Public

CrowdFlex Utilisation Summer Trial 2025: Customer feedback

End of Trial Report

December 2025

NESO
National Energy System Operator

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Executive Summary

This report presents the results of the customer feedback surveys in the CrowdFlex utilisation trial for summer 2025. This customer feedback work is designed to answer three core research questions:

1. What strategies do different consumer groups use to turn up and turn down?
2. Do consumer characteristics correlate to: ease of participation; levels of satisfaction with events and rewards; willingness to maintain participation; understanding of effective demand shifting?
3. Does engagement change over time for different consumer groups? (For example, can we see habits formed, technologies adopted, changes in willingness to participate?)

The customer feedback surveys were sent to all participating customers, excluding those in the control group. A total of 16,260 survey responses met our quality checks - 10,509 from new respondents, and 5,751 from repeat survey respondents. This report relates only to survey respondents – a subset of participants in the CrowdFlex Utilisation Trial.

These survey responses mean that there were 28,609 total unique respondents at this stage in the trial, including summer 2024 and winter 2024/25. A total of 42,611 surveys have been completed to date by these respondents.

Over the duration of the CrowdFlex customer research, customers have completed surveys several months apart, enabling longitudinal analysis to understand change over time. In addition, new participants were recruited into the trial, adding more survey respondents at each stage. Energy consumption data has been analysed to provide further insights into event participation and to give a more complete picture of respondents' energy characteristics, which can be used to better understand the impact of the trial on different demographics and on vulnerable customers.

This phase also involved in-depth qualitative research, conducted between September and November 2025. Interviews and focus groups explored strategies for maximising successful engagement with home flexibility, with a focus on three topics: Power Up events, automation, and effective shifting. Separately, we interviewed respondents who reported taking part in ways that are not recommended, to better understand how to support safe participation. Though the report focuses primarily on participation in the summer trial, the findings on supporting safe participation also reflect behaviour in the

winter, as repeat survey respondents, interview and focus group participants had taken part in both winter and summer trials.

Key findings

Perceptions

A number of key findings have now been seen consistently throughout the trials. Survey respondents continue to report positive overall experiences of the trial, with 69% reporting overall positivity to some extent for this summer. Higher awareness of electricity usage and shifting as a result of participation remain clear and consistent benefits.

The most commonly cited challenge in participating, as has been the case in each stage of the trial, was remembering to take part in events. A large majority of respondents continued to manually shift during the summer trials, as they have throughout CrowdFlex.

We do, however, see some changes in the magnitude of these metrics when compared to previous trials. Survey respondents reporting that they became more aware of their electricity usage or how to shift dropped by 15 percentage points and 5 percentage points respectively, compared to the end of winter survey. As we might expect, for repeat respondents an initial substantial increase in energy awareness has tailed off over time. Meanwhile, manual shifting has dropped from 87% in summer 2024 to 80% in summer 2025, suggesting that more automated methods are being taken up, although manual shifting remains very high among survey respondents throughout.

A minority of participants (22%) reported losing interest over the course of the trial. The biggest factor for survey respondents losing interest in the trial was whether they felt that they were making a difference with their participation, with those who felt they were making a difference significantly less likely to say they were losing interest. This may provide a useful counterpoint to common assumptions about what drives engagement in flexibility schemes, suggesting that perceived contribution could play a meaningful role alongside other motivations, such as financial reward. However, as has been found in previous CrowdFlex reports, some respondents feel they lack understanding of the impact of their participation.

Trial Design & Ease of Participation

Different elements of service design were tested in the summer 2025 trial, and these differences do appear to impact sentiment about the trial:

- Longer notice periods were more popular than shorter, with the longest period generally correlating with the best trial opinion, across several measures.
- The opt-in functionality was introduced for the first time in this trial, designed to ensure that any observed participation reflected deliberate customer engagement. This new system was a clear barrier to engagement for some. Qualitative data shows numerous survey respondents expressing annoyance at the need to opt in to every event, and when asked about why they had lost interest in the trial, one of the most common additional reasons provided was the opt-in functionality. However, it remains unclear whether this sentiment stemmed from a fundamental dislike of the feature itself or if the transition to a requirement for active input was simply perceived as an additional barrier compared to previous trials.

Survey respondents receiving their rewards in the form of free electricity were more likely to report losing interest with the trial and less likely to have enjoyed the trial. Survey respondents were more likely to find Power Up events (the name for demand turn up events in the CrowdFlex trial) easy than Power Down events. However, some didn't understand the purpose of the Power Up events, given the parallel mainstream messaging around reducing consumption. They were reluctant to use more energy to achieve the target, and some questioned the net gain of turning up their energy usage. Overall, more work may be needed around communicating the concept of Power Up and ensuring any unintended consequences of turn up are avoided.

Customers that may be vulnerable[1]

We continue to see relatively strong engagement but mixed outcomes for survey respondents with vulnerability risk factors. Those with at least one vulnerability risk factor reported participating in more events, but were more likely to feel negative upon receiving notifications and less likely to find the frequency of events manageable. Those with multiple vulnerability risk factors were less likely to have enjoyed the trial and felt they made a difference with their participation, but they managed to shift a greater volume of electricity than average.

Looking forward, we can see potential challenges around older people taking up demand shifting schemes that favour a pivot away from manual intervention – older survey participants expressed less openness to automation and were more likely to say that nothing could convince them to automate. They were also less likely to say they

[1] Our definition of households that may be vulnerable in the energy market because of their circumstances is informed by Ofgem's definition of vulnerability, though it is important to point out that the presence of vulnerability risk factors does not mean that customers are necessarily vulnerable or at greater risk.

would make other energy investments/purchases such as buying technology or switching tariff.

Financially insecure respondents were more likely to engage in behaviours that are not recommended. However, they were more positive about future automation and slightly more likely to have bought technology to help them with the trial. This is surprising as we might expect financial insecurity to be a barrier to investing in technology.

For the first time, we have analysed the experiences of customers paying with a pay as you go tariff, a group that already faces a range of energy challenges. Survey respondents on pay as you go were more likely to report behaviours that are not recommended and were less likely to want CrowdFlex to continue.

We have now heard from some customers four times over 18 months, enabling us to understand how participation and impacts have changed over time. A higher proportion of repeat respondents reported forming a habit as their motivation for participating in their fourth survey compared to any of the previous surveys. 39% of repeat survey respondents said that participation had become a habit, compared to 22% of those completing their first survey, indicating that habits around shifting may take some time to form. The proportion of repeat respondents using automated methods has increased in every survey. However, they do not appear to be buying technology to manage the trial, suggesting that survey respondents may have started using automated features on appliances and technology they already owned.

We find that tenure has unexpected correlations with experiences of the trial among survey respondents. Private and social renters were generally more likely to have been satisfied with the trial. This echoes findings from the summer 2024 and end of winter trial surveys, where renters responded more positively than those in other tenures. Private renters were more likely to be positive about future automation and were more likely to report wanting a fully automated scheme in future.

As we have reported in previous survey reports, the nature of CrowdFlex does not appear to be well suited to low energy users, where participants receive payments based on volume shift. In the most recent survey, low energy users were less likely to want a continuation of CrowdFlex, and more likely to have no interest in future flexing schemes. However, they were also less likely to feel they had different flex options available to them. So, for those that do want to engage, low risk or no penalty demand shifting schemes, similar to the CrowdFlex Utilisation Trial, may currently provide their limited chance to participate in flexibility services that are “volume based”.

Supporting safe participation

In this survey, we asked new questions to increase our understanding of respondents reporting behaviours that are not recommended - using less electricity than needed, switching off essential appliances, and changing their care routine without consulting a professional. A minority of respondents indicated they were engaging in these behaviours and for those who were, many indicated they were already doing these behaviours before the trial. When we asked respondents how they felt about these activities, the feedback was not as negative as one might expect. Nonetheless, households with vulnerability risk factors were more likely to report these behaviours, so those navigating demand shifting events alongside existing vulnerabilities must be considered carefully moving forward.

Flex for the Future

As this is the final CrowdFlex survey, we were interested to know how respondents would prefer to engage with demand flexibility in the future. Findings support the generally positive response to CrowdFlex, with 50% saying they wanted a continuation of CrowdFlex – a much higher proportion than the other response options. Importantly, only 2% of respondents said they wanted no flexing scheme in future, suggesting that the vast majority of participants are keen to support future flexibility programmes and would like to be involved in future.

In relation to automation in future:

- Private renters were more likely to want a fully automated scheme, along with those with any low carbon technology and those with higher electricity consumption.
- Households with vulnerability risk factors were less likely to want an automated scheme.
- When asked what would make them feel more positive about using an automated system, key factors included: the ability to override the technology if necessary, the need to know that it is easy to install and operate, and trust that the tech would work, alongside guidance and support.
- The vast majority of interviewees expressed interest in taking up automation if reported barriers can be tackled.

Recommendations

Guidance and communications

Advice and support need to continue and are vital to ensure safe participation for all, particularly where people have existing vulnerability risk factors. As we navigate the changing energy system, smart energy advice should be available to anyone taking part in flexibility services. This should include:

- **Service provider responsibility to support safe participation.** Service providers could provide more examples of ways to safely shift, beyond what was shared in the communication to customers within the CrowdFlex trials. Information on the energy consumption of different appliances could also help maximise the effectiveness of their shifting efforts by ensuring they aren't going to unnecessary efforts for minimal reductions. This could also help to maintain engagement amongst those who may become disillusioned if not achieving the level of flex they were hoping for, particularly with low baseline electricity consumption. Alongside this, service providers should consider providing accessible resources for people with specific health conditions – including neurodivergence - about how to participate in flex safely.
- **Holistic smart energy advice.** Though service providers have a responsibility to adequately support their customers, this can only go so far and cannot be expected to cover all aspects of people's energy-related behaviour or the interaction of different services, products and tariffs that people may be participating in. Tailored smart energy advice available via a national energy advice service is essential to ensure good outcomes for customers and could help avoid people taking risks to participate for scant reward. Whilst it is positive that government is considering some coordinated advice provision for consumer-led flex in future, demand shifting services and time of use tariffs already exist and, as this research shows, support is needed now.

Identifying those who may need extra support may be challenging for service providers. Though the current Priority Services Register (PSR) helps identify those with traditional vulnerability characteristics, it is not designed to identify and support those who may face broader challenges participating in the emerging smart, flexible energy system. Added to this, service providers who are not energy suppliers do not currently have access to this register. More work is needed to understand how vulnerability interacts with the provision of domestic flexibility and the role of the existing Priority Services Register in a smart energy market. For example, whether there are any new vulnerabilities that need to be added or changes to the category levels within the PSR.

Public

Clear and engaging explanations on the purpose and importance of demand flexibility schemes will be crucial to ensuring people feel engaged and invested in these schemes. This research has shown that the biggest factor for survey respondents losing interest in the trial was whether they felt they were making a difference with their participation, with those who felt they were making a difference significantly less likely to say they were losing interest. However, as has been found in previous CrowdFlex reports, some interview respondents felt they lack understanding of the impact of their participation.

Improved communication and greater understanding of why Power Up events are beneficial to the grid and how they can help optimise renewable energy use could help overcome some of the challenges we have reported around taking part in these events. As well as understanding the concept, greater understanding is needed around what appliances can be turned up, and how to avoid increasing bills in doing so. Further customer engagement research and guidance on this issue is needed.

Future service design

We continue to see relatively small but statistically significant differences in attitudes and experiences for the consumer groups considered in this research (for example around people's overall enjoyment of the trial, whether they feel good about shifting, or whether people feel they are making a difference through their participation). To ensure broad participation as demand flexibility is scaled up over the coming years. Further in-depth consumer research and engagement is needed to explore what inclusive and accessible service design means for different consumer groups and different propositions.

With automation expected to be key to unlocking large amounts of domestic flexibility, more needs to be done to improve understanding and uptake. Expanded public participation in energy flexibility through automation will require increased awareness of the efficacy of smart technologies. The findings from CrowdFlex provide empirical evidence that automation results in better outcomes. Survey feedback shows that provision of free small measures, such as smart plugs, might help to build understanding and acceptance of automated methods.

Innovation in service design or targeted marketing of automation may be particularly beneficial for certain groups:

- Automation for people with specific health conditions. Whilst amongst survey respondents this group were slightly more likely to report manual shifting than those without a health condition, they were also slightly more likely to be positive about future automation, which could help increase safe and effective participation.

- Low participation rates due to being out of the house and difficulty fitting around established routines could be addressed with automation, implying that a targeted campaign promoting the benefits of automation to these individuals may be fruitful.
- Survey respondents renting privately were more likely to report being positive about future automation and supportive of fully automated services than respondents in other tenures. However, there are actual or perceived barriers around landlord permission and compatibility of automated services with existing communal systems. Designing or marketing automation services and flexibility tariffs specifically for tenants could mitigate some of these barriers.

Further research or specific service design could help reduce the possibility of older people not taking up more automated flexibility services. As we have seen, survey respondents in older households report a challenging combination of not being positive about future automation (and more likely to say nothing could convince them to automate) and being less likely to say they would make other energy investments or purchases.

Exploring the experiences of pre-payment customers with demand shifting schemes in more detail could be a valuable avenue for future research. This group already face more challenges and poor outcomes around their energy use, and they are currently excluded from almost all smart tariffs[2].

Further research

As we have reported in previous surveys, further research is still needed to understand whether the underrepresentation of ethnic minorities in the CrowdFlex Utilisation surveys reflects a wider issue of smart energy participation for these groups, and what mitigation measures can be put in place to reduce the risk of their exclusion from energy flexibility.

[2] CSE (2025), Insights from Smart and Fair research program

2. Introduction

This project is funded by energy network users and consumers through the Strategic Innovation Fund, a programme from the UK's independent energy regulator Ofgem managed in partnership with Innovate UK.

This report presents the results of the customer feedback in the CrowdFlex utilisation trial for summer 2025. This trial has focused primarily on turn up events, with only a subset of participants also taking part in turn down events.

The customer feedback surveys were sent to all participating customers, excluding those in the control group. A total of 16,260 survey responses met our quality checks - 10,509 from new respondents, and 5,751 from repeat survey respondents.

These survey responses mean that there were 28,609 total unique respondents at this stage in the trial, including summer 2024 and winter 2024/25. A total of 42,611 surveys have been completed to date by these respondents.

We have also conducted in-depth qualitative research throughout autumn 2025. Semi-structured interviews were conducted to explore strategies for maximising engagement (n=20) and supporting safe flex (n=15). Three online focus groups were held to explore strategies for maximising engagement in greater depth in relation to three topics: Power Up events, automation, and effective shifting.

This report builds on the research and report from the previous CrowdFlex utilisation trials (available at: https://smarter.energynetworks.org/projects/10070764/).

The customer feedback work within CrowdFlex is designed to answer three research questions:

- What strategies do different consumer groups use to turn up and turn down?
- Do consumer characteristics correlate to: ease of participation; levels of satisfaction with events and rewards; willingness to maintain participation; understanding of effective demand shifting?
- Does engagement change over time for different consumer groups? (For example, can we see habits formed, technologies adopted, changes in willingness to participate?)

All three questions have been answered through the lens of particular consumer groups and vulnerability characteristics, informed by CSE's Capabilities Lens, as detailed below and in Appendix 2.

This final stage of the trial allows us to fully answer the third question, with a sample size of four surveys for a full longitudinal analysis (n=792 of those who completed all four surveys), along with qualitative analysis of open-ended text responses in the survey.

Consumer groups

As outlined in the research questions, we aim to understand how different types of energy consumers participate in the trial, and whether certain characteristics of the person or their home correlate to different experiences. To do this, we have defined four broad groups:

- Households that may be vulnerable in the energy market because of their circumstances.
- Households that may face barriers to demand shifting – for the first time this includes those on pay as you go tariffs.
- Households with low carbon technologies that may be enablers for demand shifting.
- High and low energy users.

The groupings are informed by Ofgem's definition of vulnerability and CSE's theoretical model, 'the Capabilities Lens', which sets out the necessary and desirable characteristics that enable people to benefit from smart energy offers such as CrowdFlex. More detail on these groups and their rationale for inclusion is provided in Appendix 2. Group differences in participation are explored in detail in Chapter 10. These findings represent a subset of CrowdFlex participants who took part in the survey, therefore findings may not extend to the wider population.

For the summer 2025 trial we have also explored experiences for different **trial arms.** This analysis also looks at the differing notice periods offered to trial participants, as well as those who were rewarded for their participation with free electricity on the basis of either the number of events they participated in, or the volume of electricity they were able to shift within events. The outcomes for different trial arms are covered in detail in the analysis by Centre for Net Zero ('CrowdFlex report: Utilisation Trial, Summer 2025).

3. Methodology

Over the duration of the CrowdFlex customer research, customers have completed surveys several months apart, enabling longitudinal analysis to understand change over time. In addition, new participants were recruited into the trial, meaning we could add more survey respondents at each stage. This gives us a tiered survey design, shown in Figure 1.

The summer 2025 trial surveys were conducted in October 2025. This round consists of 2 surveys to different cohorts:

- survey 1.4 for new respondents
- survey 4 for any respondent who had already completed a survey as part of this trial, whether their first survey was survey 1, 1.2 or 1.3.

Most survey questions were identical; but there were some differences for appropriateness – for example, repeat respondents weren't asked questions about their household composition.

The appropriate survey was shared via email with all utilisation trial participants. Responses that were completed in a time less than 2 absolute deviations below the median were excluded from this analysis, as we consider these to be abnormally fast response times, which may not have provided accurate responses.

792 respondents completed their fourth survey, having participated consistently since the beginning of the CrowdFlex study in summer 2024.

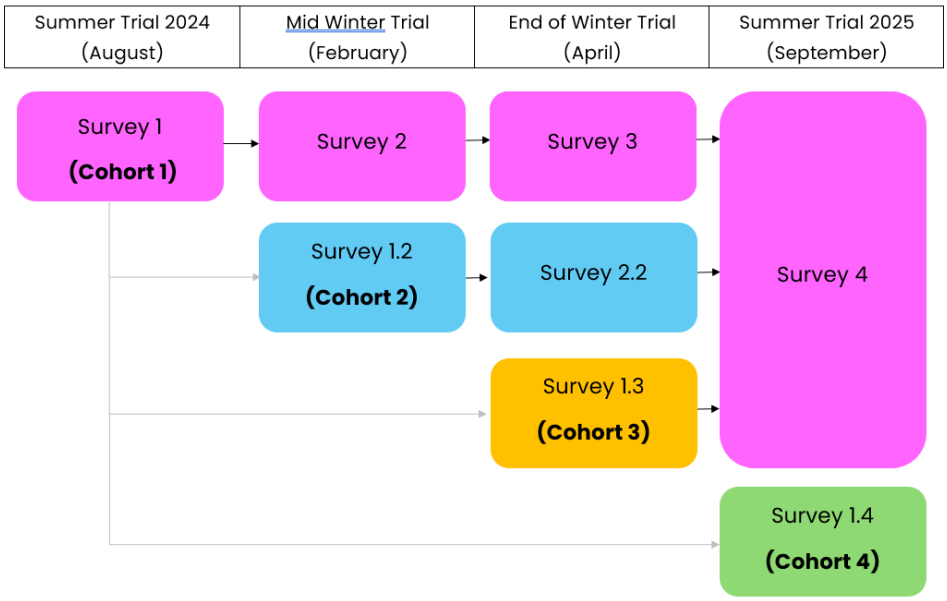


Figure 1: Survey Flowchart

Statistical tests

Significance testing shows the difference between a group and the remainder of the sample, so a statement such as 'Group X were more likely to say Y' indicates they are more likely to say Y than those that don't fall within the group, rather than in comparison to another group. All significance testing has been conducted at 95% confidence level. This means that, if there had been no true difference, the probability of observing a difference as large as that observed would have been less than 5%. Because the sample is a subset of CrowdFlex participants, who themselves are a subset of the general population, the results should not be interpreted as being generalisable across the whole population. Significance testing does not on its own determine whether findings are representative of the wider population, and makes no claims as to the extent of a difference. Statistics have been provided through the report to contextualise these findings. Unless otherwise stated, results refer to the entire sample (surveys 1.4 and 4).

