EQUINOX

Learning from trialling novel commercial methods: Week of consecutive events

December 2024

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1. Executive summary

Equitable Novel Flexibility Exchange (EQUINOX) is exploring the role that domestic heat pump demand response could play in electricity network planning and management by Distribution Network Operators (DNOs) like National Grid Electricity Distribution (NGED). EQUINOX is testing novel commercial arrangements at scale across three trial periods which incentivise domestic heat pump owners to shift their heating from peak hours, while ensuring fair and safe participation for all participants, including those with potential vulnerabilities.

This report focuses on findings from an additional phase of trial two–the Week of Consecutive Events mini-trial ('mini-trial'). Trial two's main phase ('main phase') was held in the winter of 2023/24 with over 1,000 participating households, each with a heat pump installed. Its findings are captured in the main phase report. The mini-trial was a week-long trial held during 18-22nd March 2024, after the main phase. All main phase participants were invited to take part in the mini-trial, with a 57% sign up rate. During the mini-trial, participants were asked to turn down their heat pump between 4-6pm daily Monday to Friday.

The mini-trial sought to understand whether customers are willing to participate in a flexibility offering spanning five consecutive weekdays. It was a preliminary examination of whether there are any clear blockers to conducting a wider, more rigorous trial of consecutive day flexibility during trial three in 2024/25. The key aim for the mini-trial was to maximise customer behavioural data. Accordingly, we recruited one large treatment group instead of also recruiting a control group as in the main phase. The key findings from the mini-trial include:

1. **Participants were highly satisfied with the mini-trial and open to participating in further consecutive day flexibility events.** 57% of main phase participants indicated they would be willing to participate in the mini-trial. Following the mini-trial, 89% of these participants reported they would be likely to participate in further consecutive day flexibility offerings. This suggests consecutive day flexibility can be unlocked from domestic heat pumps.
2. **Participants on Non-Tariffs of Interest[1] achieved demand response during the mini-trial** Participants' demand profiles were compared to baseline forecasts informed by prior demand on days without turn-down requests (although these baselines systematically overestimated demand likely due to about 2.5°C warmer weather during the mini-trial week than on previous days, reducing heating demand). Demand response was evident when isolating the demand of participants on a Non-Tariffs of Interest: we identified a consistent 20% overestimation of their baseline from 4-6pm indicating these participants reduced their demand as requested.

The third and final EQUINOX trial will further advance the conversation on unlocking flexibility from domestic low-carbon heating. Building on the mini-trial, it will explore the potential for heat pumps to participate in consecutive-day flexibility arrangements. This more rigorous trial will include a control group, ensuring a robust evaluation and following best practices from the main phase.

[1]EQUINOX defines a "Tariff of Interest" as a supplier tariff with varied daytime prices. A fixed daytime rate tariff is a "Non-Tariff of Interest". Tariff of Interest participants were already peak load shifting during the mini-trial hours, offering limited additional demand response. Removing them from the analysis allowed us to definitively demonstrate demand response.

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2. Context

2.1. Introduction to EQUINOX

EQUINOX is a Network Innovation Competition (NIC) project funded by the Office of Gas and Electricity Markets (Ofgem). It is developing, trialling, and implementing commercial arrangements at scale that can maximise participation of domestic heat pumps in Distribution Network Operator (DNO) procured flexibility while meeting the needs of all customers, including those with potential vulnerabilities.

EQUINOX is testing multiple novel commercial arrangements over three winter trials. Trial one ran from December 2022 to April 2023, and with nearly 400 households ('participants') it served as a proof of concept for unlocking commercial-scale UK demand flexibility from residential heating. Trial two ran from November 2023 to March 2024. It increased EQUINOX's scale to over 1,000 participants and tested commercial arrangements more closely resembling existing commercial flexibility procurement arrangements. Learnings from trial two were captured in a previous report. This report focuses on sharing learnings from an additional week of trials held at the end of March, after trial two had ended: the Week of Consecutive Events. Henceforth, we refer to trial two as the 'main phase', and the additional week as the 'mini-trial'.

A third EQUINOX trial is running in 2024/25, building on previous learnings and testing additional elements that will further inform what is possible for business as usual (BaU). The EQUINOX timeline is shown in Figure 1.

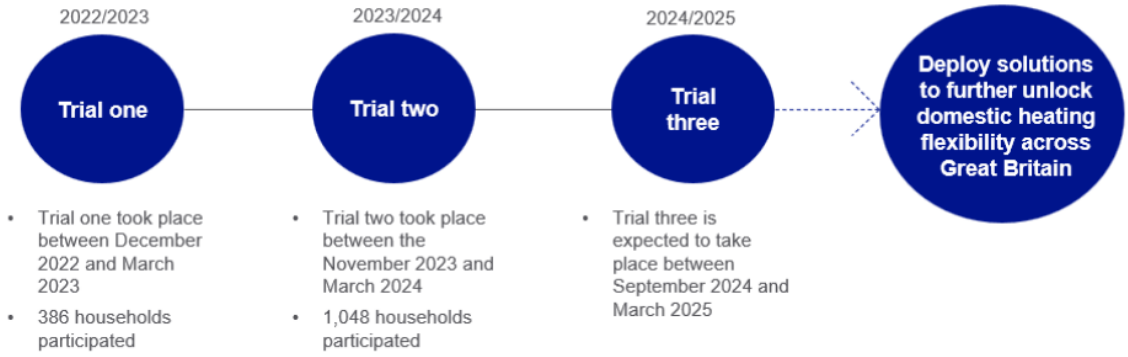

Figure 1. EQUINOX project timeline

EQUINOX is led by National Grid (NGED), while customers of Octopus Energy, ScottishPower and Sero were recruited into trial two as participants. See Overall, the mini-trial results are encouraging, offering valuable insights into unlocking further flexibility from domestic heat pumps. We look forward to applying these learnings as we explore consecutive-day flexibility more comprehensively through a Sustain-type arrangement in trial three.

