price signals and direct load controls, creating shared value and more robust demand forecasts.
- Sharing best practices across states and countries will be key; trials like SmartCharge serve as a blueprint for how targeted, user-driven interventions can meet renewable and grid targets without imposing heavy-handed operational limits.