For further details on the statistical tests throughout the report, please see Appendix 1.

Trial data

Energy consumption data has been analysed to provide further insights into event participation and to give a more complete picture of respondents' energy characteristics, which can be used to better understand the impact of the trial on different demographics. The data comprises variables derived from CrowdFlex

respondents' smart meter data, shared by OVO with CSE, with consent from respondents under the terms and conditions of the project. It includes: energy consumption by decile, trial arm, volume of flexibility delivered, whether or not a respondent was on a pay as you go tariff, the number of events a respondent was notified of and opted into and rewards earned for the summer 2025 CrowdFlex trial.

The main variables used in this part of the analysis are the volume of flex delivered by respondents in kWh, along with each household's overall energy consumption, split into deciles, where the tenth decile represents the top 10% overall energy consumption, across trial participants who completed a survey at this stage of the trial.

The volume of flex delivered by a household is analysed per opted-in event. This has been calculated using the total kWh shifted in the correct direction by a household when they opted into an event (i.e. the electricity usage reduction in Power Down events and the electricity usage increase in Power Up events). This value was then divided by the number of events a household opted into, to achieve an estimate for the volume flexed by a household per event. In this final trial, households had to explicitly opt in to every event, in an additional step, whereas in previous trials, all enrolled participants were automatically included in each event. The introduction of event opt-in data allows us to more accurately track how much electricity was intentionally shifted by respondents as part of their trial participation. However, it is important to note that this does not account for misinterpreted notifications or for a household having an inability to participate in specific events due to reasons independent of the trial.

The trial data analysed in this report is for a subset of CrowdFlex participants only – those who completed a survey in the summer trial. The primary research of the trial published alongside this report (see CrowdFlex report: Utilisation Trial, Summer 2025) analysed a larger sample of CrowdFlex participants. As a result, findings will not be directly comparable between the two reports.

Qualitative analysis

Open-ended survey questions were analysed using thematic coding analysis, which involves reading through qualitative data, assigning labels (or "codes") to segments of text that relate to key ideas, and then grouping these codes into broader themes to interpret patterns and meanings across the dataset. The code frame was developed iteratively, adding new codes as required. Initially, all new ideas and topics received new codes but as the frame was developed some codes were combined, whilst others were disaggregated to capture the nuance of what people were saying.

For some open-ended survey questions, we collected a very large volume of qualitative data. In these cases, the analysis was guided by an initial word frequency analysis which

involved using a natural language processing model in R. The most prevalent words or phrases, or those that particularly stood out, were the target for coding and were explored in more depth. Bigram and trigram word clouds were created using counts of each combination of two or three words. These words were not lemmatised, to avoid changing grammatical structure. Any combinations of two stop words (e.g. 'and', 'the') were excluded from counts. More information on how the word clouds are calculated can be found in Appendix 1.

Interviews and focus groups

Semi-structured follow-up interviews were conducted with 35 survey respondents to explore strategies for maximising engagement (n=20) and supporting safe participation (n=15). Interviews were conducted either online or over the phone depending on the participant's preference.

The maximising engagement interview research sampled survey respondents whose responses indicated high levels of engagement and/or positive experiences of the trial. Sampling also sought representation from groups who may be vulnerable in the energy market or face barriers to flexing: a) those experiencing financial insecurity, b) those with a health condition or disability, c) those with electric heating, and d) private renters.

In addition to these interviews, three online focus groups were held with a total of 16 survey respondents to explore strategies for maximising engagement in greater depth in relation to three topics: Power Up events, automation, and effective shifting.

The supporting safe participation interview research sampled respondents who indicated in the survey that they had both engaged in behaviour that is not recommended during the trial and experienced negative impacts to their comfort or wellbeing as a result.

All interviews and focus groups were analysed using thematic coding analysis. The coding strategy used the same iterative process as for the open-ended survey question analysis outlined above.

Limitations

Given the differing incentives offered to different trial arms, including receipt of free electricity for some participants as opposed to monetary rewards, and the additional complexities this brings, the rewards received hasn't been analysed at length for this report.

As in previous reports, another limitation is that only one demand side response service provider (DSRSP) participated in the utilisation trial and therefore we only have feedback from their customers. We are therefore not able to account for any impact that OVO's

approach to customer communications may have shaped experience, beyond the changes in approach OVO employed across the summer and winter trials.

This report relates only to survey respondents – a subset of participants in the CrowdFlex Utilisation Trial. The voluntary nature of the survey may result in a self-selection bias, with participants feeling more engaged in the trial being more likely to respond. This may explain the difference in event participation rates between survey respondents (who on average took part in 52% of events) and the full trial sample (who on average took part in 35% of Power Down events and 32% of Power Up events).

Questions used to define a respondent's group were asked during each respondent's first survey. As such, changes to household composition that would include or exclude them from a group (e.g. those with health conditions) have not been captured in the analysis.

The longitudinal analysis completed as part of this report has been heavily confounded by the changes in trial design, as changes in respondent experience might be attributed to this, rather than changes over time. In particular, as indicated by respondents' qualitative responses, the introduction of the requirement to opt-in to specific events could have had an impact on both trial participation and satisfaction. It is therefore unclear whether survey respondents were voicing their opinions on participating in the flex trial or to the changes made to the trial. Seasonal changes may also have had an impact – for example, in summer people use their heating less and therefore have less demand to shift, and lower demand means lower energy bills and generally lower awareness or concern about energy use and cost.

Attrition (respondents dropping out) is a widely recognised challenge for longitudinal studies, as the result of including the same individuals across the entire study and thus controlling for individual-level variation that would arise from sampling different participants at each wave. In the longitudinal analysis, we have included robustness checks for the 792 respondents completing four surveys against respondents who completed three, with a much larger sample size of 2,335.

4. Demographic and Household Characteristics

This chapter looks at the makeup of survey respondents and their households. Demographic characteristics are compared against the wider population of Great Britain (GB).

Representativeness

The following chapter describes the make-up of the summer 2025 survey respondents. Each of these groupings has been determined using responses to the first survey completed by each respondent, so changes over time in terms of these factors have not been captured in this analysis. Definitions of these groups can be found in Appendix 2.

Group	Count	Proportion of sample	Comparison to GB population
Health condition	4,420	27%	43[3]%
Older Household	6,658	41%	19%
Financially insecure	678	4%	NA
Social renter	1,710	11%	17%
Private renter	2,010	12%	18%
Electric vehicle +Charger owners	310	2%	5%
Home Battery Owners	363	2%	1%
Solar Photovoltaic (PV) Owners	1,336	8%	2%
No Low Carbon Technologies (LCTs)	14,122	87%	NA
Electric heating	1,936	12%	8%
Pay as you go	264	2%	14%[4]
Total	16,260	-	-

Table 1: Group breakdown

As found through previous trials, there's an overrepresentation of respondents from older households compared to Great Britain (GB) averages. There's also an underrepresentation of health conditions whilst renters continue to be underrepresented in the sample.

Electric vehicle owners were underrepresented due to their involvement in the separate CrowdFlex 'availability trial', which focuses specifically on using their vehicle for flex, in partnership with Ohme and OVO. The results of this trial will be reported separately (CrowdFlex Availability Summer Trial 2025: Customer feedback).

Since the survey respondents are a subset of CrowdFlex participants, it is unclear whether the distribution of different groups across the survey respondents is reflective of OVO account holders or CrowdFlex participants.

[3] This figure has been corrected from previous reports.

[4] Statista (2024), UK number of households 2024| Statista Prepayment Meters & Pay As You Go Energy Explained

Electricity usage

Inclusion of the trial data means we can also explore how the amount of electricity used by a household impacts participation. Figure 2 shows the level of engagement of different electricity usage deciles in terms of both the flex they deliver (which predictably rises with usage) and the proportion of events they explicitly opted into, as a proportion of the total number of events they were notified of, which increases significantly when considering all deciles.

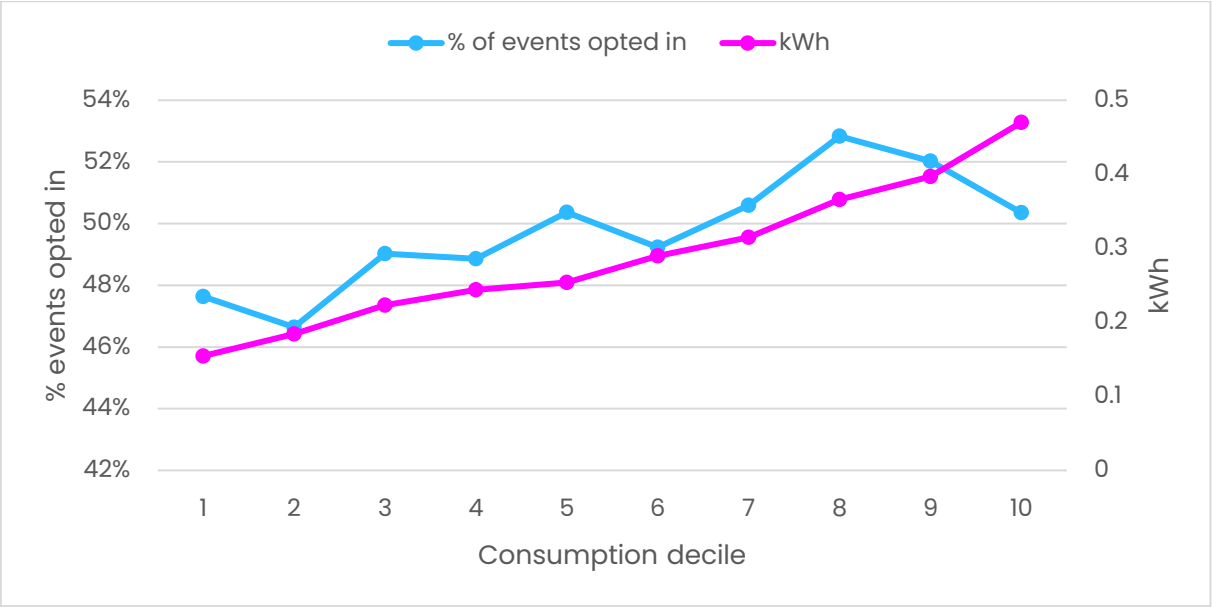


Figure 2: Consumption decile by flex volume and participation

Older households, both types of renters and households without low carbon technology had lower electricity consumption based on the trial data decile, whilst those with health conditions had higher consumption. Financially insecure households and those with multiple vulnerabilities didn't have significantly different consumption from those outside their groups.

Ethnicity

As seen previously, there is a substantial overrepresentation of White respondents. This finding is important to emphasise, since it suggests that ethnic minorities might be at risk of exclusion if they are not engaging in flex schemes such as CrowdFlex. Further research would be useful to understand the reasons for this, and how it might be mitigated. As mentioned above, it's unclear if this is representative of either OVO account holders, CrowdFlex participants, or simply survey respondents.

Gender

In line with previous findings, there were a greater number of female respondents than male, though again it's unclear if this is representative of OVO customers, CrowdFlex participants, or survey respondents.

Conclusion

As in previous reports, this demographic analysis presents an imbalance of gender and an underrepresentation of ethnic minorities participating, as reflected in other flexibility scheme evaluations[5]. Further research is still needed to understand this underrepresentation of ethnic minorities and what mitigation measures can be put in place to reduce the risk of their exclusion.

[5] CSE (2023) Household engagement with the Demand Flexibility Service 2022/23 https://www.neso.energy/document/282981/download; CSE (2025) Experiences of domestic flex: Two years of the DFS, not yet published

5. Perceptions

This chapter explores how respondents felt about the trial, and if participation impacted awareness and interest in demand shifting, smart technology and energy more broadly.

Trial Perception

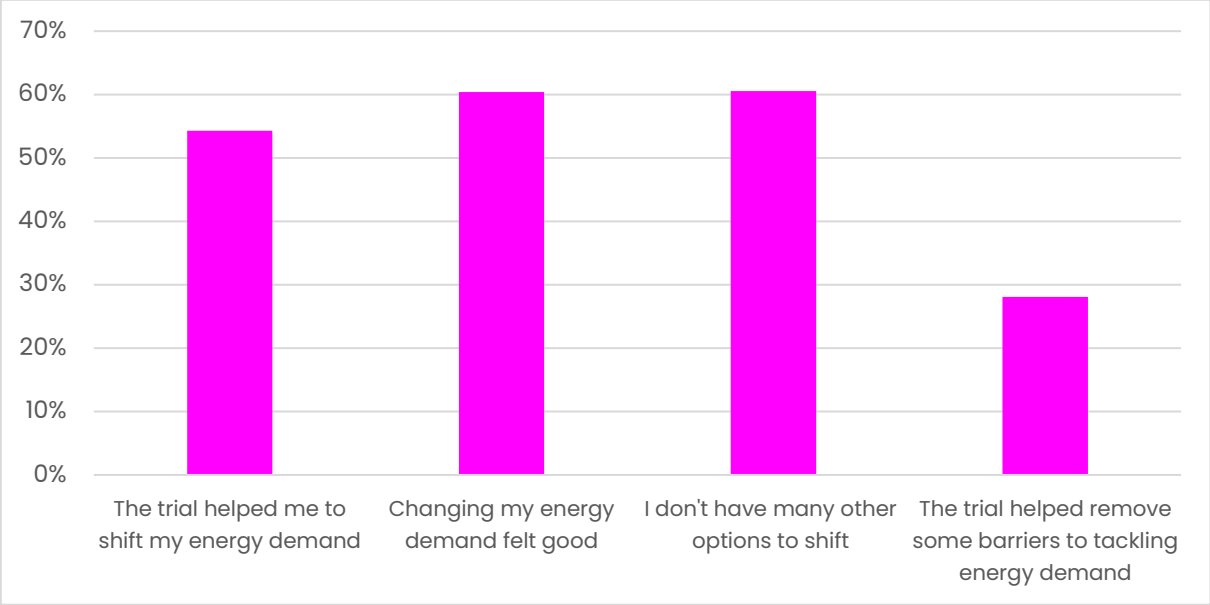


Figure 3: Trial Perception *Those saying 'agree' when asked the question 'Please say how much you agree with the following statements' (n=15,789)*

Respondents with at least one vulnerability risk factor were less likely to find that changing their demand felt good. However, they were more likely to say that the trial helped to remove some barriers to tackling their energy demand.

Households with lower electricity demand profiles were less likely to feel they had different flex options available to them. (Though, as explored in Chapter 13, when asked about future flex they were also more likely to say they don't want a continuation of CrowdFlex).

Those with low carbon technology were less likely to report that the trial helped them shift their usage and removed barriers to tackling their energy demand.

Those with shorter notice periods were less likely to feel the trial helped them shift demand, changing demand felt good, or the trial helped tackle barriers. The poorer trial experiences of the short notification cohort are explored further in Chapter 6.

Trial Satisfaction

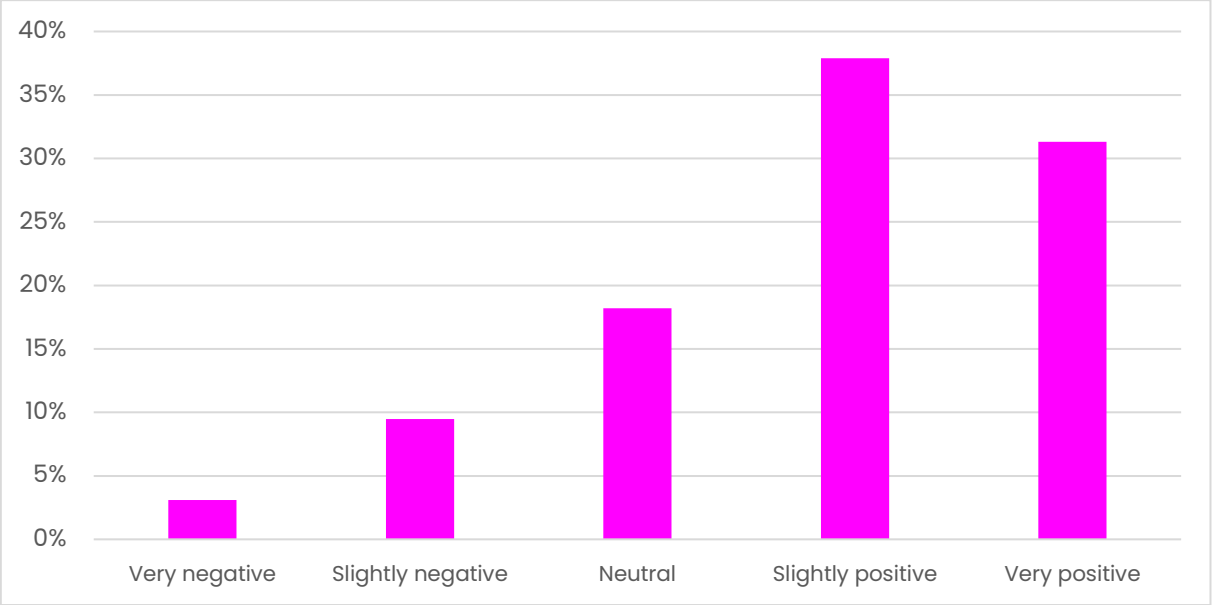


Figure 4: Overall experience *Responses to the question 'Overall, how have you found your experience of Power Move Flex [CrowdFlex]' (n=16,260)*

CrowdFlex respondents generally reported positive overall experiences of the trial, with 69% reporting overall positivity to some extent.

Both social and private renters reported better overall experiences of the trial.

Respondents reporting at least one vulnerability risk factor, older households in particular, reported more negative experiences than younger households. Further in-depth consumer research is needed to understand why this might be and how services can be designed to overcome this.

Those on shorter notice periods were less likely to enjoy the trial overall, feeling somewhat positive 65% of the time compared to the 71% who felt somewhat positive outside this group, and had more negative experiences according to the metrics seen in Figure 5.