Appendix A: project partners for the full list of project partners.

3. Week of consecutive events design

3.1. Introduction to the week of consecutive events

The mini-trial was held during 18-22nd March 2024, and recruited participants directly from the main phase participant pool. The main phase investigated the potential for domestic heat pumps to participate in close-to-real-time procured evening peak demand response on single days. These arrangements were aligned with a specific network need, as defined by NGED's Secure and Dynamic flexibility products (Table 1).

Yet networks require additional forms of flexibility. The main phase's findings suggested that the flexibility volume contributed by domestic heat pumps might be better suited to an everyday service spanning consecutive days, like NGED's Sustain product (Table 1). During the final weeks of the main phase, we surveyed participants for interest in taking part in this form of consecutive day flexibility. The results were positive, with 57% indicating they would be interested in taking part.

We therefore designed this mini-trial to provide preliminary data on whether domestic heat pumps can participate in Sustain-type evening peak demand response scheduled further in advance, spanning five consecutive weekdays. Findings from this mini-trial have informed EQUINOX trial three design, revealing areas that need to be better understood for DNOs to account for daily flexibility volumes from heat pump homes in their network planning.

Table 1: Current National Grid flexibility products

Flexibility product	Network constraint	Customer notice period	Duration
Secure	Peak load management	Week ahead, real time, within day	30 mins to several hours, over a single day
Dynamic	Unscheduled maintenance	Week ahead, real time, within day	30 mins to several hours, over a single day
Sustain	Constraint management service	Advanced pre-agreed schedule	Four hours, for several weeks Monday to Friday

3.2. Commercial arrangements for the Week of Consecutive Events

The mini-trial carried over many commercial arrangements from the main phase. It also introduced new arrangements. They are summarised in Table 2.

Table 2: Main phase and mini-trial commercial arrangements and settlement process

Item	Main phase	Mini-trial	Rationale of changes from main phase
Sign up approach	Participants sign up for the main phase	Participants sign up for the mini-trial, and then for the first 2, 3, 4 or all 5 days	Enable participants to take part in the mini-trial without feeling compelled to take part in more consecutive days than they were comfortable with.
Event duration	2 hours		No change as the mini-trial was not looking to test different event lengths to the main phase.
Notice period	Day Ahead, morning of, two hours ahead	Week in advance	To enable households to make a consistent adjustment to their heating habits ahead of time.
Event timing	4-6pm, 5-7pm, 6-8pm	4-6pm	The main phase's initial results showed no difference in customer experience by event time. Given the higher frequency of events, we decided to test one consistent time of flex per day
Event frequency	Zero to three events per week	Five consecutive events	Structural change to test consecutive day flexibility over a week
Control type	Manual, remote (app), and aggregator-controlled		No change to enable further evaluation of experiences by heat pump control type.
Participant payment groups	M1: £0.80-£2.40/kWh[2] M2: £0.40-£1.20/kWh[2] M3: £0.50-£1.50/kWh[2] M3: £8 availability payment	M1: £0.80/kWh M2: £0.40/kWh M3: £0.50/kWh	Same payment groups to minimise confusion. Only the lower bound payment rate implemented as participants were notified of all events a week in advance. M3 availability payment discontinued given the mini-trial's short duration.
Testing approach	Randomised Control Trial (RCT): Participants randomised to Groups A & B, alternating as 'treatment' and 'control on event days	All participants recruited into a single treatment group	Since the mini-trial was only one week, our priority was to maximise customer experience data

[2] The main phase saw participants on M1, M2 and M3 all paid their lower bound rate £/kWh when notified a day ahead, their middle rate when notified the morning of, and their higher bound rate when notified two hours before an event.

3.3. Settlement and analysis approach for the Week of Consecutive Events

As in the main phase, we used the p376 baseline method to settle participants in the mini-trial. This involved forecasting each participant's event day consumption as the average of their consumption over the previous 10 non-event weekdays. Their event day consumption between 4–6pm was then subtracted from this baseline to estimate how much demand response they had they achieved. Participants were rewarded in £/kWh terms according to their payment group (see Table 2 above).

We used two methods to analyse participant experience during the mini-trial:

1. **Survey analysis.** On the final event day, we surveyed participants on overall satisfaction, comfort, and whether they would be interested in participating in further consecutive-day flexibility offerings.
2. **Demand response evaluation.** We calculated the average demand response achieved by all participants who opted in,[3] based on the p376 baseline method settlement approach.

The demand response evaluation method used in the mini-trial differed from that of the main phase. As explained in Table 2, the main phase was implemented as an RCT, allowing for a rigorous post-trial analysis where demand response was calculated as the aggregate difference in consumption between the treatment and control groups on event days.

In contrast, the mini-trial did not follow the RCT approach. Instead, we prioritised recruiting a larger treatment group to maximise customer experience data. For this, we adopted the p376 baseline method, which was considered adequate to highlight key trends, even though it lacked the analytical rigour of the main phase analysis.

[3] EQUINOX defines 'opt in' as providing demand response >0 kW.