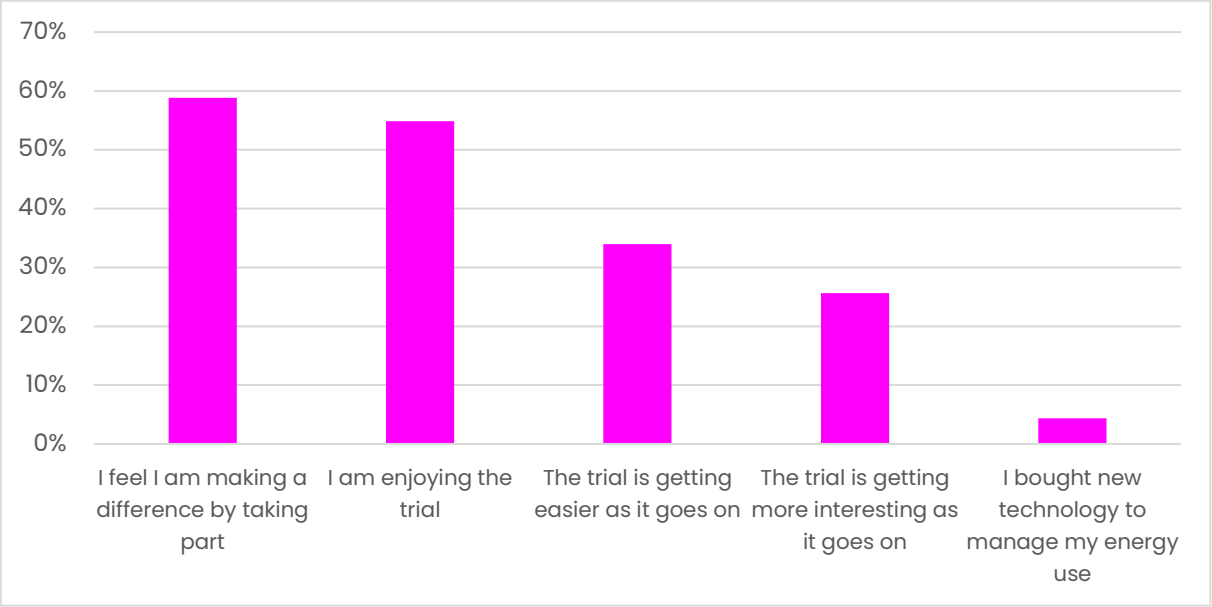


Figure 5: Trial satisfaction *Those who said 'agree' when asked 'Please say how much you agree with the following statements about Power Move Flex [CrowdFlex]' (n=15,789)*

As has been the case through the CrowdFlex trials, private and social renters were generally more likely to have been satisfied with the trial across the metrics seen in Figure 5. This echoes findings from the summer 2024 and end of winter trial stages, where renters responded more positively to all these questions than other tenures.

Those with multiple vulnerability risk factors were slightly less likely to have enjoyed the trial or felt they made a difference with their participation, a repeat of the findings from the winter trial. Further in-depth consumer research is needed to understand why this might be and how services can be designed to overcome this.

Respondents with low carbon technology were less likely to have enjoyed the trial or have found it easier with time. Qualitative responses suggest that this lower enjoyment may largely be attributed to households with solar PV. This is discussed more in Chapter 11.

Those with electric heating were more likely to have bought technology during the trial to help manage their electricity usage and more likely to have found the trial interesting.

We also included an open question about why respondents are enjoying the trial. As shown in the word cloud below, saving money, making a difference and having a challenge dominated the feedback. This remains strongly in-line with previous findings.

Figure 6 - *Trigram word cloud – analysis of survey question "In the space below, please try and tell us why you are enjoying the trial." (n=7,356)*

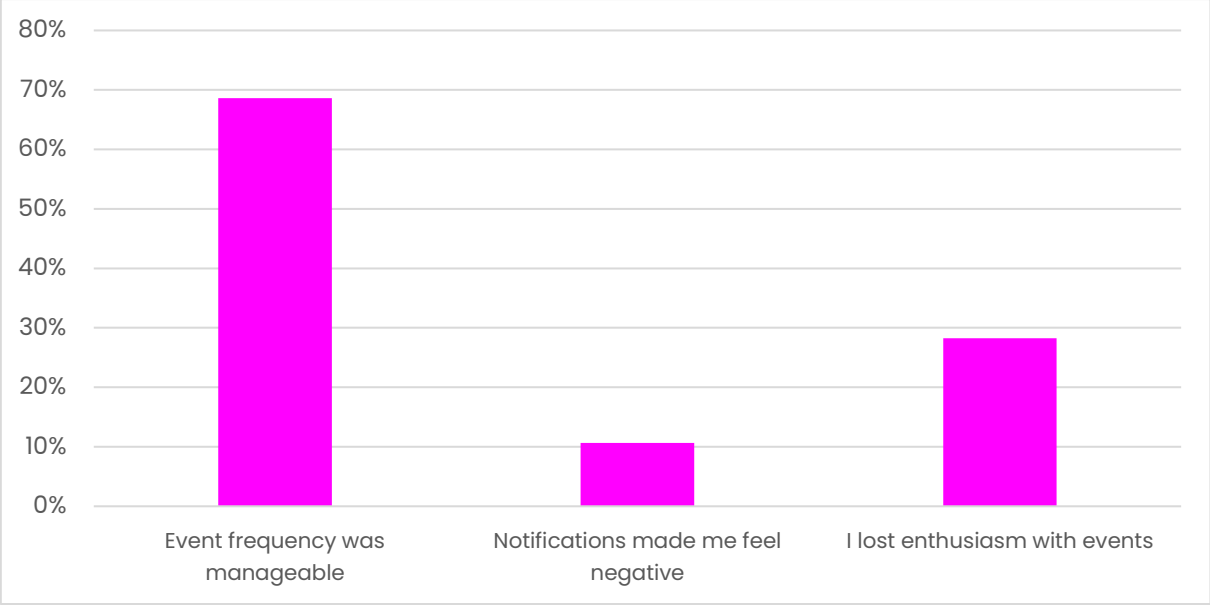


Figure 7: Notification perceptions *Those responding with either 'slightly agree' or 'strongly agree' to the question 'To what extent do you agree with the following statements' (n=15,789)*

Respondents with vulnerability risk factors were both less likely to find the frequency of events manageable and more likely to feel negative upon receiving notifications. However, chapter 8 shows that out of respondents who said they were losing interest

with the trial, those with vulnerability risk factors were less likely to say this was because there were too many events.

Trial impacts

Overall, higher awareness of electricity usage and how to shift electricity were clear and consistent benefits throughout the trials.

> *"I do my washing in the early hours or overnight most of the time but sometimes when the laundry is waiting and there's a power move, I say oh, why not? Let me just do it in this one hour, if that's the time. So yeah, I've learned that I can be flexible." Adisa (Focus Group 3)*

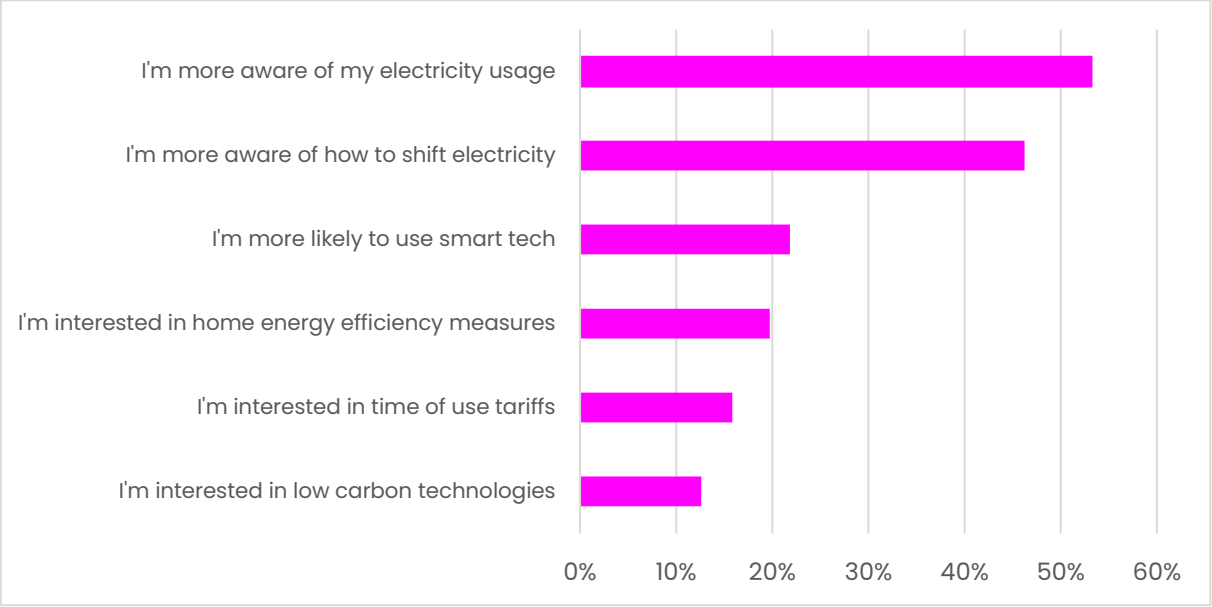


Figure 8: Trial Impact *Responses to the question 'Please say how much you agree with the following statements about Power Move Flex' (n=15,789)*

Respondents with multiple vulnerability risk factors were more likely to report improved awareness of electricity usage.

Households with low carbon technology were less likely to be both aware of their electricity usage and how to shift it.

Respondents with vulnerability risk factors were less likely to express interest in making changes such as purchasing low carbon or smart technology or taking home energy efficiency measures.

98% of respondents did not buy technology during the trial. Those who did were most likely to buy an electric vehicle (1%).

Respondents reporting that they became more aware of their electricity usage or how to shift dropped by 15 percentage points and 5 percentage points respectively, compared to the end of winter survey. Changes in these responses through the trial are explored more and significance tested as part of a longitudinal analysis in chapter 9.

CrowdFlex prioritisation

2,633 respondents reported participating in another trial or service along with CrowdFlex. Of these, 52% said they didn't feel there was a conflict between the services. Only 3% said they never prioritise CrowdFlex, 18% said they prioritised it half of the time, and 14% always prioritise CrowdFlex.

Conclusion

Findings across the summer trial survey responses remain generally consistent to those from previous CrowdFlex surveys. Awareness of electricity usage and shifting appears to have improved from the trial, particularly among households with vulnerability risk factors. Survey respondents generally felt that they had made a difference with, or enjoyed, their participation, though this experience was less pronounced in households with vulnerability risk factors.

In addition, we find that although participants continued to report that the trial had improved their awareness of shifting and their electricity usage, the rate of change of these variables declined substantially in the most recent survey. This, combined with reductions in the proportion of repeat participants saying that they were satisfied with the trial, could indicate a risk that customers were becoming less engaged in the flexibility events and program overall; changes in price incentives, season, and trial design (such as requiring opt-in for each event) may have played a role in these findings.

Just as with previous surveys, renters had more positive experiences, whilst those with low carbon technology were less likely to have been satisfied or educated by the trial.

6. Trial Design & Ease of Participation

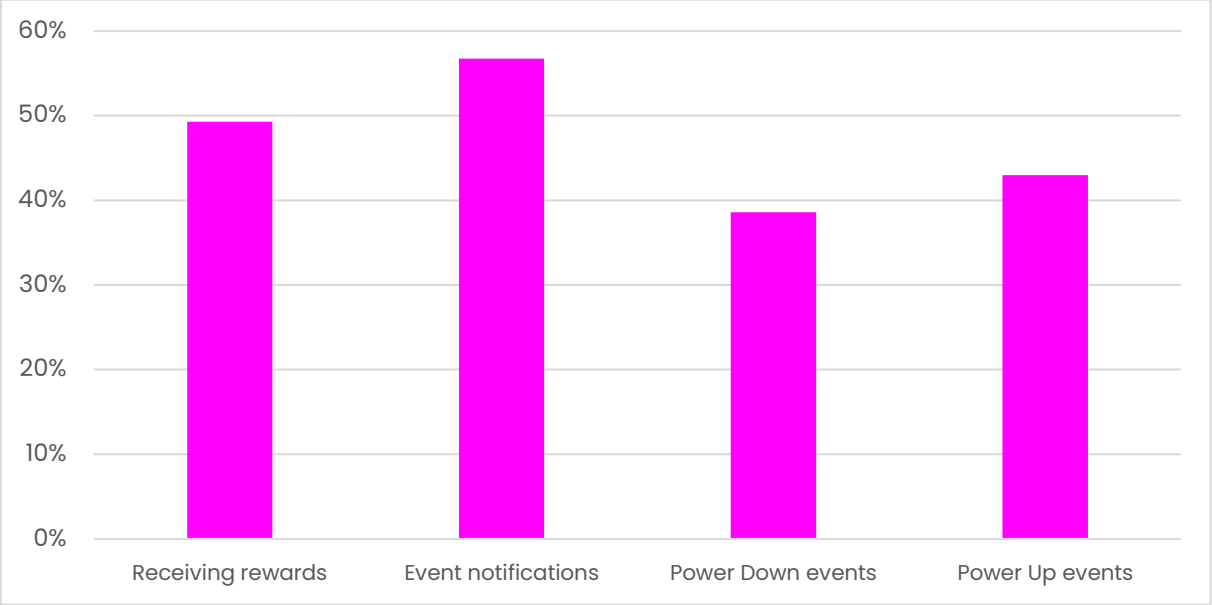


Figure 9: Ease of participation *Those responding 'easy' to the question 'How easy was it for you to take part in Power Move Flex? For each of the following' (n=15,789)*

Figure 9 shows that Power Down events were found most difficult by respondents out of these four elements of the trial. The Power Down event figure presented here is restricted to those who participated in Power Down events during this trial.

Respondents with shorter notice periods found both event notifications and receiving rewards more difficult, and this is further explored below.

For many households, their difficulty with Power Down events was largely because their baseline energy use was already low in regular hours.

> *"We're running quite a tight ship, and everything that's off is off or being sensibly used and it is easier to Power Up." Janet (Focus Group 3)*

However, experiences varied depending upon individual lifestyles. For some, Power Down was straightforward and fit naturally into their routines.

> *"We found it was really easy to do the Power Down because we just went round and turned everything off because we're at home all day and you're into your routine" Diane (Focus Group 4)*

Overall, respondents were more likely to find Power Up events easy than they were to find Power Down events easy. Experiences around Power Up events are explored in detail below.

Challenges

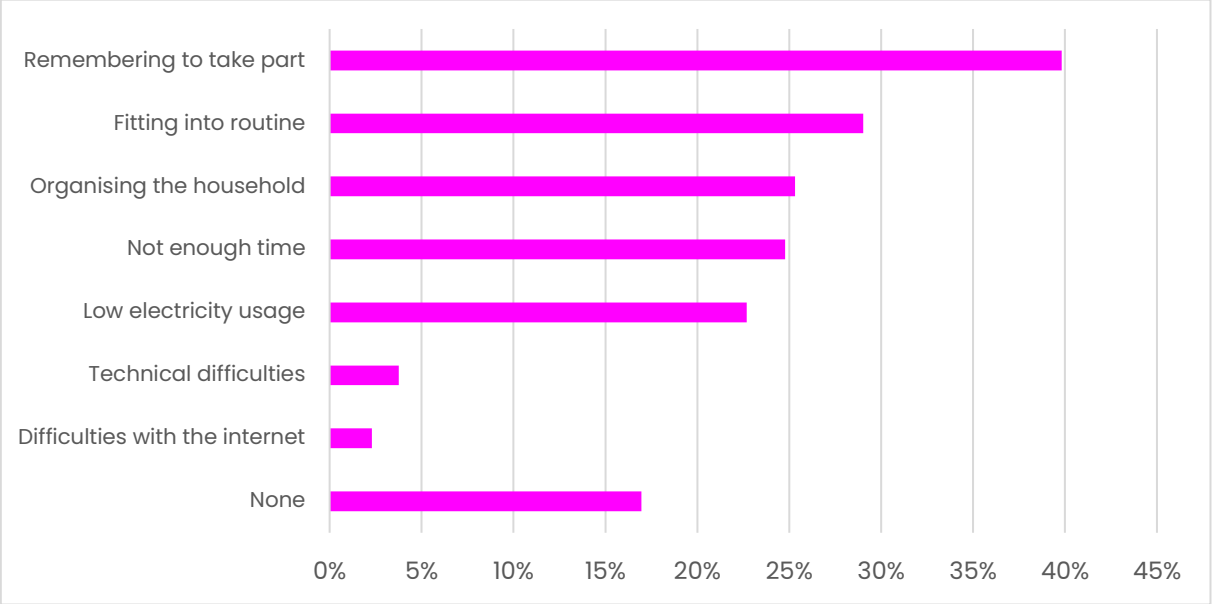


Figure 10: Household challenges *Responses to the question '. Did you or your household experience any of the following challenges in taking part?' (n=15,789)*

The most commonly cited challenge in participating, as has been the case in each stage of the trial, was remembering to take part in events.

Of the 3,581 respondents citing low electricity usage as a challenge, 2,335 (65%) said this was due to their household being small or household members often being out.

Respondents with electric heating were more likely to report facing no challenges, showing this is a group that can engage well with a scheme like the CrowdFlex Utilisation Trial.

Some challenges reflected previous findings, including conflicting event times and personal schedules, short notice leaving little time to prepare, and concerns about disturbing neighbours by using appliances at unsociable hours. Several found the repeated opt-in requirement burdensome.

For challenges relating to Power Down, certain aspects of respondents' routines were more challenging to shift, and they were less willing to do so to accommodate the trial. This included mealtimes, with most saying that even though they were likely to keep flexing after the trial, they would go back to their normal mealtimes. This particularly

applied to those with a health condition, with medication often dictating routines. Childcare (e.g. bathtime) was another non-negotiable for many.

For some the trial offered a bonus without requiring changes to routine:

"We kind of stick with our schedule and so if it fits then it works great… But it's just all about does that time fit us, right?" Scott (Focus Group 1)

Trial barriers

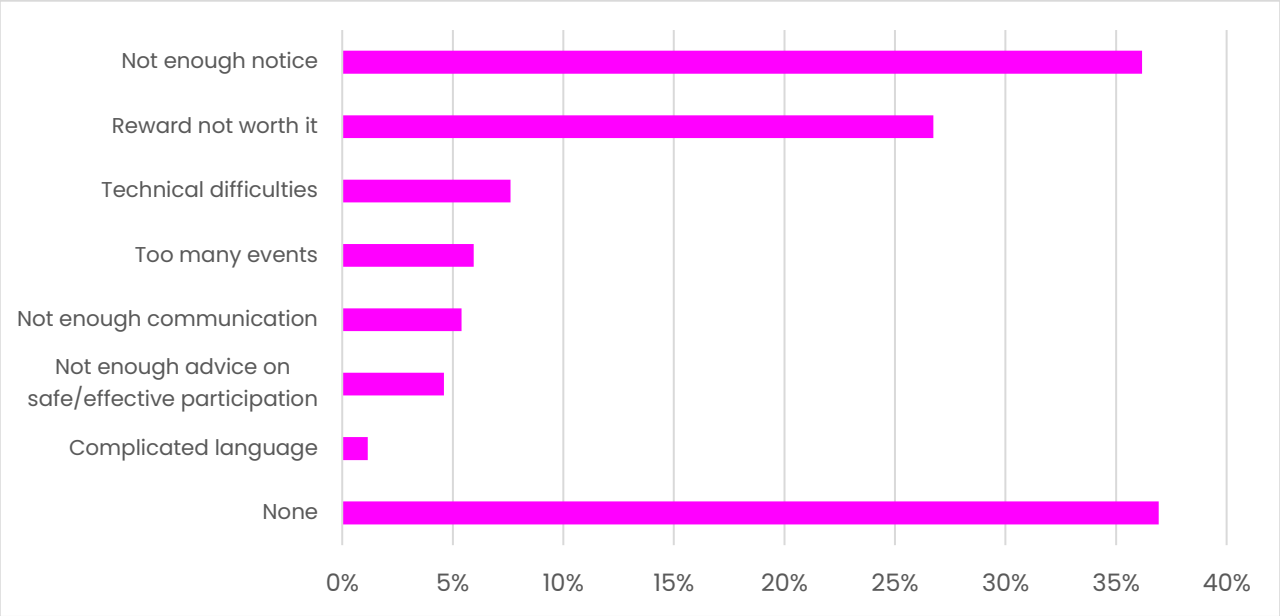


Figure 11: Trial barriers *Responses to the question 'Did any of the following aspects of the trial make it hard for you to take part?' (n=15,789)*

This question asked specifically about aspects of the trial that created barriers to participation.

Those without low carbon technologies were more likely to say that they didn't experience any barriers to engaging with the trial, suggesting that the design of the CrowdFlex utilisation trial is successfully making demand flexibility accessible to those without access to technology-specific schemes.

Those reporting at least one vulnerability risk factor were also more likely to say they faced a barrier, suggesting these groups are less able to participate in demand shifting to some extent.

Both types of renters were less likely to report barriers to participation, but as seen in Chapter 10 this didn't actually result in higher participation levels.

Similarly, lower electricity usage deciles were less likely to report barriers to participation, though Chapter 4 shows that higher deciles participated more frequently.

Power Up events

Overall, survey respondents were more likely to find Power Up events easy than they were to find Power Down events easy and more electricity was shifted by survey respondents per event during Power Up events than Power Down events during the trial.

Survey respondents with both an electric vehicle and charger, along with those without any low carbon technologies, were more likely to find Power Up events easy, whilst they didn't have significantly different opinions on Power Down events to other respondents. Electric vehicle charging is clearly the technology that allowed respondents to benefit the most from Power Up events. In Chapter 10 we note the huge amount of electricity shifted by this group per event, and they are able to shift even more during Power Up events than Power Down events. Aside from this, no other groups are taking particular advantage of Power Up events or finding them particularly difficult.

Despite this overall positive response to Power Up events, several interview participants reported challenges around them. Many didn't understand the purpose of the events, given the constant mainstream messaging around reducing consumption. They were reluctant to use more energy to achieve the target, with many actively ignoring these events. Some respondents also questioned the net gain of turning up their energy usage, seemingly misinterpreting or missing the messages to "shift" energy into "turn up" periods rather than a net increase in overall consumption.

"Even though I understand it, I find it really odd that they're telling you to use as much as you can […] I'm still a bit confused about that because it's like, if I do that, does that mean my bill's going to go up or is it use it now and it's free?" Roger (interview)

A few respondents also reported the challenges in meeting the Power Up target in summer, when they cannot make use of heating as much as in winter. Furthermore, the length of the events being shorter than the high-energy tasks that respondents would engage in at these times (e.g. washing machines, tumble dryers) led to feelings of dissatisfaction.

"I do find sometimes that the power times, one hour isn't enough for certain washing things. If you're gonna do something like a hot wash on towels and things like that, you need more than an hour. The washing machine is gonna need a lot more, you don't get that." Margaret (Focus Group 3)

Safety concerns relating to Power Up were prevalent amongst focus group participants, which acted as a substantial barrier to engagement – particularly if larger electrical appliances such as tumble dryers would be left unattended.

"but these timers and everything I'm just concerned about things turning on that are high-powered when I'm not there in case it catches fire." Roger (Focus Group 2)

That said, less than 5% of respondents in the survey said that 'not enough information on safe or effective participation' was a key barrier for them.

Given the potential for Power Up events to provide increased benefits to participants, overcoming these challenges and facilitating more effective participation through better communication could improve the performance of future turn-up services.

Interview participants who reported negative impacts from using more electricity than needed during Power Up events talked primarily about changes in their laundry habits. These changes included doing laundry – including tumble dryers - more frequently than usual. 16% (27/165) of survey respondents noted the increased frequency of using the washing machine or dishwasher, which was framed as taking up time and sometimes increasing electricity bills.

"I was actually using the dryer during the summer, whereas normally I just use an airer. So I was using more electric to take part more in the trial. […] I did notice that my bills didn't reduce in the summer as much as they would do normally." Jeremy (interview)

A related issue was the use of grid electricity to take part in Power Up events for households with solar PV. Two respondents reported doing laundry or charging an EV using energy from the grid, which resulted in higher electricity bills. These insights are echoed in some of the survey responses, particularly around bills and washing habits. 22% of those who provided open text responses (37 out of 165) emphasised the counter-intuitive impact of turning up, noting the real or imagined increase in their energy bills which was not offset by the rewards. Many also expressed discomfort as a result of increasing their energy consumption. The comment below from an open-ended survey response illustrates how this could be exacerbated by the lack of understanding around energy consumption of different appliances, and so a need to make this information more accessible for participants:

"I couldn't judge what appliances I needed to use to use 0.05 kWh. So there were times I went way over that consumption, in a way I didn't need to (although I didn't know that at the time)."

Notice periods

Trial participants received either a short notice period (2 hours) a medium period (5 hours) or a long period (the previous evening). Of the participants who completed a survey, those with short notice periods were 30 percentage points (pp) more likely to find the notice period challenging, though they were slightly less likely to say remembering to take part was an issue (3pp). They participated in fewer events and were more likely to lose interest (they were 2pp more likely to agree they were losing

interest and 3pp less likely to disagree). They were also less likely to have positive overall experiences (6pp less likely to agree to this and 5pp more likely to disagree). However, they did shift more electricity for each event they opted into than those on long notice periods as shown in Table 2. This aligns with the Centre for Net Zero analysis of Local Average Treatment Effect [LATE] showing that shorter notice periods correlated with lower opt-in rates, but more shift during opted-into events. Because findings in this report only relate to survey respondents - a subset of the sample analysed by Centre for Net Zero - specific figures differ between the reports.

Either of the longer notice periods were better received by survey respondents, with the longest period correlating with the best overall trial opinion and the most total shift delivered per respondent (considering both the number of events opted into and the amount shifted in each event).

The differences found between respondents from different trial arms may be in some part due to compositional differences between trial arms, so conclusions about the effect of trial arm on volume shift should be taken with some caution. In particular, we cannot assume a causal relationship between trial arm and the above findings..

Group	Group size	Average volume shifted per opted-in event (kWh)	Events opted into (%)
Short notice	5,432	0.30*	43%*
Medium notice	5,569	0.30*	53%*
Long notice	5,247	0.27*	59%*
Volumetric free electricity	3,131	0.29	51%*
Consistency free electricity	3,334	0.30	53%*
Full sample	16,260	0.29	52%

Table 2 Trial arm group statistics (*significantly different from those outside the respective group)

In line with this, respondents who had lost interest in the trial were asked about what would increase interest. The vast majority of these respondents, as was the case in the winter trial, wanted to be given more notice of events, ideally the day before an event is due, as well as higher rewards.

Figure 12:Bigram word cloud *Analysis of survey question "Is there anything which would have increased your level of interest?" (n=2,344)*

Some respondents also would prefer a longer time slot for the event, noting that washing machine and dishwasher cycles typically run for longer than 1 hour. Many also wanted a selection of time slots, although this indicates the prevailing knowledge gap around peak demand and balancing the grid.

Opting in

The opt-in functionality was introduced for the first time in this trial, meaning participants were required to opt-in on a per-event basis, whereas previously participants were automatically included in each event. This opt-in mechanism was designed to ensure that any observed participation reflected deliberate customer engagement, with the aim of reducing paying customers who had not actively participated.

Qualitative data shows numerous respondents expressing annoyance at the need to opt in to every single event. Many similarly reported that they would rather receive in-app notifications as they couldn't constantly check their emails for updates, and some reported shifting without rewards due to not having completed this additional step:

> *"Yeah I just feel the Power Up was a little bit harder this time mainly because the opting in… sometimes I forgot to opt in on the email, so that was a little bit annoying really." Graham (Focus Group 2).*

Requesting automatic or one-time opt-in was also a common trend identified across the interviews, focus groups, and free-text survey responses. The opt-in functionality

was also a common reason respondents gave why they had lost interest in the trial – this is covered in more detail in chapter 8. The high frequency of events in the CrowdFlex trial may be a contributing factor to this negative sentiment.

"automatic opt in, missed a number of events due to not actioning opt in"

Clearly a balance needs to be struck in service design between accuracy for service providers and reducing barriers to participation for customers, as both impact the value that can be achieved through flexibility. It is worth noting though that the dislike of the opt-in events may have stemmed from the change from people's previous experience without opt-in to one requiring active engagement. In addition, we did not test different options for communicating the opt-in events, therefore it is unknown whether different communication methods – for instance, a dedicated app – might have impacted perceptions.

Reward type

Some respondents received their rewards in the form of free electricity, as opposed to a monetary reward. These respondents were less likely to report receiving rewards as easy (they agreed 6pp less often and disagreed 5pp more often).

The trial analysis by Centre for Net Zero concludes that the free-electricity groups achieved comparable demand response to the highest cash incentive recipients but at roughly one-third of the cost. Our analysis suggests that, within the subset of survey respondents, those with this reward system did receive lower rewards during the trial, despite not shifting a significantly different amount per notified event. Dissatisfaction with the rewards, including the free electricity, was evident in the free-text survey responses. As respondents noted that they often weren't in the house to utilise the free electricity, they would have preferred the option to choose when they could have received it.

"I wasn't at home when I could use my free electricity, so although I'd took part to help with bills and the environment I haven't benefited."

The free electricity was awarded based on either a) the amount of electricity shifted correctly or b) the number of events participated in (i.e. consistency reward). Those receiving the consistency reward reported participating in more events than those outside this group. Conversely, those receiving free electricity based on the volume shifted were more likely to lose interest in the trial, feel negative when receiving notifications and less likely to enjoy the trial.

Whilst it's difficult to say whether these experiences were due to the nature of the reward or the total overall reward made achievable by respondents in these groups (those

receiving the consistency reward achieved a higher average reward) it seems that a reward based on consistency was the more effective approach during this trial.

Conclusion

Overall, many survey respondents found CrowdFlex accessible, though practical challenges continue to influence the ease with which some are able to engage.

While Power Up events were generally considered easier than Power Down, the differing experiences across households reflected variations in lifestyle, routine and understandings of each event's purpose.

Longer notice periods were more well-received by respondents, with the longest period correlating with the best trial opinion over a number of measures. The opt-in functionality is a barrier to engagement for some.

Respondents receiving their rewards in the form of free electricity, as opposed to a monetary reward, had slightly poorer trial experiences, particularly with regard to receiving rewards.

Those receiving free electricity based on the consistency of participation reported more positive experiences across a number of measures than those receiving free electricity based on volume shifted.

7. Shifting strategies

Evidence from the surveys indicates that a large majority of respondents continued to manually shift during the summer trials (Figure 13). This has remained consistently high throughout the trials, though this dropped to 80% from 87% in the summer 2024 trial, as explored in chapter 9.

Delay functions, often built into modern technologies, were the most popular form of automation, though this was only slightly more utilised than timer plugs. Respondents who spend a lot of time at home indicated that automation provided limited benefits to them personally, emphasising that their uptake would be conditional on some extrinsic need to automate.

> *I work from home so I can do a lot of these things myself rather than having a smart system. It's an option I would consider if there is a real need for it but at the moment, it's not saving me anything that I couldn't have done myself" Adisa (Focus Group 3).*

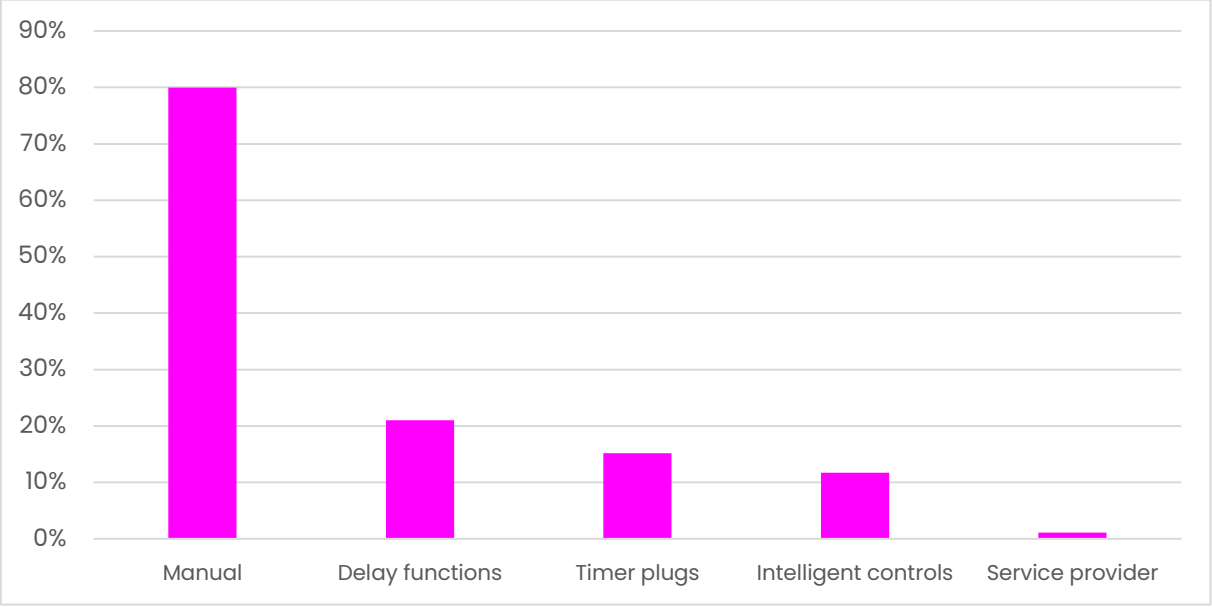


Figure 13: Shifting strategy *Responses to the question 'How do you manage your energy to make the most of cheaper, off-peak rates or rewards sessions?' (n=15,789)*

Social renters and respondents with at least one reported vulnerability risk factor were more likely to shift manually, whilst private renters and those with some form of low carbon technology were less likely. Those in lower electricity usage deciles were also more likely to shift manually. This is relevant given households shifting using some form

of automation were able to shift a significantly higher amount of electricity during flex events (Table 3).

Whilst social renters didn't feel they faced barriers to engagement with the trial (as seen in Chapter 6), their reliance on manual approaches could be perceived as a barrier to effective shifting, and could go some way in explaining why they shifted relatively small amounts of electricity (Chapter 10).

Some respondents indicated that with sufficient notice they found manually shifting high-energy tasks to the appropriate time to be easy while also encouraging organisation.

> *"if you know the time ahead of time… for me, at least, it was just playing it out better. '6:00pm?' – great, easy to fill up the bathtub right before, daughter jumps in and then we turn off the water." Scott (Interview and Focus Group 1)*

Indeed, amongst manual shifters those with a longer notification period were able to shift more.

Automation

While manual shifting (often supplemented by simple digital tools) remained the dominant strategy, many respondents also reflected on the potential role of automation in making flexibility easier and more consistent.

Automated shifters are defined here as those who reported using delay functions, timer plugs or intelligent controls when shifting their electricity.

Group	Group size	Average volume shifted per opted-in event (kWh)	Events opted into (%)
Automated shifters	7,572	0.32*	53%*
Full sample	16,260	0.29	52%

Table 3: Automation group statistics (*significantly different from those outside the respective group)

Those who shifted their electricity usage using some form of automation were able to shift 18pp more electricity per opted-in event compared to those not using automation, as well as participating in a greater proportion of events (table 3). This complements the findings from the winter trial, when automated shifters were able to shift 30% more electricity. Clearly, whether a survey respondent was using automation can impact their

ability to flex. These findings are important given that automation is expected by policymakers to be key to unlocking flexibility[6].

In the survey, we asked questions specifically about respondents' attitudes toward automation, discussed in more detail in the 'adopting automation' section in Chapter 13. This reveals some openness to automation (Figure 22) although insights from the interview and focus groups provide evidence of practical and contextual barriers to engagement with related technologies.

Conclusion

Taken together, these findings suggest that manual flexibility remains the norm. Nonetheless, automation presents an opportunity to support and enhance participation, helping mitigate the three most common challenges of forgetting to take part, fitting shifting into a routine, and organising the household.

[6] DESNZ (2025) Clean Flexibility Roadmap. Available at: https://www.gov.uk/government/publications/clean-flexibility-roadmap/clean-flexibility-roadmap

8. Motivation and Maintaining Participation

This chapter explores why people participate, how often they take part, and what causes people to lose interest.

Sign up and continuation motivations

The strongest motivation for CrowdFlex participation amongst survey respondents continues to be the opportunity to save money (69%). However, motivations evolved over time as respondents developed new habits and perspectives regarding their individual energy use.

All respondents were asked whether they'd formed a habit during the trial. Those completing their first survey agreed with this at a rate of 22%, whilst repeat survey respondents agreed 39% of the time, indicating habits around shifting are being formed, but they may take some time. This is explored in more detail in chapter 9, showing a significant increase in the number of respondents who reported continuing to take part due to habit formation.

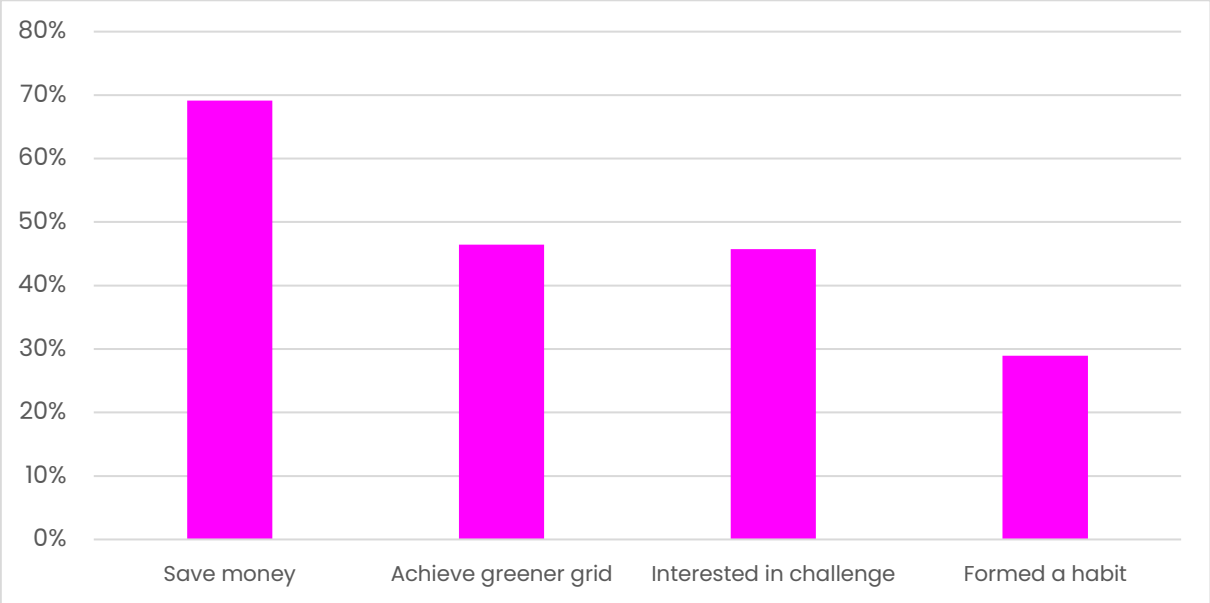


Figure 14: Respondent motivations *Responses to the question 'Why do you continue/did you decide to take part in CrowdFlex?' (n=15,789)*

Those with at least one vulnerability risk factor (financial insecurity, long-term health condition, older households) were 7pp less likely to be motivated by saving money.