4. Week of consecutive events participants

The key observation from the mini-trial's recruitment was that the participant characteristics and demographics closely mirrored those of the main phase, showing an almost direct alignment. There were no observable trends indicating that certain participant groups were any more or less likely to sign up for the mini-trial compared to the main phase.

4.1 Participant recruitment

1,048 households signed up at the start of the main phase in late 2023. By March 2024, 934 remained enrolled,[4] with 54% consistently participating in events when called. Of these 934 households, 57% signed up for the mini-trial (Figure 2), a sign-up rate consistent with the 54% engagement observed towards the end of the main phase.

Figure 2: Proportion of main phase participants who signed up for the mini-trial

4.2 Participant characteristics

We compared the demographics of main phase participants who signed up for the mini-trial to those who did not sign up. The aim was to identify any key trends, which could then provide early indication of whether certain demographics would be more able to participate in a sustain type arrangement.

However, by investigating responses from the sign-up survey completed prior to the main phase, we found negligible variation. For key factors such as concern about staying warm during winter, and in income distribution, participant sign up rates for the main phase mapped almost directly to the mini-trial. These early results indicated households could be equally open to a sustain-type arrangement as they had been to the flexible style of events tested during the main phase.

[4] 34 participants left the trial, primarily to participate in Octopus' Saving Sessions Demand Flexibility Service. Neither the main phase nor the mini-trial permitted EQUINOX participants to take-part in other flexibility programmes. This was to ensure participants could focus on the EQUINOX trials. However, stacking with other programmes, like Savings Sessions, will be a feature in EQUINOX trial three held between 2024-5. 71 participants were also removed by their suppliers after January given, they were no longer responsive to their electricity supplier's communications.

We also checked whether main phase participants rewarded with lower payments would be less likely to sign up for the mini-trial. However, we found no differences in sign-up rates across the M1, M2, and M3 payment groups suggesting that variation in payment amounts did not influence sign up for this group of participants.

In addition, we investigated the sign-up rate of participants who were on a Tariff of Interest or Non-Tariff of Interest.[5] Our main phase analysis later showed that Tariff of Interest participants had minimal evening peak demand, even on non-EQUINOX days. This meant they were already exhibiting the desired peak load shifting, likely in response to their tariff's price signal. Their low baselines meant they could offer limited additional flexibility, and therefore earn limited rewards through EQUINOX. We would have expected these participants to sign-up to the mini-trial at lower rates, following limited earnings from the main phase. Yet their sign-up rates remained consistent at 47% of the total cohort indicating high engagement in EQUINOX.

We also examined trends in the characteristics of households who signed up for all five days versus those who signed up for fewer days. As shown in Figure 3, 85% signed up for all five days, indicating a preference for frequent participation. There was negligible variation between those who signed up for the full week and those who signed up for fewer days – across concern of cold, income distribution, payment group and tariff type.

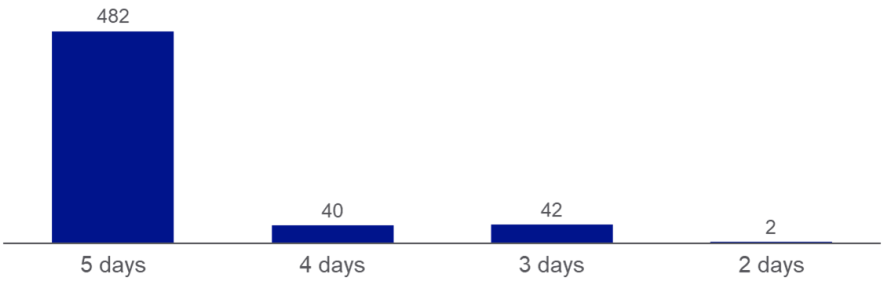

Figure 3: Number of days households signed up to for the mini-trial

These findings highlight that households with diverse characteristics were just as likely to sign up for the mini-trial as they were for the main phase. Similarly, households across different main phase payment groups demonstrated comparable willingness to participate in the mini-trial. In both cases, households were equally willing to commit to a high frequency of events. These findings provided an early indication that consecutive-day flexibility is as accessible to households with potential vulnerabilities as to others, underscoring the potential for domestic heat pump participation in Sustain-type arrangements.

[5] EQUINOX defines a "Tariff of Interest" as a supplier tariff with varied daytime prices. A fixed daytime rate tariff is a "Non-Tariff of Interest".

5. Participant experience

On the final day of the mini-trial, participants were asked to complete an end-of-trial survey covering topics such as satisfaction, trial design, and thermal comfort. Participants' responses were overwhelmingly positive, underscoring the potential to unlock flexibility from domestic heat pumps over consecutive days. However, it is worth noting that these events took place during March 18-22nd, during which the weather was uncharacteristically warm.

5.1 Participant views on daily flexibility events

At the end of the main trial, we asked participants conceptually what their views were on daily flexibility events. 57% of participants indicated they would be willing to participate in flexibility for five or more days consecutively. After testing this with some participants in the mini-trial the results were encouraging. Survey responses highlighted high satisfaction with the mini-trial and strong interest in participating in future consecutive-day flexibility offerings.[6]