Survey respondents in higher electricity usage deciles were more likely to be motivated by saving money and less likely to cite a greener grid as a motivator. This suggests financial incentives are more effective for those with high energy bills and/or the ability to shift more electricity.

Respondents without low-carbon technologies were 5pp more likely to prioritise saving money and 5pp less likely to emphasise environmental goals.

The interviews and focus groups provided insights of how motivations developed and varied. Although many began for the financial incentive, some respondents continued simply because they had formed a habit:

> *"So I don't have dinner until seven o'clock now because of the electricity and because I'm trying to get the rewards, which don't seem any point anymore now it's gone down, but I still do it."* Oliver (Focus Group 3)

46% of respondents stated that they were driven by the importance of 'doing their bit', in terms of supporting the grid and environment. This often kept respondents engaged even when they sometimes found the financial reward disappointing.

> *"Yeah, I think it's that making the difference, that's the important part… it's just taking the extra step to do it at a specific hour just shows that you are conscious and you want to do what you can to help the community or to help the planet."* Adisa (Focus Group 3)

As found in the previous trials, many were driven by the challenge (46%, compared to 47% in the previous winter survey). Others were simply curious about how much they are physically able to change their behaviour.

> *'I'm engaging in something […] that I've not done before to see what will come out of it, to see how it can help me, to see how it can improve things about my utilities and all of that.'* Femi (Interview)

Event participation

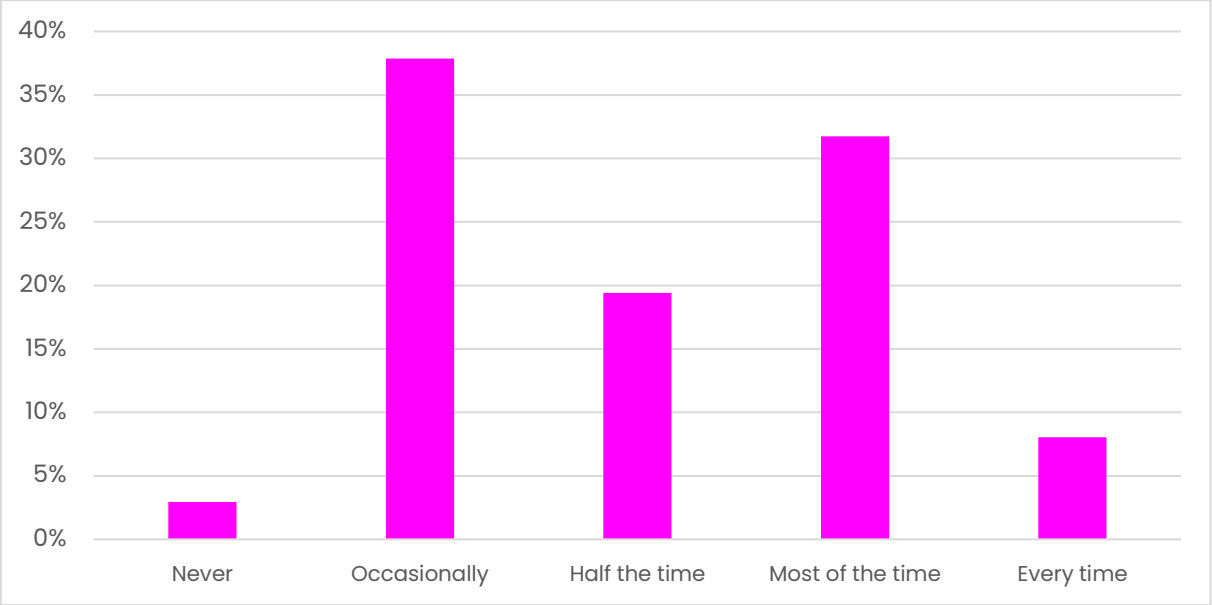


Figure 15: Event participation *Responses to the question 'When you receive a notification about Power Move Flex [CrowdFlex] how often did you change your electricity usage during the time slot?" (n=16,260)*

Self-reported participation dropped compared to previous surveys, as explored further in the longitudinal analysis (chapter 9). During the summer trial, most events were in the middle of the day as opposed to morning/evening, which likely contributes to this finding when compared to the Winter trial. Those with electric heating, those with at least one vulnerability risk factor, and both types of renters reported participating in more events – this has been a consistent finding over time. Meanwhile those on shorter notification periods participated less frequently.

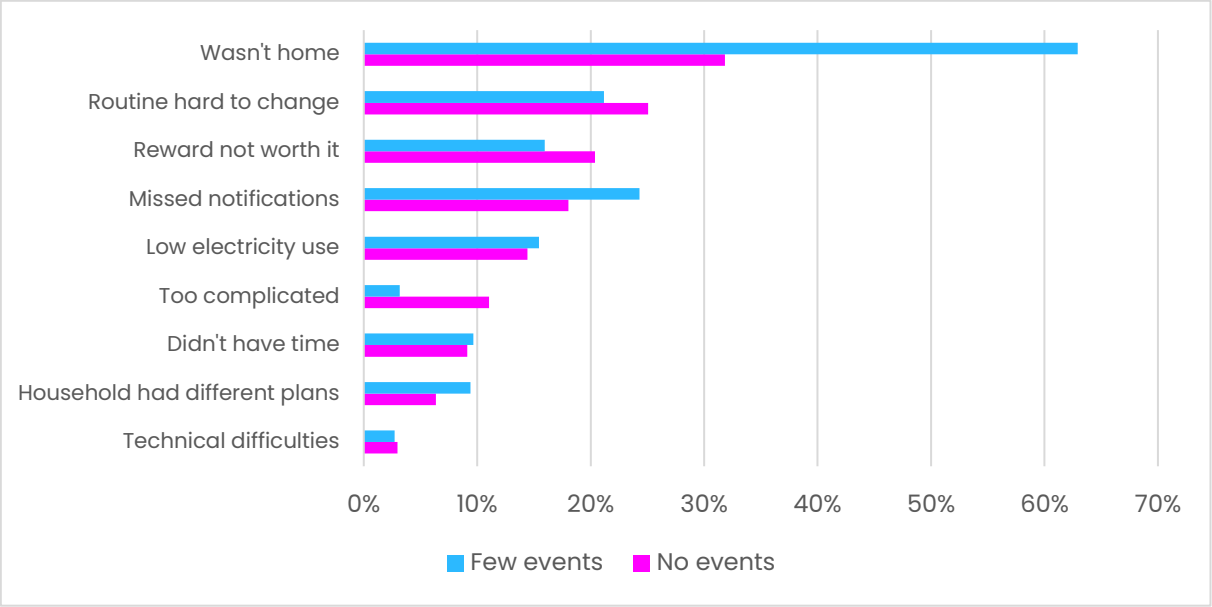


Figure 16: Low participation reason *Responses to the question 'Why didn't you take part in any/more events?' (n=471 (no events), 9,164 (few events))*

Not being at home for events was by far the most common reason (61%) respondents didn't participate more, for those never participating or doing so infrequently (this includes those saying they never participated, participated occasionally, or participated half the time, forming 59% of the whole sample). Other top reasons for not taking part more often were finding it hard to change their routine (21%), and missing notifications (24%). Of those taking part in no events, 20% said that the reward didn't feel worth it. Note that the above figures refer to self-reported measures of participation in the survey, rather than a comparison of opt-in versus participation in the trial data.

> *'The Power Ups are quite difficult because I usually work six to five most days and a lot of the Power Ups are during the daytime. So it's sort of difficult to do that. I don't have advanced technology to be able to set it on the timer as you know, I can't turn the washing machine on via my phone.' Sid (interview)*

For the first time in the trial, participants were asked to opt in to events. Access to the number of events a respondent was notified of, along with the number of events they opted into, gives us another metric to measure event participation. This shows us that, overall, survey respondents opted into 52% of the events they were notified of.

Under this metric, those with at least one vulnerability risk factor didn't participate significantly differently from those without any, nor did those with electric heating. Renters participated less frequently.

The drop in participation, according to the self-reported measure, may be caused in part by this opt-in functionality of the trial. Though not covered in the options in Figure 16,

the opt-in function was one of the most common additional reasons respondents gave for losing interest.

Those with short or medium notification periods did opt in to significantly fewer events, further indicating shorter notice periods correlated with more negative trial experiences, as seen in chapter 6.

Loss of interest in the trial

3,561 (22%) of survey respondents reported they lost interest in CrowdFlex over time. This is higher than the figure of 12% reported at the end of the winter trial. As seen in chapter 9, respondents were more likely to report losing interest in this survey than in either of the winter trial surveys they completed.

A decision tree regression analysis was completed using an XGBoost model to identify the factors that had the biggest impact on whether a respondent was losing interest in the trial. Details of the method for this analysis can be found in Appendix 1.

This analysis showed that the biggest factor for respondents losing interest in the trial was whether they felt they were making a difference with their participation, with those feeling they were making a difference significantly less likely to say they were losing interest. Given the analysis completed for the winter trial indicated whether a respondent felt good when shifting was the most important factor, it's clear that a participant's experience when flexing is paramount to their sustained engagement with demand shifting schemes.

Whether or not a respondent was receiving free electricity based on the volume of electricity shifted as part of the trial made the biggest difference to whether they were losing interest in terms of trial design. This group were significantly more likely to lose interest in the trial than those outside the group. As shown below, the 'rewards no longer feeling worth it' were also the main reason given for losing interest.

Loss of interest in the trial - self-reported reason

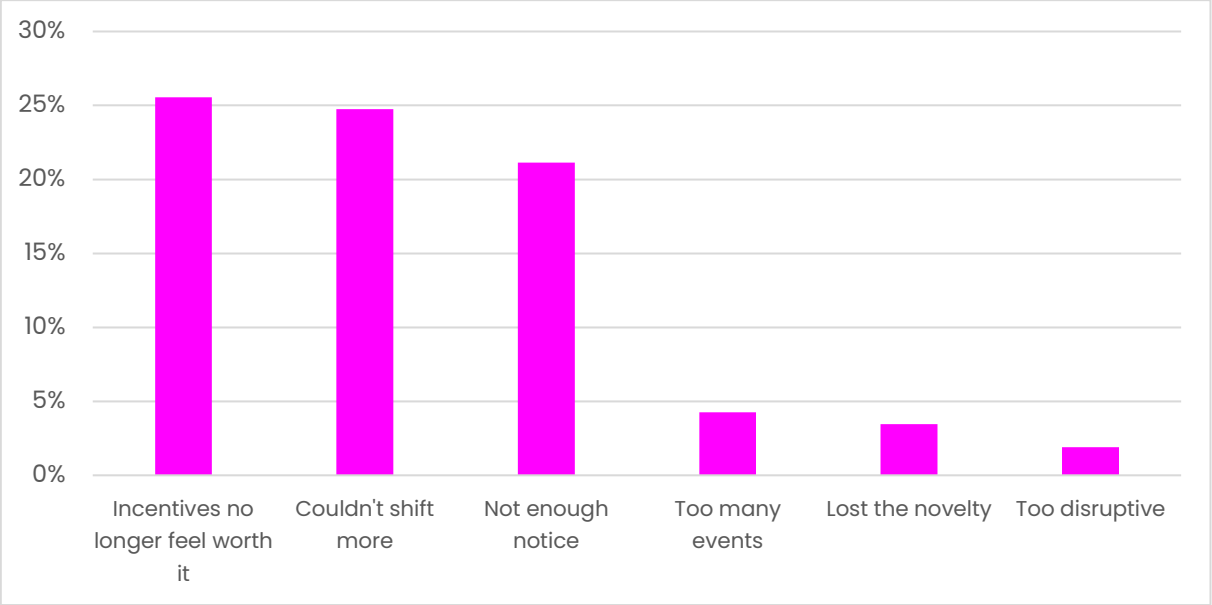


Figure 17: Loss of interest reason *Responses to the question 'Why would you say you started to lose interest in the trial?' (n=3,561)*

Respondents reporting that poor incentives led to them losing interest in the trial fell from 54% in the end of winter survey to 26% in this analysis, but this may be attributed to the addition of the option to choose 'I couldn't shift more', as seen in figure 17.

Survey respondents also had the opportunity to write their own response to why they were losing interest. The most common additional reasons were the opt-in functionality (14%, 79 out of 554) and not being at home when the events took place (27%, 152 out of 554). Respondents reported the need to opt-in to every event as annoying or caused them to miss some notifications. They also said they often weren't at home when the events took place, a problem that could be solved by encouraging automation.

"not at home […] plus daily opt in meant I missed lots of the events."

Those with solar PV installations or home batteries were more likely to lose interest in the trial, which is further supported in the qualitative data below. These respondents were also less likely to want a continuation of CrowdFlex to support them with demand flexibility in the future (see chapter 13). This may suggest that the CrowdFlex model is less suitable for solar photovoltaic and home battery customers, and that technology-specific incentive schemes might be more appropriate for them. Some users said they were losing interest because their independence from the grid meant they received little benefit, particularly as it was summer:

"Because I have solar panels and a storage battery, there is very little facility for me to vary my consumption of mains electricity during the summer months."

There was little evidence of loss of interest in the interviews and focus groups, though this is likely in part due to self-selection bias, with a greater number of interested individuals engaging with the qualitative elements of the research.

Conclusion

Financial motivation remains the primary driver for participation amongst survey respondents, with habit formation and environmental concerns being important for maintaining participation over time. We have seen a significant increase in the number of respondents who said they continued to take part out of habit.

Event participation continued to be higher amongst renters and those with at least one vulnerability risk factor – groups who may face barriers to engaging with the energy transition in other ways. Low participation rates due to being out of the house and difficulty fitting around established routines could be at least partially addressed with automation, implying that a targeted campaign promoting the benefits of automation to these individuals may be fruitful.

A higher proportion of respondents reported losing interest in the trial than in the previous survey at the end-of-winter trial. A regression analysis found that the biggest factor in whether respondents said they were losing interest was whether they felt they were agreed that they were 'making a difference by taking part', with those feeling they were making a difference significantly less likely to say they were losing interest in the trial. Rewards and the type of reward received were also important determinants.

The loss of interest found by households with solar photovoltaic installations or home batteries, along with other differences investigated in chapter 11, suggests that services similar to the CrowdFlex utilisation trial may encounter challenges engaging these households, potentially because they have other technology-specific schemes available to them.

9. Longitudinal Analysis

A longitudinal analysis was completed using answers from respondents from cohort 1 (see Figure 1) who participated in all four rounds of surveys, to evaluate their answers over time. There were 792 respondents who completed four surveys in total. Analysis has also been completed for the 2,335 members of cohort 2 who completed three surveys (surveys 1.2, 2.2 and 4).

This analysis covers event participation, trial motivations, shifting methods, trial satisfaction, trial impact and people participating in ways that are not recommended. Since the sample size of those completing four surveys is relatively low, we have supported the analysis with robustness checks, including those who completed three surveys rather than four where relevant, and only reported results which are consistent across both.

The differing opinions seen in the below analysis will likely be strongly influenced by changes in trial design, which necessitates caution in the interpretation of the findings. In particular, the most recent trial (summer 2025) involved a fundamental change to the incentive structure for 2 out of 5 trial arms. In addition, changes over time will be influenced by the seasons (winter vs summer comparisons). Some of these changes have been explored in this chapter.

Event participation

Participation rates decreased between the first and last surveys completed by respondents. Notably, a relatively large drop in participation occurred between the end of winter trial survey and the summer 2025 trial survey. This echoes the increase in respondents reporting they lost interest in the trial across this same period, as seen in chapter 8 and below.

Trial motivations

Respondents were generally less likely to report saving money, achieving a cleaner grid or being interested in the challenge of participation as motivations for taking part in the most recent survey. Saving money as a motivation dropped the most between the end of winter surveys and survey 4, which may reflect a negative response to the different rewards offered as part of the summer 2025 trial.

On the other hand, a higher proportion of respondents reported forming a habit as a motivation for participating in survey 4 compared to any of the previous surveys. Clearly,

habit formation is replacing these other motivations for some respondents, which could be important for the future of demand shifting schemes.

Trial satisfaction

Respondents were more likely to have reported that the trial had become easier with time in summer 2025 compared to summer 2024. However, they were less likely to say this in summer 2025 when compared to the end of winter survey. There were several changes in trial design between the winter and summer trials, which likely contributed to this finding.

The trial was also found more interesting by the end of winter trial stage, but by summer 2025 interest had dropped to their lowest levels, significantly lower than reported in each previous survey.

There was no significant difference found in households buying technology to manage the trial between surveys 1 and 4, though this did drop significantly between the mid-winter trial surveys and summer 2025. Similarly, no significant difference was found between surveys 1 and 4 in whether respondents felt they were making a difference with their participation, with this dropping between the final two surveys.

Trial impact

A lower proportion of respondents reported they were more aware of their electricity usage at the end of the trial, compared to the end of winter survey. This difference is significant when looking at those completing either three or four surveys. However, this follows a significant increase earlier in the trial, shown in previous reports, and we found no significant difference between summer 2024 and summer 2025 surveys. Therefore, this could be because increased awareness earlier on naturally tails off as those who have increased their understanding have less to learn.

This indicates that as the trial goes on, fewer survey respondents are finding the trial beneficial for improving their awareness around electricity usage. However there are multiple confounding factors that may affect this - it might well be attributed to a steep learning curve towards the beginning of the trial where participants learn a lot about their usage from being more mindful as part of the trial, it could be influenced by the effect of seasonality on awareness, or could be influenced by changes to the trial design in summer 2025.

Ease of participation

Respondents throughout the trial had increasingly negative opinions on receiving notifications, receiving rewards, Power Up events and Power Down events, with a

significant decrease in satisfaction between the first and last surveys (satisfaction dropped between each individual survey, though not always significantly). This solidifies the finding, along with the drop in event participation, that some survey respondents were losing interest in the trial. This may have been influenced by changes to trial design, for instance the introduction of the opt-in requirement.

Shifting methods

A higher proportion of respondents completing four surveys used automation to shift their electricity in every survey compared to survey 1, with the highest proportion of respondents reporting using automation during survey 3 at the end of winter stage. Conversely, a lower proportion shifted their usage manually in survey 4 compared to survey 1.

In summer 2024 17% of respondents automated in some way, and 46% reported automation in summer 2025, although it is worth noting that from Survey 2 onwards we added additional response options to the survey for specific automation techniques (timer plugs, delay functions, energy apps). Manual shifting dropped from 87% in survey 1 to 80% in the most recent surveys. These findings show the uptake of automation, important for future flex schemes, given the greater flex delivered by automated shifters.

Participating in ways that are not recommended

More survey respondents reported using less electricity than they needed, more electricity than needed, switching off essential appliances or altering their care routine without consulting a professional in the most recent surveys than in any other survey, for both cohorts analysed as part of this longitudinal analysis. The proportions for each of these behaviours increased significantly between the end of winter trial stage and summer 2025. Whilst we cannot definitively conclude why these seasonal differences have occurred, one hypothesis could be due to the lower energy consumption in summer, leading people to take more discouraged behaviours.

Losing interest

Respondents were more likely to report losing interest in the trial during their most recent survey than in either winter trial survey. However, respondents were less likely to be losing interest in the trial by the end of winter stage, before loss of interest became stronger in summer 2025. This mirrors some other findings from the longitudinal analysis, where enjoyment and engagement increase steadily over the first 18 months of the trial, followed by a noticeable drop-off at the end of the trial. The findings from summer 2025

on losing interest suggest that this might be largely the result of changes to the incentives in the most recent trial.

Conclusion

During the winter 2024-5 trial we saw an overall improvement in survey respondents' opinions on the CrowdFlex utilisation trial, but in the most recent survey respondents started to report poorer trial experiences during the summer 2025 trial. It's difficult to know if this change in opinion is due to the length of the trial (i.e. the trial wasn't able to keep participants engaged over an extended period), the changes in trial design (for example, the introduction of the mandatory opt-in feature), the reduction in rewards, or the impact of seasonal energy demands on trial participation.

10. Households that may be vulnerable

As outlined in the introduction, we aim to understand how different types of energy consumers participate in the trial, and whether certain characteristics of the person or their home correlate to different experiences. In this chapter, we explore the experiences of those respondents who may be vulnerable in the energy system or who may face existing barriers to demand shifting. Our definition of households that may be vulnerable in the energy market because of their circumstances is informed by Ofgem's definition of vulnerability, though it is important to point out that the presence of vulnerability risk factors does not mean that customers are necessarily vulnerable or at greater risk.

The following findings relate to survey respondents, rather than the full sample of CrowdFlex participants. As with trial arm in chapter 6, the group a participant falls into cannot be said with certainty to have caused a given response. Findings only show the distribution of responses across different groups.

Households that may be vulnerable in the energy market

Group	Group size	Average volume shifted per opted-in event (kWh)	Events opted into (%)
Financially insecure	678	0.25	52%
Health conditions	4,420	0.28	52%
Older households	6,658	0.33*	51%
Multiple vulnerabilities	2,235	0.32*	51%
Full sample	16,260	0.29	52%

Table 4: Potentially vulnerable group statistics (*significantly different from those outside the respective group)

Older households

Contrary to the findings from the winter trial, older households shifted more of their electricity demand than those outside this group when considering survey respondents, which might be attributed to being at home more.

Older households were less likely to report their routine was a challenge for participation (7pp), and were less likely to report participating in ways that are not recommended.

Despite these seemingly positive signs, they had worse overall trial experiences (feeling positive 4pp less often and negative 2pp more often) and being less likely to report that shifting felt good (agreeing 3pp less often). This might be attributed to their low energy use, which was a prevalent challenge for this group. They were more likely to feel they had no other options to participating in demand shifting (they were 5pp less likely to agree, and 2pp more likely to disagree with this statement).

Amongst survey respondents, older households were less positive about future automation (18pp, and 7pp more likely to say nothing could convince them to automate), generally less likely to say they would make other energy investments/purchases (such as buying technology or switching tariff) and overall more likely to say they wouldn't want to participate in future demand shifting schemes. It is worth noting that older households were also substantially over-represented in the survey sample (41% compared to 19% in GB population), therefore we should be cautious when extrapolating these results to the general population.

Financially insecure households

Financially insecure survey respondents were 4pp more likely to agree the trial was their only option to engage in demand shifting. They were more likely to participate in ways that are not recommended compared to their behaviour before the trial (it is noted that OVO specifically advised against these behaviours through their trial communications, with forum moderators available to address participant concerns or lack of understanding). Of the four types of discouraged behaviour we asked about, only changing their care routine led to more negative feelings than other groups (explored in more detail in Chapter 12). They were less likely to have felt they were making a difference with their involvement (4pp less likely to agree and 5pp more likely to disagree), less likely to say they'd learnt more about how to shift their usage through the trial (6pp), and less likely to agree that this shifting felt good (4pp).

Whilst this group were more likely to manually shift their electricity when participating in events (4pp), they were more likely to agree they were positive about future automation (4pp) and slightly more likely to say they bought technology to help them with the trial (3pp). This indicates this group might be more effective shifters in the future, particularly if they're supported in participating with automation.

Health conditions

Survey respondents with health conditions were more likely to feel they had no other options for flexing (they were 3pp more likely to agree and 2pp less likely to disagree), and generally found the trial more challenging, particularly with organising their

household and fitting it into their routine, than those survey respondents without health conditions (6pp and 5pp respectively).

Despite an overall feeling among this group that barriers were removed, the qualitative data better uncovers the challenges faced by people with a health condition and/or disability. One particular respondent, who took part in both an interview and a focus group, shared some of his experiences of the trial being visually impaired, reporting that the accessibility of online information means he is not able to read supplementary information. Physical accessibility issues also restricted his ability to engage with flex events, with both domestic infrastructure and the design of smart technology proving to be barriers. We discuss how such challenges might be addressed in future flexibility schemes, in the 'Recommendations' section.

Multiple vulnerability risk factors

Within the subset of participants completing surveys, households facing multiple vulnerability risk factors had poorer trial experiences across a number of measures, reporting they had a positive overall experience less often (3pp) and agreeing they enjoyed the trial less often (5pp). Despite those reporting negative experiences actually also delivering a greater volume of shift, seen in table 4, this group reported using less electricity than they needed more, altered their care routine more, and were less likely to have become more aware of their usage (3pp, 2pp and 3pp respectively).

Households that may face barriers to demand shifting

Group	Group size	Average volume shifted per opted-in event (kWh)	Events opted into (%)
Social renters	1,710	0.20*	51%*
Private renters	2,010	0.25*	51%*
Pay as you go	264	0.13*	57%*
Full sample	16,260	0.29	52%

Table 5: Household with potential barriers group statistics (*significantly different from those outside the respective group)

Renters

Both social and private renters were more likely to have had a positive overall experience of the CrowdFlex utilisation trial than those outside their groups, when considering participants who completed the survey. They agreed to enjoying the trial more (5pp and 7pp respectively), feeling that they'd made a difference with their

participation. They also felt the trial had helped remove barriers to their engagement with demand shifting, particularly social renters, who agreed to this 10pp more than other respondents. However, both also flexed less electricity, and participated more in ways that are not recommended to do so. Private and social renters were more likely to shift manually (3pp and 6pp respectively), but their perspectives on automation differed, with private renters 6pp more likely to be positive about future automation, versus social renters who were 6pp less likely to say this.

Pre pay customers

From the sample of participants completing surveys, those paying with a Pay As You Go (PAYG) tariff were more likely to report behaviours that are not recommended and were less likely to have learnt more about their electricity use or how to shift it (3pp and 2pp respectively).

Despite some positive trial experiences, such as being more likely to agree the trial became easier with time (7pp), and being more likely feel that the trial removed barriers to demand shifting (they were 5pp more likely to agree and 8pp less likely to disagree), They were less likely to report they wanted CrowdFlex to continue (14pp).

The qualitative survey data did not reveal any distinct differences between PAYG customers and the rest of the sample. Exploring the experiences of PAYG customers with demand shifting schemes in more detail could therefore be a valuable avenue for future research.

It's important to note that PAYG customers only participated in Power Down events. As such, the greater potential to shift electricity during Power Up events seen in chapter 6 was available in a smaller proportion of events, which might go some way to explaining their less effective participation.

Electricity Usage

A respondent's electricity usage decile had no significant effect on their overall trial experience. Amongst survey respondents, higher usage deciles both participated in more of the events they were notified about and delivered a greater amount of flex when they did participate. Higher deciles were more likely to want the CrowdFlex utilisation trial to continue.

Conclusion

We see a mixed picture for survey respondents with vulnerability risk factors:

- Contrary to the findings from the winter trial surveys, **older survey respondents** have shifted more electricity than average, but they had worse overall trial

experiences, and we can see potential challenges around future uptake of automation for this group.

- **Financially insecure survey respondents** were more likely to report behaviours that are not recommended but were more likely to be positive about future automation and more likely to have bought technology to help them with the trial, indicating they may become more effective shifters in the future, particularly if they can be supported in participating with automation.
- Survey respondents with a **health condition** were more likely to use less electricity than needed, switch off essential appliances and change their care routine than those without health conditions (these behaviours are discussed in more detail in Chapter 12). however, they were also more likely to say that the trial helped to remove barriers to demand shifting, and were more likely to build habits, suggesting that CrowdFlex has had some success in including this group.
- Survey respondents with **multiple vulnerability risk factors** reported poorer overall trial experiences and were less likely to want to participate in future flex schemes. However, they also shifted a greater volume of electricity than those with just one or no vulnerabilities. Both social and private renters were more likely to have had a positive overall experience, but both groups flexed less electricity, and were more likely to report behaviours that are not recommended.
- Survey respondents paying with a **pay as you go tariff** reported more challenges taking part, and were less likely to say that they would want to participate in a similar scheme in future.

11. Impact of technology ownership

This chapter examines how low carbon technology impacts participation in the CrowdFlex utilisation trial. We expect electric vehicle ownership, battery storage ownership and electric heating to all enable more effective shifting. Solar PV has the potential to interact with shifting services differently. In previous trials, though these groups have shifted considerably greater volumes, respondents have reported technology-specific challenges.

Group	Group size	Average volume shifted per opted-in event (kWh)	Events opted into (%)
Solar photovoltaic owners	1,336	0.31*	51%
Home battery owners	363	0.35	50%
Electric vehicle owners	310	0.98*	51%
Households with no low carbon technologies	14,122	0.27*	52%
Households with electric heating	1,936	0.35*	51%
Full sample	16,260	0.29	52%

Table 6: Households with potential enables group statistics (*significantly different from those outside the respective group)

Solar photovoltaics owners

Survey respondents that own solar photovoltaics felt positive about the trial less often than those without this technology (6pp), though they shifted more than those outside this group per opted-in event. They were less likely to report behaviours that are not recommended and agreed they were losing interest with the trial more often (4pp).

The open-text responses show that many believe their solar photovoltaics limit their ability to benefit from the trials, particularly when combined with battery storage. These respondents noted that participation was challenging because of their low demand for energy from the grid. Power Up targets were also hard to achieve when the sun was shining and so they couldn't increase consumption further.

"Flexing is near impossible if panels are generating during the flex period. Sometimes we will use energy off the grid, other times off the panels, it just depends on the level of sunshine. Not sure the scheme can work for us because of this."

Solar photovoltaic owners felt they had better options available to them (they agreed 1pp more and disagreed 3pp less) and were less likely to want a continuation of CrowdFlex (7pp).

43% of solar photovoltaic owners reported that the combination of their solar array and the trial formed a barrier to CrowdFlex participation.

Home Battery Owners

Of the 463 respondents with a home battery, 180 (39%) never used it to participate in flex events, and 53 (11%) hardly used it. Half of these respondents weren't aware that shifting with a home battery was possible. Whilst this figure was slightly higher for respondents completing their first survey, repeat respondents still said this 47% of the time.

As with solar photovoltaic owners, home battery owners had poorer overall trial experiences than those without a home battery (they felt positive 8pp less often), resulting in them agreeing to losing interest more often (8pp) and being less likely to want CrowdFlex to continue (7pp).

Electric vehicle and charger owners

Electric vehicle and charger owners enjoyed relatively risk-free engagement with the trial. They didn't have significantly better or poorer overall trial experiences to those without this technology but were less likely to agree that they had no other options for engaging in demand shifting (10pp). They were able to shift a large amount more electricity in events they participated in than those outside the group – EV owners shifted on average over three times more than the average respondent.

Households without low carbon technologies

Households without low carbon technology less likely to agree to being positive about future automation (7pp). This accompanies their being more likely to shift manually (they did this 5pp more) and could help explain why they shifted less per opted-in event. Despite this, they reported slightly better overall trial experiences, (they agreed they were positive 2pp more and that they were negative 2pp less often), which is important given they felt they had no other opportunities to get involved in demand shifting (they were 2pp more likely to agree to this and 2pp less likely to disagree).

Electric heating

Households with electric heating reported participating in more events, and shifted more electricity than households with alternate heating when they did. They were more likely to agree the trial was interesting than others (5pp) but were more likely to participate in ways that are not recommended. This suggests that advice is needed to ensure safe and effective participation in relation to shifting heating – this is explored further in chapter 12.

Conclusion

As we have seen throughout the trial, survey respondents with all types of low carbon technology shifted more than the average. For EV users this was over three times more than the average respondent. Outside of EVs we continue to see specific challenges related to technology:

- Survey respondents with solar photovoltaics had poorer overall trial experiences than those without this technology and many believe their solar photovoltaics limit their ability to benefit from the trial, particularly when combined with battery storage.
- Half of survey respondents with batteries never or hardly ever used it to participate in flex events.
- Electric heating users participated in more events, and shifted more electricity than households with alternate heating when they did.

Survey respondents without low carbon technologies had better overall trial experiences, and were more likely to feel the trial removed barriers to their engagement, which is important given they were also more likely to feel they had no other opportunities to get involved.

12. Supporting safe participation

Customer communications provided by OVO encourage safe participation – regular emails state that participation is about shifting energy use rather than using more or less than needed, and the terms and conditions refer to shifting 'non-essential electricity'. They also make clear that there is no penalty for not taking part. Despite this, throughout the trial we have seen a minority of survey respondents participating in ways that are not recommended, that may put them in discomfort. For example using less electricity than needed (e.g. not eating dinner or sitting in the dark), switching off essential electrical appliances (e.g. medical equipment, fridges / freezers) and changing care routine without consulting a medical professional. We also asked about impacts of using more electricity than needed (e.g. turning on appliances that weren't needed) – this is reported separately in Chapter 6 on Power Up events.

In this survey, we wanted to find out more about these types of participation. We added survey questions on how respondents found the experience and the extent to which they were behaving in this way before the trial. We then followed up with in-depth qualitative interviews with 15 participants who reported negative impacts of participating in this way.

Though the rest of this report focuses on participation in the summer trial, this chapter also reflects behaviour in the winter trial - the survey question we asked to repeat participants was 'Thinking back, how often did you do any of the following during the trial, including in the winter?'. Interview and focus group participants had taken part in both winter and summer trials.

Survey analysis

Figure 18 shows the percentages of participants reporting each type of action that is not recommended, along with the percentage who said they increased this behaviour during the trial. This attempts to indicate more accurately whether a participant took actions that may reduce comfort more during the trial than they otherwise would have done. This deeper analysis shows that many people were already doing these behaviours, providing insight into the impact of affordability challenges more generally.

Our interviews have also shown that the survey data on this topic needs to be viewed with some caution, despite our attempts to control for confounding factors. In particular, some interviewees reported behaviours that were in fact related to Power Move or about

their more general low energy consumption patterns rather than CrowdFlex specifically. Nevertheless, we know that participants don't always easily and cleanly differentiate between different services and schemes they are taking part in (particularly the nuances between, for example, Power Move and Power Move Flex), and that impacts of the energy transition on consumers need to be viewed holistically if we are to avoid introducing or exacerbating energy-related risks.

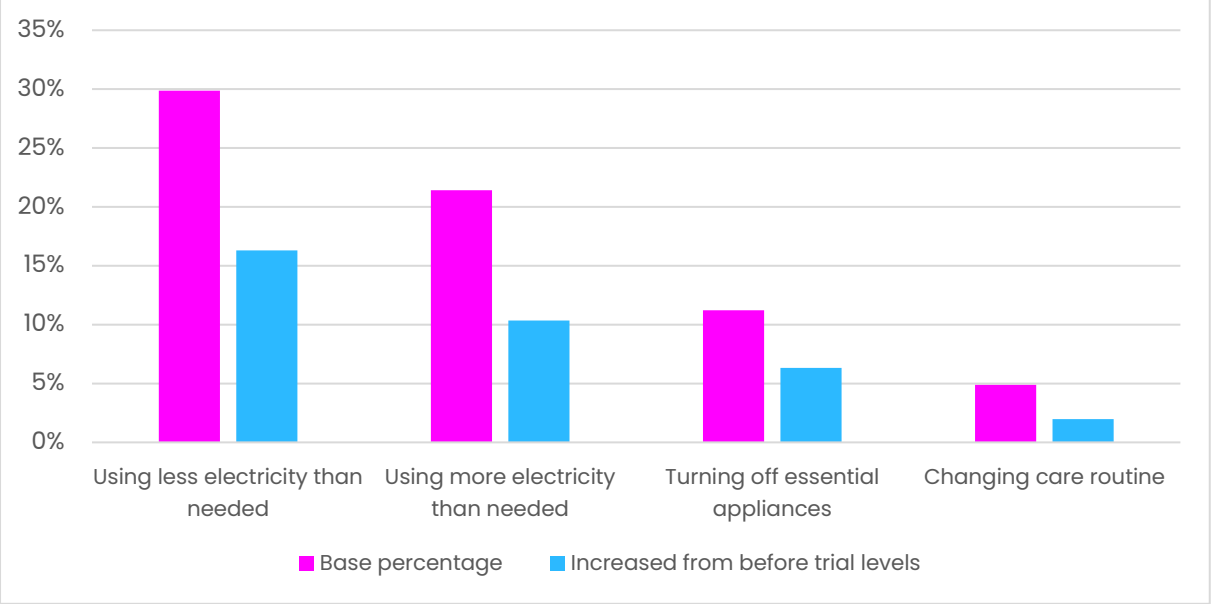
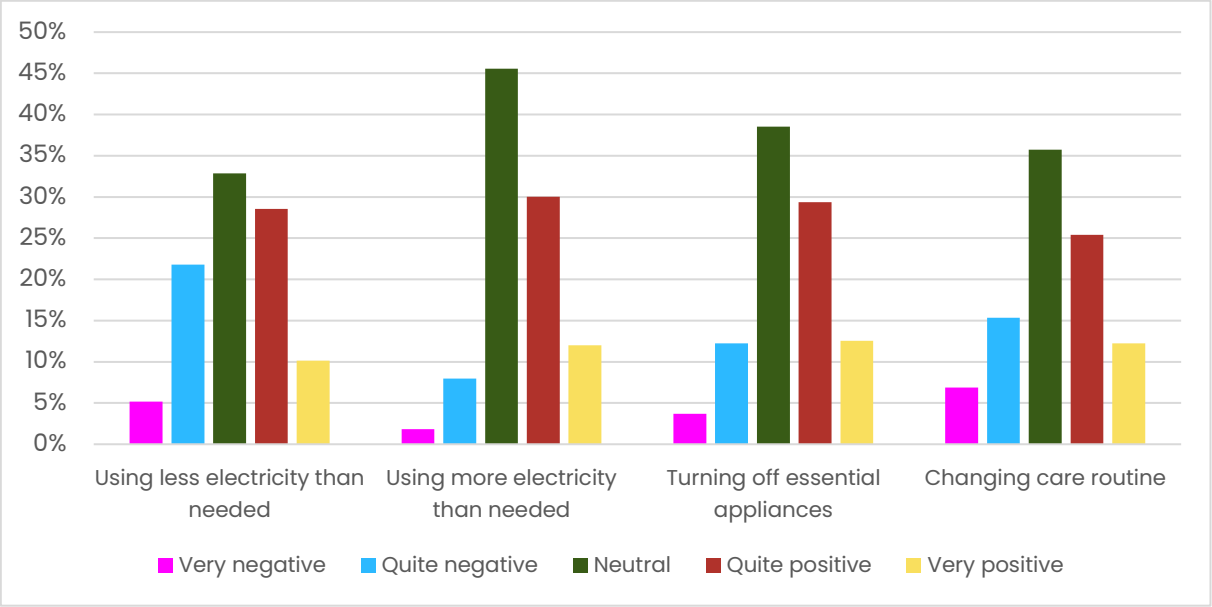


Figure 18: Behaviours that are not recommended. *Responses to the questions 'Thinking back, how often did you do any of the following during the trial, including in the winter? Please note, we do not recommend them.' and 'To what extent did you do this before the trial?' (n=15,789)*

Survey respondents with vulnerability risk factors were generally more likely to participate in ways that are not recommended whilst taking part in CrowdFlex. Those with multiple vulnerability risk factors were more likely to use less electricity than needed, switch off essentials and change their care routines.