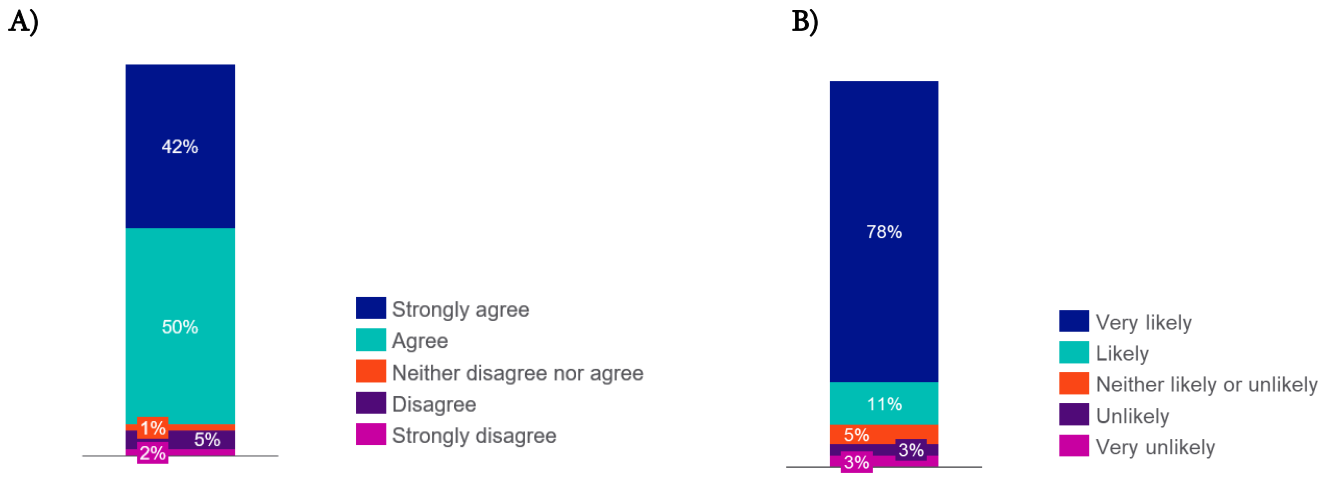

Figure 4: Mini-trial participant responses to a) "To what extent do you agree or disagree with the following statement, 'I am fine having EQUINOX events five days in a row'" (n=542) and b) "How likely would you be to participate in a flexibility offering that asks you to turn down your heat pump for a consistent period of time each day?" (n=542)

[6]It is worth noting that these results include responses from approximately 47% of participants who were on a Tariff of Interest. They may be more likely to look favourably upon providing flexibility daily as their price signal incentives this.

Figure 4 a) shows that 92% of participants reported they were fine with having EQUINOX events five days in a row, while Figure 4 b) reveals that 89% indicated they would likely participate in flexibility offerings requiring them to turn down their heat pump for a consistent time each day. When asked about their willingness to participate in future EQUINOX events involving different numbers of consecutive days, participants provided further encouraging insights. Figure 5 shows that 81% of surveyed participants said they would be willing to take part in the full five consecutive weekday events required by a Sustain-type arrangement. 58% of these participants were even willing to take part in seven consecutive days of events. Together, these findings provide compelling evidence of the feasibility of consecutive-day flexibility for domestic customers.

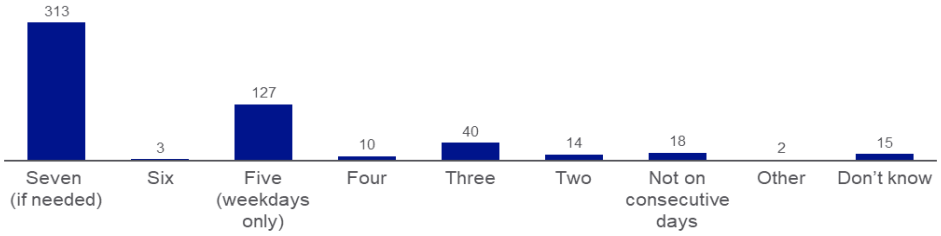

Figure 5: Participant responses to 'On how many consecutive days would you be willing to participate in EQUINOX events?

Survey responses also indicated participants were largely unconcerned with the frequency of events. Figure 6 shows that two thirds of participants reported that the frequency made no difference to their ability to participate, while 17% stated that it made participation harder, and the same proportion noted it made participation easier.

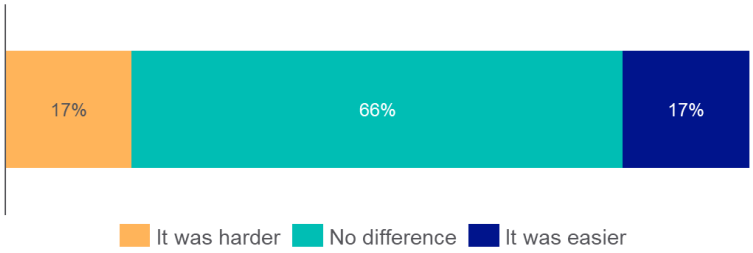

Figure 6: Participant responses to 'Did the frequency of events impact your ability to participate?' (n=542)

Responses from participants who found the frequency more challenging still provided encouraging insights. Figure 7 highlights that the most cited reason for why the frequency made it hard to participate was not being at home during events (49%). This can be attributed to the fact that a large portion of customers cannot control their heat pump remotely and need to manually turn down their heat pump to be able to adjust the settings. Importantly, only 29% of selected responses indicated that the number of events was an issue.