A participant's electricity usage decile only made a significant difference in whether they would use less electricity than needed, with those in higher deciles more likely to behave in this way.



Responses to the question 'How did you find this experience?' where a respondent reported behaviours that are not recommended more during the trial than beforehand (n=3,695)

Figure 19 shows the experience of those reporting behaviours that are not recommended and indicates that generally people felt neutral about this. This is interesting as it shows that many participants did not feel as negative about some of these behaviours as we might expect. In addition, contrary to our expectations, a substantial proportion reported feeling 'quite positive' or even 'very positive' about each of these types of behaviour.

In terms of negative experiences, the most negative response was toward using less electricity than needed (27%). Participants with at least one vulnerability risk factor felt more negatively about these experiences than those without any vulnerability. Those with lower electricity usage felt worse about using more or less electricity than needed.

Overall, we find that those participating in ways that are not recommended are a small proportion of the population. For the majority, these behaviours are not particularly damaging or problematic. However, as described below, for a small sub-set of people, participation appears to interact with pre-existing challenges resulting in negative outcomes.

Qualitative findings

We asked an open-ended survey question and conducted 15 in-depth online follow-up interviews, where we asked people to tell us more about their negative experiences. We specifically wanted to understand more in order to support participants who might be

struggling with the trial. Therefore, we only included those who reported that they were participating in ways that are not recommended, that they were doing this more than they would have otherwise in order to participate in events, and that they had negative experiences as a result of this. This means that these experiences reflect a small proportion of the sample that had the most negative experiences, and, as shown in figures 18 and 19, is not reflective of the large majority of survey respondents.

The feedback reflects the essential nature of electricity in our lives – covering people's experiences of cooking, heating and lighting their homes. Some of the activities and impacts reported by interview and survey participants include:

- Homes becoming cold due to reduced heating during events.
- Homes being dark as a result of turning off lights.
- Changing eating habits or mealtimes to avoid cooking during Power Down events.
- Limiting showering and laundering during Power Down events.
- Turning off fridges and freezers, sometimes resulting in food spoilage or appliance damage.
- Limiting use of electrical disability aids.

For a small proportion of participants with existing physical or mental health conditions, these actions have led to problematic impacts. It is crucial to understand how such participants can be identified and supported, so that flexibility schemes can mitigate rather than exacerbate existing vulnerabilities.

For some survey respondents (147), participation in Power Down events involved skipping meals, or substituting home-cooked food for snacks in an effort to reduce cooking time. Meanwhile 338 survey respondents said that they would turn the lights and heating off.

Many of those reporting these types of behaviour talked about financial drivers for doing so, highlighting the importance of affordability support. For those struggling to afford their energy bills, the trial has offered an opportunity to save money, but for those who already ration their electricity use this can mean further curbs on usage in an effort to earn rewards. Some interview participants said that they would probably ration less in future, since the rewards didn't feel worth the impacts on their wellbeing. However, others said that it would depend on future energy costs:

"It depends how much the electric and gas goes up. … I probably will do it again, but obviously if I really got too cold … then I would put the heating on." (Julia)

In some cases, CrowdFlex appeared to interact with and exacerbate pre-existing mental health conditions. Some reported feeling adverse mental health impacts during the trial, most commonly low mood connected to lack of light and heat, and anxiety as the result of their heightened surveillance of their energy consumption. 21 survey respondents said they avoided laundry and washing, and 45 said they neglected hobbies and activities. One interview participant – who is autistic and facing financial hardship – spoke about restricting her heating, cooking, bathing, lighting and laundry:

"It made me look at the electricity I was using, or gas, … and I realised, you know, I couldn't afford it. So … I thought the best way would be to obviously not use it." (Sarah).

Sarah's case was one of existing health vulnerabilities and existing energy rationing impacting participation. The CrowdFlex surveys enabled us to more deeply understand her circumstances and initiate safeguarding procedures to get her more support. This highlights the value of ongoing communication with participants, to be able to identify anyone who is putting themselves in discomfort. It also highlights the importance of government-led data sharing and affordability measures to correctly identify and support households in hardship.

Recommendations for supporting safe participation

Energy flexibility of the kind explored in CrowdFlex is expected to be central to the energy transition, but this research shows that it cannot be viewed as a system or market intervention in isolation, particularly when energy costs are high and many people feel forced to ration their energy use. The experiences of some survey respondents make clear that a holistic suite of interventions is needed to support those with existing energy related vulnerabilities to participate in our changing energy system, ranging from individual support to better monitoring of impacts on different consumer types. This could include:

- Attention to ongoing communication with customers participating in flexibility schemes. This should use multiple communication mechanisms - including app notifications and SMS for customers who don't tend to check their email, and not relying on T&Cs. Ongoing communication and check-ins could:
    - Emphasise safe participation and support customers to understand the difference between 'essential' and 'non-essential' power consumption, especially for those with already low usage
    - Utilise onboarding questionnaires to identify customers who might require additional support (and potentially link up with the Priority Services Register)

    - Better communicate the gas/electricity distinction for those with gas heating, so that customers with gas heating do not turn their heat off unnecessarily during events
    - Identifying safety concerns throughout, signposting customers to appropriate help and advice, and initiating safeguarding procedures if necessary.
- A requirement or responsibility on service providers to protect customers and support safe and effective participation. A customer protection duty is proposed for load control providers through the Smart and Secure Electricity Systems regulations, but nothing similar is currently proposed for consumer-managed programmes like the CrowdFlex utilisation trial.
- Holistic smart energy advice covering broader energy-related behaviour or the interaction of different services, products and tariffs that people may be participating in. Tailored smart energy advice available via a national energy advice service is essential to ensure good outcomes for customers and could help avoid people participating in ways that are not recommended for scant reward.
- More work to understand how vulnerability interacts with the provision of domestic flexibility, how service providers can identify those that may need extra support, and the role of the existing Priority Services Register (PSR) in a smart energy market. The PSR should, in theory, already include customers with existing medical, physical and mental health needs; however, it is often not up-to-date, and many vulnerabilities are not included.-
- Better monitoring at the population level of who can participate and benefit from the different types of flexibility services that are emerging and addressing gaps in the market if it becomes clear that some types of energy user cannot benefit.

13. Future Flex

This chapter brings together several different elements of the research exploring what type of service respondents want to use in the future, how people can be supported to take up automation (which is anticipated to be key to unlocking widespread flexibility in future), and other ways to help people become effective demand shifters.

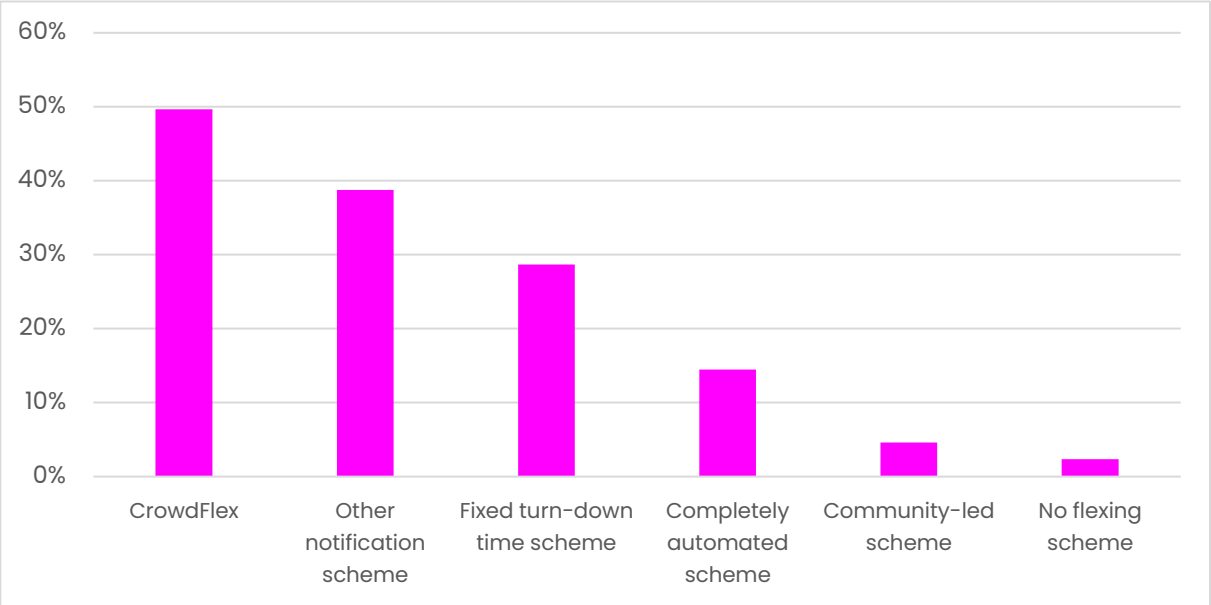


Figure 20: Future Flex *Responses to the question 'Thinking about the future, how would you like to engage in energy flexibility?' (n=15,789)*

We asked how respondents would prefer to engage with demand flexibility in the future – for instance, through a continuation or roll-out of something similar to CrowdFlex, versus other options for demand flexibility. 50% of respondents supported continuation of CrowdFlex, the most popular option, with only 2% stating they don't want to engage in any type of flexing scheme.

Respondents with multiple vulnerability risk factors were 1 percentage points (pp) more likely to respond that they're not interested in future flexing schemes, whilst those with no reported vulnerabilities were 5pp more likely to want to continue CrowdFlex. Suggesting overall that CrowdFlex may be more attractive to those without vulnerability characteristics.

Survey respondents with solar PV or home batteries were both 7pp less likely to say they wanted to continue with CrowdFlex, which aligns with the earlier finding that those with solar PV and home batteries were more likely to be losing interest and suggests that technology-specific schemes might be more appropriate for this group.

As seen in figure 21, those in lower deciles for electricity demand were less likely to want a continuation of CrowdFlex, and more likely to have no interest in future flexing schemes.

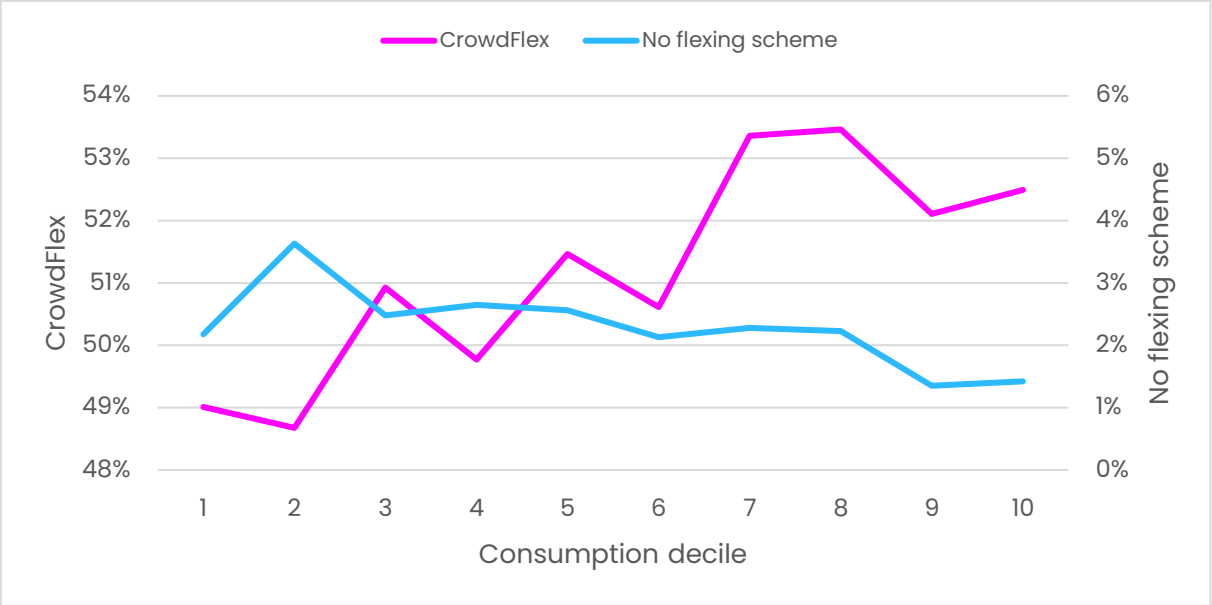


Figure 21: *Consumption decile against future flex scenarios*

This aligns with our findings that those with very low electricity consumption were more likely to struggle to engage with the scheme and raises questions about how to ensure that demand flexibility can still benefit those with low consumption.

A follow-on question to the one above asked respondents to expand upon why they would like to engage in flexibility in the way they selected (n = 8,674). Results from a word frequency analysis mirror respondents' overarching motivations; financial savings remain the primary driver, as well as contributing towards a greener future. Those who selected 'a completely automated scheme' added that this would overcome the annoyance and 'faff' of opting in every time; it would simply make participation easier. It would also be more fitting for busy lifestyles where work and other responsibilities interfere with remembering to opt in. This would hopefully reduce any lost financial and environmental savings made.

"It would be nice to just sign up for all events and be notified when it's happening. When you work shifts and have a family, it's tricky to flex as it doesn't fit in with family schedules."

Households with vulnerability risk factors were less likely to report wanting a fully automated scheme, as were social renters. Private renters were more likely to want this type of scheme, along with those with any low carbon technology and those with higher electricity consumption.

Adopting automation

Though adopting a fully automated scheme was preferred by only 14% of respondents, Chapter 7 highlighted the importance of automation in ongoing efforts to support demand shifting.

Survey analysis (Figure 22) reveals an openness to automation (as we have seen in previous surveys), though insights from the interview and focus groups provide evidence of practical and contextual barriers to engagement with related technologies.

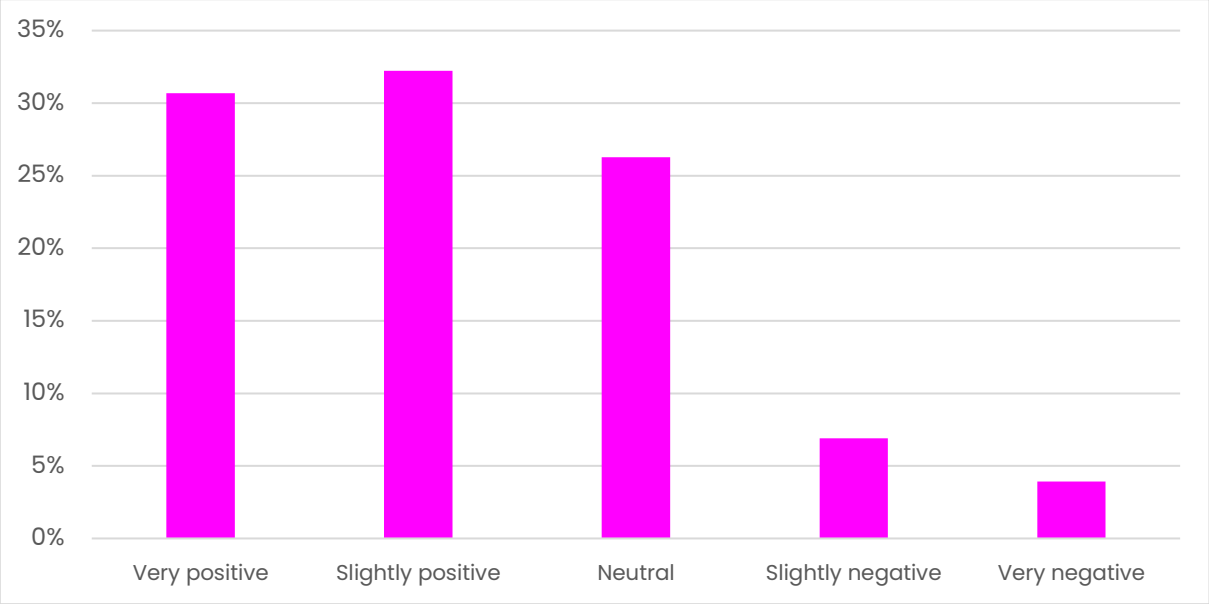


Figure 22: Openness to automation *Responses to the question 'In the future, how would you feel about using an automated system to manage your electricity use?' (n=15,789)*

Respondents without vulnerability risk factors were more likely to be positive about future automation, as were those with higher electricity demands and private renters.

Openness does not always correspond with uptake, and this is not always due to the lack of intrinsic motivation of the individual, as the example of this private renter shows:

> *"I don't think that the letting agency or the landlord would be happy with devices being switched on if I'm not home." Rhiannon (Interview)*

Respondents with low carbon technology were also more likely to be positive about future automation.

Feedback from two respondents who had previously received free smart plugs from OVO in a separate scheme shows how experiences with automation can lead people to consider other technologies, implying greater familiarity and experience could bolster uptake:

"I've been using the smart plugs that OVO sent us. The rest of the things I've been turning off manually, but we're currently looking at getting some sort of automated, like the Hive… that's on the back of getting the smart plugs 'cause we didn't realise just how useful that is and when you get older"

"Now that I knew how well they worked when the trial came along, that's when I started making more of an effort to actually put them in use' Rosie" (Interview and Focus Group 4).

This suggests that increased awareness of the efficacy of the technologies as well as reducing friction to access through technology provision may support public participation in energy flexibility through automation. Indeed, as expanded on in Figure 23, 30% of respondents indicated a better understanding of how automation works would facilitate their use of it.

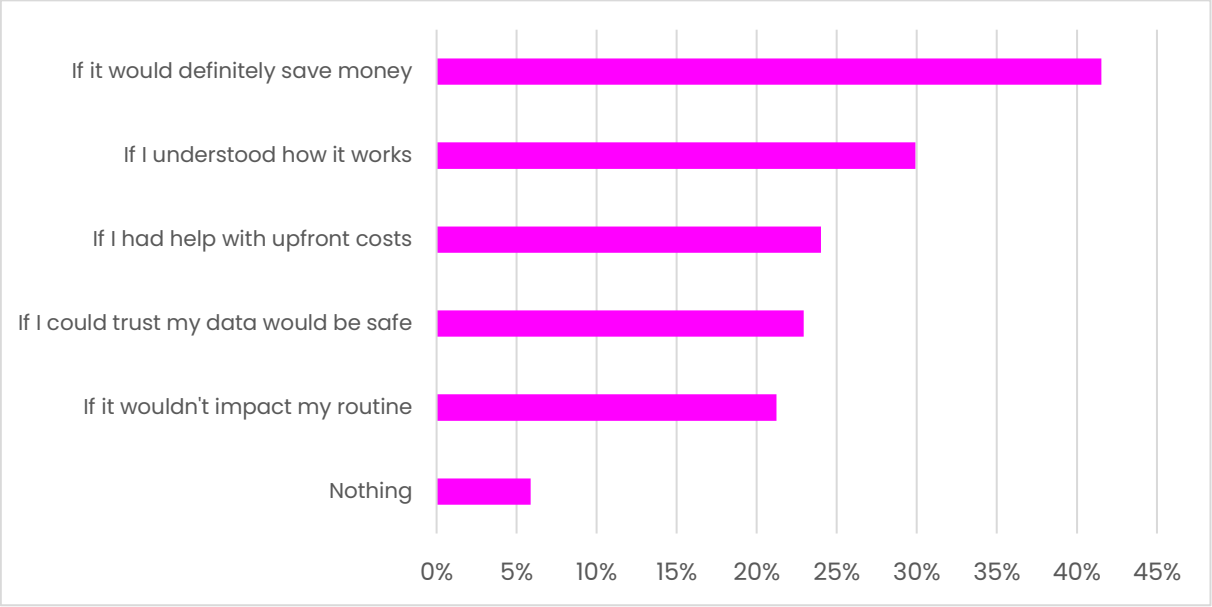


Figure 23: Factors that would improve automation uptake

Automation was a key focus of the qualitative research due to recognition of its importance and value to domestic flexibility going forward. The subject was covered in the interviews and then explored in more depth in the focus groups.