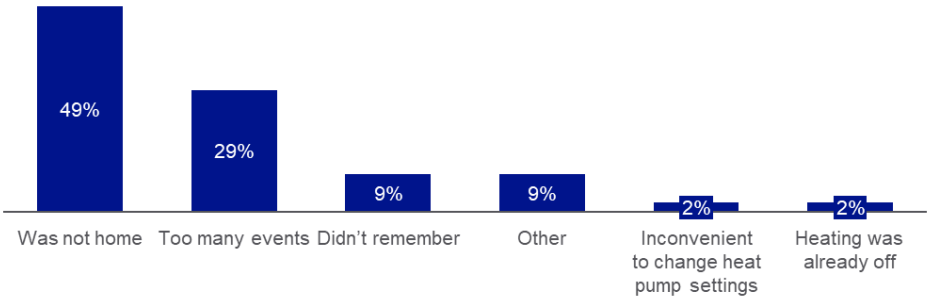

Figure 7: Participant response to 'Why did this frequency make it harder to participate' (n=90)[7]

5.2 Participant comfort

Participant comfort is a top priority for EQUINOX. In the main phase we saw that most participants reported feeling no change or a slight change in comfort. The mini-trial provided similar results. Figure 8 shows that 84% of participants reported the events caused no change to their comfort level, while 13% indicated only a slight change in comfort. While the mini-trial events did occur while the weather was milder, these results are indicative that there is no meaningful risk to customer thermal comfort in providing heating flexibility on consecutive days.

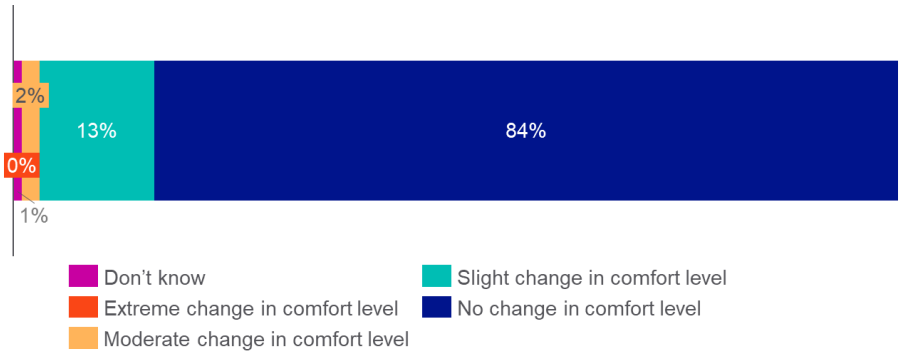

Figure 8: Self-reported comfort across the mini-trial

[7] Participants could select more than one answer.

6. Demand response results

Demand response results were obtained through the calculation method outlined in Section 3. The demand response analysis of the mini-trial therefore concentrated on key trends, rather than seeking to replicate the robust RCT-based analysis undertaken during the main phase. We also did not analyse any factors that the main phase found did not impact the magnitude of demand response participants provided, or their rate of event opt in. These were commercial arrangements, heat pump control method, home EPC rating, and fuel poverty indicator.

We found a systematic over-estimate by the baseline, which complicated demand response analysis. This was likely due to unseasonably warm temperatures across the mini-trial event periods - 2.5°C higher than the same period on the days informing the baseline. However, it was still possible to identify flexible behaviour from certain groups of participants. We saw that Tariff of Interest participants were peak load shifting regardless of whether an event was called. We saw that when isolating the demand profiles of non-Tariff of Interest participants there was an observable increase in peak reduction during the event window. We also saw that for all participants, consumption was even across the different event days, and while there was increased consumption per event half hour, this was also directly matched with increases to the baseline, evidencing consistent demand response behaviour across the full flexibility window each day, and during each half hour.

6.1 Systematic baseline over-forecast

The analysis aimed to measure demand response by comparing event day load against forecasted load using the p376 baseline method. However, as shown in **Error! Reference source not found.** below, the p376 baseline consistently over-forecasted opted-in participants' actual load across all hours of the day. This consistent divergence, including during hours not targeted by EQUINOX events, complicated demand response evaluation.

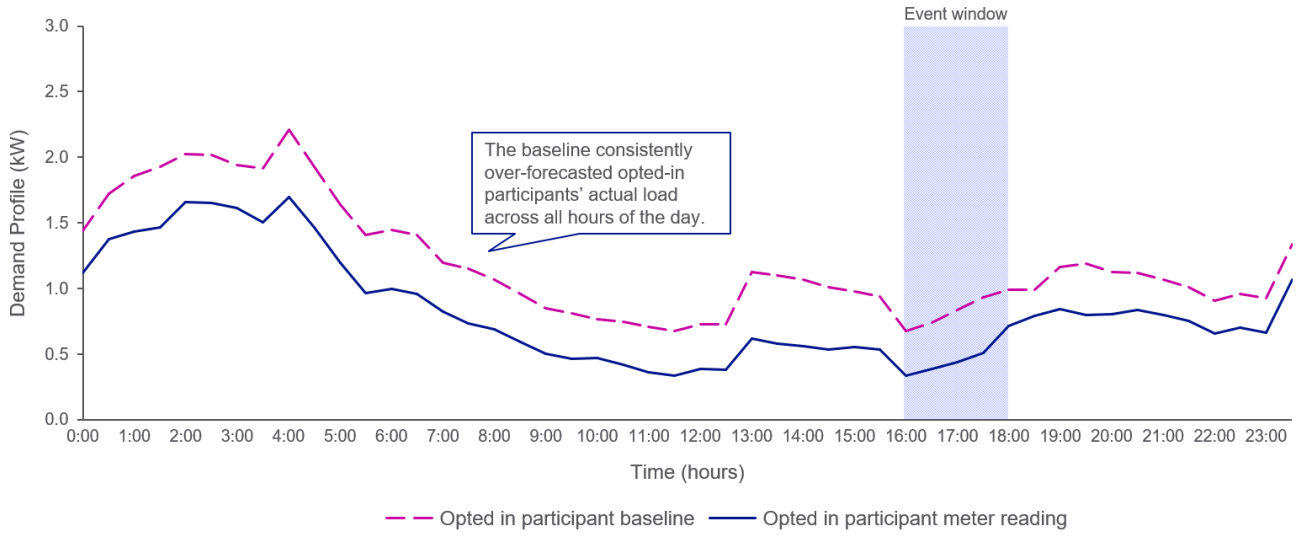

Figure 9: Average weekly demand profile for all opted in participants

Temperature variation likely contributed to the discrepancy between actual and forecasted loads. The average temperature was 12.1°C during the mini-trial hours of 4-6pm, compared to 9.6°C on the non-event days used to inform the baseline. More heating is required in colder weather, meaning participants' electricity consumption was likely higher on the cooler non-event days. This likely caused the baseline to overestimate participants' actual load during the warmer mini-trial period. These implications highlight the importance of comparing event day demand with that of a representative control group when there is a focus on accurately measuring changes in demand volume. We took this approach during the main phase, and it yielded more statistically significant results.

6.2 Tariff of interest

Nevertheless, we were able to identify key trends of demand response when tracking demand patterns linked to participant tariff type. Consistent with main phase findings, Figure 10 shows that participants on Tariff of Interest tended to shift load from peak to off-peak hours on both event and non-event days. During off-peak pricing hours (1-3pm), these participants exhibited higher demand, while during peak pricing hours (4-6pm), they exhibited comparatively lower demand.

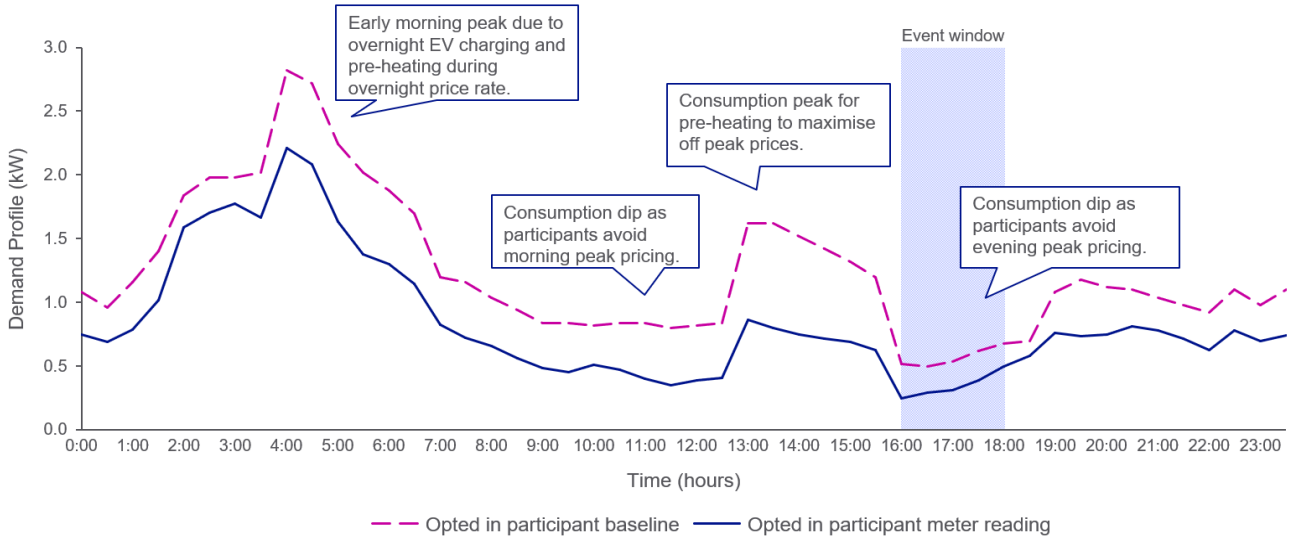

Figure 10: Average weekday demand profile for participants on a Tariff of Interest

In contrast, Figure 11 demonstrates that participants not on Tariffs of Interest showed the opposite trend, with higher demand during peak hours and lower demand during off-peak hours.

Closer analysis of both groups' baselines further suggests Tariffs of Interest participants were peak load shifting regardless of whether an EQUINOX event was called. Their average baseline was 0.7 kW during the 4–6pm event hours, compared to 1.1 kW for other participants. Yet, over a full 24-hour period, both groups exhibited a similar average load of 1.2 kW.

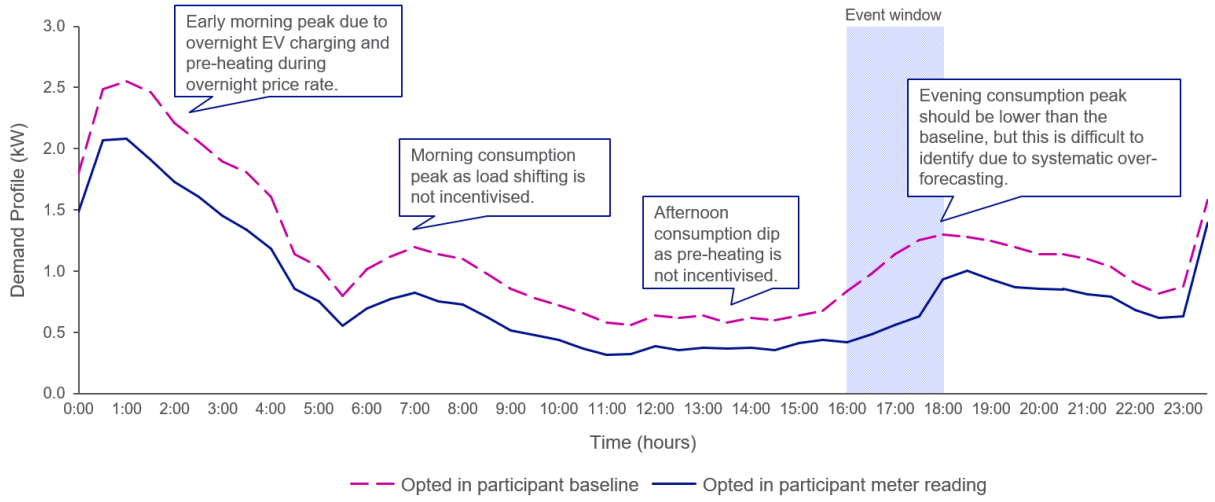

Figure 11: Average weekday demand profile for participants not on a Tariff of Interest

These findings align with the main-phase conclusion that Tariffs of Interest can incentivise flexibility, while EQUINOX's explicit flexibility mechanisms can unlock similar demand shifts for participants on fixed-rate tariffs, who may lack comparable price incentives.

We saw clear signs of demand response when tracking the difference between forecasted load and actual load solely for non-Tariff of Interest participants. Figure 12 shows average actual load of non-Tariff of Interest opted in participants as a proportion of their baseline forecasted load. It shows that during the event window these participants had approximately 50% of the load forecasted by their baseline, relative to 70% for the rest of the day. This finding indicates these participants were engaging in demand response.

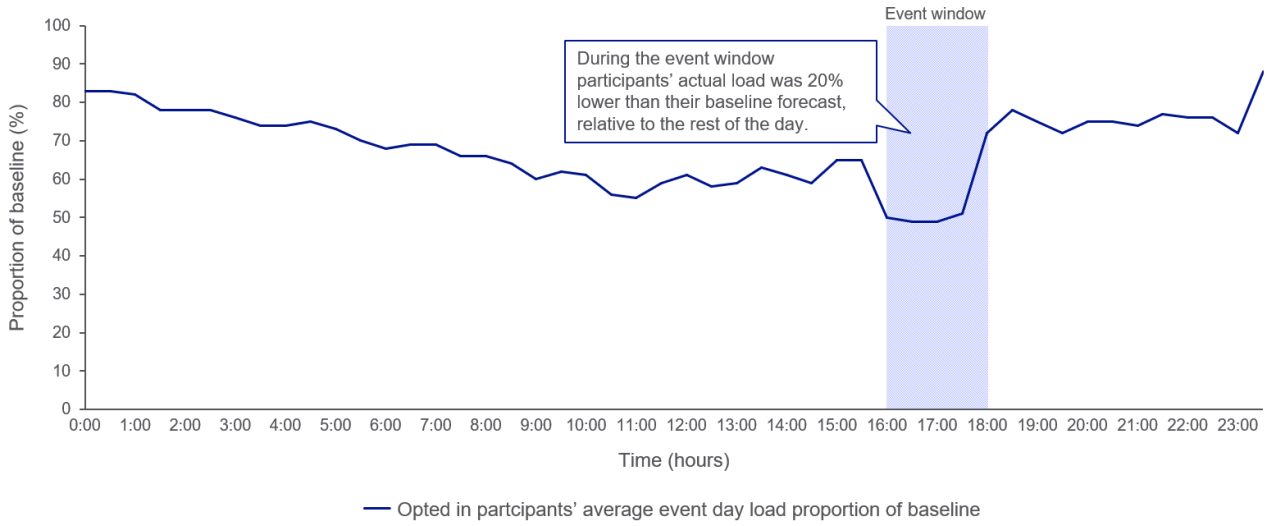

Figure 12: Non-Tariff of Interest opted in participants event day load proportion of baseline forecasted load

6.3 Temporal variation

We also tracked event window consumption patterns across each consecutive day, and across the four half-hourly timesteps during events. Figure 13 indicates opted in participant consumption remained consistent throughout the week. Figure 14 shows a 53% consumption increase from the first to final half-hour of the events, but this effect was also observed in the baseline (45% increase). This suggests consumption is higher at 6pm than 4pm, whether or not there is a flexibility event.

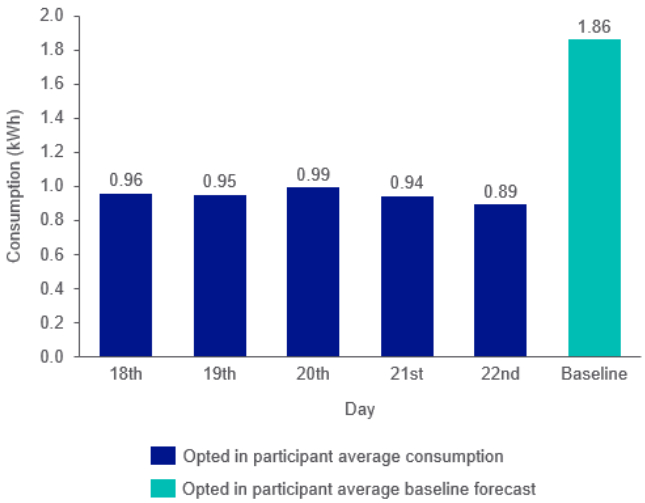

Figure 14: Opted in participant average consumption per half hour during 4-6pm

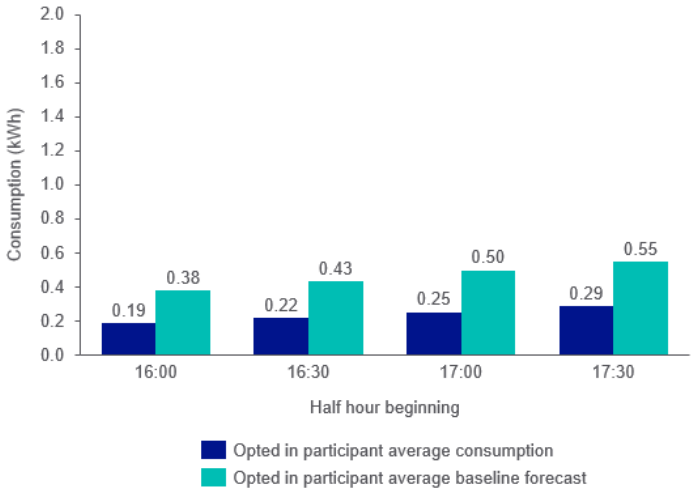

Figure 13: Opted in participant average consumption per event day during 4-6pm

These findings highlight domestic heat pumps can achieve consistent load reductions over consecutive days, across the full 4-6pm window.

7. Looking ahead to trial three

We are encouraged by the results of this mini-trial and have progressed plans for a longer consecutive-day arrangement in trial three. The key takeaways from the trial are summarised below:

- **Overall trial satisfaction:** In the main phase end of trial survey 57% of participants indicated they would be willing to participate in flexibility for five or more days consecutively. Of those who participated in this mini-trial, 89% of participants reported that they would be likely to participate in further flexibility offerings that ask them to turn down their heat pump at the same time each day. This suggests participants would be receptive to a Sustain-type arrangement during trial three.
- **Schedule satisfaction:** 83% of participants reported that the frequency of events either made no difference to their ability to participate or made participation easier. This suggests that participants would not find the consecutive event scheduling challenging during trial three.
- **No observable risk to comfort:** 84% of participants reported that the events caused no change in their comfort level, while 13% indicated only a slight change in comfort. This suggests there will be low risk to comfort when implementing a Sustain-type trial, though we acknowledge the mini-trial was held in warmer weather than the main phase.
- **Demand response was achieved:** Initially, it was challenging to confirm demand response due to the baselines over-forecasting participants' actual demand, likely because the mini-trial occurred during an unseasonably warm week. However, isolating the demand profiles of Non-Tariff of Interest participants showed their actual load was approximately 50% of the baseline at 4-6pm, relative to 70% across the rest of the day. This suggests demand response can be expected during consecutive events in trial three.
- **Consistent consumption across all event days, and all half-hourly time-steps of the 4-6pm event window**: There was no substantial variation in consumption during the event window across days of the week. Increased consumption per event half hour also directly matched that of the baseline. These findings suggest that a Sustain-type trial could achieve consistent demand response throughout the week.

The trial has helped validate our approach to trial three planning:

- **Tariff of Interest:** As observed during the main phase, we found strong evidence that participants with a Tariff of Interest were engaging in peak load shifting regardless of EQUINOX events. These participants had limited additional flexibility to offer and likely benefited less from the events. This aligns with our conclusion in the main phase report to exclude participants on a Tariff of Interest from trial three. While they play a vital role in flexibility, they are already engaging in flexibility through their tariff.
- **Baselines are highly temperature dependent, demonstrating the need to recruit a control group:** The complication of unseasonably warm weather during the mini-trial made it initially difficult to identify demand response. We recognise the need to recruit a control group in trial three for more robust analysis.

Overall, the mini-trial results are encouraging, offering valuable insights into unlocking further flexibility from domestic heat pumps. We look forward to applying these learnings as we explore consecutive-day flexibility more comprehensively through a Sustain-type arrangement in trial three.

8. Appendix A: project partners

EQUINOX is led by National Grid Electricity Distribution (NGED), along with multiple project partners and collaborators, as detailed in Table 3.

Table 3. List of EQUINOX partners and collaborators

Name	Project function	Role
NGED	DNO	Project lead. Responsible for running the technical integration, trial design, and project management and knowledge workstreams.
Guidehouse	Consultancy	Partner. Responsible for supporting the commercial arrangement design and customer engagement workstreams. Supporting on trial design, data analysis, project management, and knowledge dissemination.
Octopus Energy	Energy supplier	Partners. Responsible for planning and delivering EQUINOX trials with participants from their customer base. Supporting all project workstreams as commercial flexibility service providers and customer experts.
Sero	Energy supplier[8]	
ScottishPower	Energy supplier	
Passiv UK	Smart technology company	Partner. Responsible for simulating the flexibility impacts for different intervention strategies and household archetypes.
West Midlands Combined Authority	Local government	Partner. Responsible for coordinating a social housing heat pump installation programme which can contribute customers to trials two and three. Also advising on equitable participation.
Welsh Government	Government	Partner. Responsible for running a social housing heat pump installation programme which can contribute customers to trial three.
National Energy Action	Charity	Collaborator. Responsible for running participant focus groups to understand trial perceptions. NEA will ensure that the needs of customers with vulnerabilities are accounted for in the trial design.
SP Energy Networks	DNO	Partner. A DNO brought on board to ensure that the design is interoperable for all DNOs. SPEN's license areas will join trial three.
National Grid	ESO	Collaborator. Responsible for sharing learnings between EQUINOX and other ESO flexibility programmes.

[8] Sero is not an energy supplier but is assuming the role for the purpose of this trial.