The research highlighted a common reason for avoiding automation was that a large proportion of time was spent at home and so respondents could therefore shift manually rather than setting timers – an activity that some even found enjoyable.

"I've personally never considered anything like that because I'm a single man living on my own. […] I know that everything's on when I need it and it's off when I

need it. So, there's just, there's never been a need to have a smart system." Oliver (Focus Group 3)

Additionally, a couple of respondents saw automation as counterproductive to energy saving, considering the additional consumption of such technologies, advocating for informed manual shifting instead. One was hesitant to invest in automation because the rapidly evolving technological landscape could render any purchases obsolete.

Further barriers to uptake included low technological confidence, infrastructural challenges, and safety risks or the possibility of faults that could simply exacerbate the effort involved.

"I thought about using it for the little robo vacuum cleaner thing […] but I like to be home when that thing runs because it gets stuck or it eats sock or something. And then you're like, well, if I wasn't home, it would just be just be stuck there for hours, right?" Scott (interview)

Interestingly, two of the renters in the focus groups cited their tenant status as impacting their willingness to invest in automation. This also came through in the survey, with 12% (59 out of 488) of respondents feeling limited by their tenure or other physical barriers. Renters commented that they might need permission for the installation of an automated system from their landlord or housing association, posing an obstacle if so. They would therefore need to know whether such systems would be suitable for a rented property. Some were also unsure about the compatibility of automated systems with existing technology and equipment, such as solar panels, or running on communal systems.

"Difficult because my heating and hot water washing machine is on a communal system"

"if it were my home, I would probably be much more comfortable. I will have a lot more gadgets and have more things in the house that I can, but as a tenant, I'm very conscious of not putting so much or keeping so much in the house that is mine." Adisa (interview participant)

Despite the mentioned barriers, openness to automation in the future mirrors the quantitative findings, with the vast majority of interviewees expressing interest if these barriers can be tackled.

The survey asked respondents what would make them feel more positive about using an automated system. The free text response option indicated several key preferences, including the ability to override the technology if necessary. 12% (58 out of 488) stressed a need for ultimate control, recognising technology's susceptibility to faults. This is particularly important for certain people, such as those who rely on electricity for medical reasons:

"Must have ability to customise & override if necessary, along with built-in redundancy for safety (for example, refrigerated medications are a specific concern)"

16% (78 out of 488) of respondents also emphasised the need to know that it is easy to install and operate and could trust that it worked as promised and was free from hacking. Access to guidance, including dedicated helplines, was suggested, which could address low digital confidence.

"If I was sure the tech worked and was straightforward to be installed by approved and reliable suppliers."

It is encouraging that some of these elements are already being brought forward through different regulations and policy mechanisms. Advice provision and information around flexibility has been suggested as part of the government's consultation on consumer led flex engagement. And user's ability to control/override technology is being considered through the forthcoming Smart and Secure Electricity Systems regulation[7].

Other ways to support people to become effective shifters

In the interviews and focus groups, we asked highly engaged respondents to share their experiences and tips on how they remembered to participate and coordinated their household, as well as their suggestions for maintaining engagement or encouraging uptake.

The respondents used a variety of techniques to avoid forgetting a Power Up or Power Down event, including smart technologies. Others preferred to take hand-written notes due to a lack of confidence using technology. Regardless of the method, taking memos helped them to remember to take part. These strategies also supported cooperation between household members, to ensure that everyone was aware of an event.

"I'd probably say to use a shared calendar, so all the family members are aware of when the times are. That's what we do, and it works quite well […] I made sure it was inputted onto the calendar, so every morning in the kitchen, it would come up onto the Alexa" Graham (Focus Group 2)

Participation was made more entertaining when the whole family got involved, encouraging and improving communication between partners, as well as educating children.

"My little one enjoys putting the dishwasher on, loading it and unloading it. So it's become a part of the day where he can join in as well, whereas previously I was doing it

[7] DESNZ (2025), Smart Secure Electricity Systems (SSES) Programme: Enduring Governance

at nighttime once he was in bed and such like that. […] But yeah, he now enjoys doing it, so it's actually changed our routine." Rosie (interview)

To get others on board, particularly young children, more emphasis could be placed on the rewards and environmental benefits of participation. The 'responsibility' element could also be targeted, with one focus group participant noting that children like being granted some responsibility which is illustrated by the above quote. As evidenced by the quotes below, highlighting these factors could help to boost enjoyment of the experience and encourage further involvement, albeit from a light-hearted and fun angle to prevent it from the subject from becoming a source of anxiety and burden.

"when we win the £20 I tell all of them, I say oh we got £20, everybody has done a good job […] so it was exciting for them to see that this is what this means. And then in their own way they are also making that difference and they have the awareness of protecting the environment even with the little that they do." Adisa (Focus Group 3)[8]

"but I think you'd have to be very carefully about the language used in that it's not their problem as such to be dealing with." Janet (Focus Group 3)

One focus group participant indicated that the increased awareness of their personal energy use, aided by their smart meter, and the Power Up events were instrumental in helping them organise – using their smart meter to recognise the right loads to shift, and the trial events to understand the right time to shift to.

When asked what would sustain their engagement, unsurprisingly most participants in the focus groups and interviews wanted to see higher rewards. They also suggested alternative incentives that weren't specific to energy.

"Could we look at some kind of Amazon voucher, record vouchers, something that people would use, food vouchers? Tesco vouchers? Sainsbury's?" (Margaret, Focus Group 3)

Many commented on OVO's mobile app, discussing the opportunities it presents and improvements that could be made. Several would like to have received notifications and reminders of the trial through app notifications, rather than email or text, where the former can easily be missed and the latter can feel disruptive. OVO did introduce SMS event notifications for a selected random sample of customers in this trial and this did prove effective in boosting both participation and performance, particularly for turn-up events (results are discussed in detail in the Centre for Net Zero trial report). This

[8] NB. the £20 prize referred to here was likely part of OVO's Power Move service, not Power Move Flex.

discussion was closely connected to discussion about notice periods, with survey results around notice periods discussed in more detail in Chapter 6. For instance:

> *"Sometimes you hardly get any notice whatsoever. I do think that needs to be improved… send it the day before for the next day so it's tomorrow your Power Up time would be at this time so you've got enough on them, that'd be something that would improve it a lot." Oliver (Focus Group 3).*

Interviewees expressed a desire for additional information that would support their engagement with domestic flex post-trial, information which could be provided through OVO's mobile app. This included information about the grid and peak times, as well as some sort of 'live grid' to help customers know when best to use electricity without relying on notifications. This information is currently available within the OVO app, and future iterations of flexibility propositions could aim to unify event-specific data with general guidance.

The app could also provide information on the wider impact of a customer's participation as evidence and validation that their participation has been worthwhile. Although this information was shared in emails, additional communication methods may assist in making this information more readily available to a large proportion of participants:

> *"some sort of outcome that says, 'because we've done this, we've now got this view on electricity, or we can now move forward with this sort of plan'. Having an outcome with what the whole trial has meant would be really interesting." Rosie (interview)*

Regarding currently disengaged households, interviewees also suggested that OVO could provide more examples of ways to shift, beyond what was already shared in the email communications. Information on the energy consumption of different appliances could also help maximise the effectiveness of their shifting efforts by ensuring they aren't going to unnecessary efforts for minimal reductions.

Finally, and similar to the discussion on Power Up events in Chapter 6, respondents stressed the need for clear explanations on the purpose and importance of demand flexibility schemes. As has been found in previous CrowdFlex reports, some respondents feel they lack this understanding and insight. Yet, this understanding will be crucial to ensuring people feel engaged and invested in these schemes. Again, this educational material was made available to participants during the trial, and further research could try and uncover why this information was not accessed, or what needs to change to improve the accessibility.

Conclusion

Survey respondents generally reported being interested in taking part in similar flex schemes in future, with the CrowdFlex utilisation trial being the most popular option. This is an encouraging sign which suggests that the trial has generally succeeded in engaging respondents enough to keep them engaged in the future. Although only one in fifty were not interested in engaging in future demand shifting, we do see slightly more disengagement amongst survey respondents with vulnerability risk factors than amongst those without (3% of those with at least one vulnerability risk factor said they were not interested compared to 1% of those with no vulnerabilities).

Greater automation of demand shifting schemes could help to sustain engagement by overcoming the added effort of opting in. This would also be another step towards normalisation of flexing household energy consumption. However, survey respondents had questions and concerns about using automated techniques to shift. These ranged from their reliability and ease of use to suitability for renters and compatibility with other technologies. The next steps will involve answering and tackling these questions to increase openness and uptake of automation.

We collected qualitative data on how to do 'effective shifting', from follow-up focus groups with survey respondents who were having a positive experience with the trial. Technology was an important theme, with most of the suggestions from effective shifters relating to automatic reminders, smart meters and apps. If managed appropriately, getting the family involved could make engagement more fruitful, with focus group participants sharing how young children have enjoyed taking on certain roles. As we have seen throughout the trial, better rewards and different types of service were also preferred by many, alongside a need for more information explaining the purpose of domestic flexibility. Considering the challenges identified in ensuring that CrowdFlex customers accessed this information during the trial, other actors such as government and advice organisations may play an important role here.

14. Conclusions and recommendations

This report presents the results of the customer feedback surveys in the CrowdFlex utilisation trial for summer 2025. 16,260 survey responses have been analysed - 10,509 from new respondents, and 5,751 from repeat survey respondents. This report relates only to survey respondents – a subset of participants in the CrowdFlex Utilisation Trial.

Demographic and Household Characteristics

CrowdFlex continues to engage different types of consumers. As in previous reports, and as reflected in other flexibility scheme evaluations [9], survey respondents were unbalanced in terms of gender and ethnicity, with more women and fewer ethnic minorities participating compared to the Great British population as a whole.

Perceptions

Findings across the summer trial survey responses remain generally consistent to those from previous CrowdFlex surveys. Awareness of electricity usage and awareness of shifting appears to have improved during the trial, particularly among survey respondents with vulnerability risk factors. Survey respondents generally felt that they had made a difference with, or enjoyed, their participation, though this experience was less pronounced in survey respondents with vulnerability risk factors.

In addition, we find that although participants continued to report that the trial had improved their awareness of shifting and their electricity usage, the rate of change of these variables declined in the most recent survey. This, combined with reductions in the proportion of repeat participants saying that they were satisfied with the trial, could indicate a possibility that customers were becoming less engaged in the flexibility events and programme overall. Though changes in season, price incentives and trial design (such as requiring opt-in for each event) likely played a role in these findings.

Just as with previous CrowdFlex surveys, renters had more positive experiences, whilst those with low carbon technology were less likely to have been satisfied or educated by the trial.

[9] CSE (2023) Household engagement with the Demand Flexibility Service 2022/23 https://www.neso.energy/document/282981/download; CSE (2025) Experiences of domestic flex: Two years of the DFS, not yet published

Trial Design & Ease of Participation

Overall, many respondents found CrowdFlex accessible, though practical challenges continue to influence the ease with which some are able to engage.

While Power Up events were generally considered easy, the differing experiences across households reflected variations in lifestyle, routine and understandings of each event's purpose.

Longer notice periods were more well-received by respondents, with the longest period correlating with the best trial opinion over a number of measures. The opt-in functionality also created a barrier to engagement for some, although the research does not go so far as to say whether it was the opt-in feature itself or the way it was delivered that presented a barrier.

Respondents receiving their rewards in the form of free electricity, as opposed to a monetary reward, had slightly poorer trial experiences, particularly with regard to receiving rewards.

Those receiving free electricity based on the consistency of participation reported more positive experiences across a number of measures than those receiving free electricity based on volume shifted.

Shifting strategies

Manual flexibility remains the norm. Nonetheless, automation presents an opportunity to support and enhance participation, helping mitigate the three most common challenges of forgetting to take part, fitting shifting into a routine, and organising the household.

Motivation and Maintaining Participation

Financial motivation remains the primary driver for participation amongst survey respondents, with habit formation and environmental concerns being important for maintaining participation over time. We have seen a significant increase in the number of respondents who said they continued to take part out of habit.

Event participation continued to be higher amongst renters and those with at least one vulnerability risk factor – groups who may face barriers to engaging with the energy transition in other ways. Low participation rates due to being out of the house and difficulty fitting around established routines could be at least partially addressed with automation, implying that a targeted campaign promoting the benefits of automation to these individuals may be fruitful.

A higher proportion of survey respondents reported losing interest in the trial than in the previous survey at the end-of-winter trial. A regression analysis found that the biggest

factor in whether respondents said they were losing interest was whether they agreed that "I felt like I was making a difference by taking part", with those feeling they were making a difference significantly less likely to say they were losing interest in the trial. Rewards and the type of reward received were also important determinants.

The loss of interest found by survey respondents with solar photovoltaic installations or home batteries, along with other differences investigated in chapter 11, suggests that CrowdFlex may be encountering challenges engaging these households, potentially because they have other technology-specific schemes available to them.

Longitudinal Analysis

During the winter 2024-5 trial we saw an overall improvement in survey respondents opinions on CrowdFlex, but the most recent survey reveals that respondents had started to report poorer trial experiences during the summer 2025 trial. It's difficult to know if this change in opinion is due to the length of the trial (i.e. the trial wasn't able to keep participants engaged over an extended period), the changes in trial design (for example, the introduction of the mandatory opt-in feature), the reduction in rewards, or the impact of seasonal energy demands on trial participation.

Households that may be vulnerable

Our definition of households that may be vulnerable in the energy market because of their circumstances is informed by Ofgem's definition of vulnerability, though it is important to point out that the presence of vulnerability risk factors does not mean that customers are necessarily vulnerable or at greater risk. The survey suggests a mixed picture for respondents in vulnerable circumstances:

- Contrary to the findings from the winter trial surveys, older survey respondents have shifted more electricity than average, but they reported slightly poorer overall trial experiences, and we can see potential risks around future uptake of automation for this group.
- Financially insecure survey respondents were more likely report behaviours that are not recommended but were more likely to be positive about future automation and slightly more likely to have bought technology to help them with the trial, indicating they may become more effective shifters in the future, particularly if they can be supported in participating with automation.
- Survey respondents with a health condition were more likely to report using less electricity than needed, switch off essential appliances, and change their care routine than those without health conditions. But they were also more likely to say that CrowdFlex helped to remove barriers to demand shifting, and were more

likely to build habits, suggesting that CrowdFlex has had some success in including this group.

- Those with multiple vulnerability risk factors reported slightly poorer overall trial experiences and were less likely to want to participate in future flex schemes. However, they also shifted a greater volume of electricity than those with just one or no vulnerabilities.
- Both social and private renters were more likely to have had a positive overall experience, but both groups flexed less electricity, and participated more in ways that are not recommended.
- Survey respondents paying with a pay as you go tariff reported more challenges taking part, and were less likely to say that they would want to participate in a similar scheme in future, though it is important to note that their participation was limited to Power Down events only and therefore not directly comparable to the rest of participants.

Impact of technology ownership

As we have seen throughout the trial, survey respondents with all types of low carbon technology shifted more than the average. For EV users this was over three times more than the average respondent. Outside of EVs we continue to see specific challenges related to technology:

- Survey respondents with solar photovoltaics had poorer overall trial experiences than those without this technology and many believe their solar photovoltaics limit their ability to benefit from the trials, particularly when combined with battery storage.
- Half of home battery owners never or hardly ever used it to participate in flex events.
- Electric heating users participated in more events, and shifted more electricity per event than households with other heating types.

Survey respondents without low carbon technologies reported better overall trial experiences, and were more likely to feel that the trial removed barriers to their engagement, which is important given they were also more likely to feel they had no other opportunities to get involved.

Supporting safe participation

A very small proportion of respondents reported participating in ways that are not recommended. Many respondents reported doing these behaviours before the trial and

respondent experience of this is not as negative as one might expect. Nonetheless, households with vulnerability risk factors were more likely to report these behaviours, so those navigating demand shifting events alongside existing vulnerabilities must be considered carefully moving forward.

Future Flex

Survey respondents generally reported being interested in taking part in similar flex schemes in future, with CrowdFlex being the most popular option. This is an encouraging sign which suggests that the trial has generally succeeded in engaging respondents enough to keep them engaged in the future. Although only a very small minority were not interested in engaging in future demand shifting, we do see slightly more disengagement amongst survey respondents with vulnerability risk factors than amongst those without (3% of those with at least one vulnerability risk factor said they were not interested compared to 1% of those with no vulnerabilities).

Greater automation of demand shifting schemes could help to sustain engagement by overcoming the added effort of opting in. This would also be another step towards normalisation of flexing household energy consumption. However, survey respondents had questions and concerns about using automated techniques to shift. These ranged from their reliability and ease of use to suitability for renters and compatibility with other technologies. The next steps will involve answering and tackling these questions to increase openness and uptake of automation.

We collected qualitative data on how to do 'effective shifting' via focus groups with survey respondents who were having a positive experience with the trial. Technology was an important theme in these discussions, with most of the suggestions from effective shifters relating to automatic reminders, smart meters and apps. If managed appropriately, getting the family involved could make engagement more fruitful, with focus group participants sharing how young children have enjoyed taking on certain roles. As we have seen throughout the trial, better rewards and different types of service were also preferred by many, alongside a desire for more information explaining the purpose of domestic flexibility.

Recommendations

Guidance and communications

Advice and support are vital to ensure safe participation for all, particularly where people have existing vulnerability factors. As we navigate the changing energy system, smart energy advice should be available to anyone taking part in flexibility services. This should include:

- **Service provider responsibility to support safe participation.** Service providers could provide more examples of ways to safely shift, as OVO did throughout the trial. Information on the energy consumption of different appliances could also help maximise the effectiveness of their shifting efforts by ensuring they aren't going to unnecessary efforts for minimal reductions. This could also help to maintain engagement amongst those who may become disillusioned if not achieving the level of flex they were hoping for, particularly with low baseline electricity consumption. Alongside this, service providers should consider providing accessible resources for people with specific health conditions – including neurodivergence - about how to participate in flex safely.
- **Holistic smart energy advice.** Though service providers have a responsibility to adequately support their customers, this can only go so far and cannot be expected to cover all aspects of people's energy-related behaviour or the interaction of different services, products and tariffs that people may be participating in. Tailored smart energy advice available via a national energy advice service is essential to ensure good outcomes for customers and could help avoid people participating in ways that are not recommended for scant reward. Whilst it is positive that government is considering some coordinated advice provision for consumer-led flex in future, demand shifting services and time of use tariffs already exist and, as this research shows, support is needed now.

Identifying those who may need extra support may be challenging for service providers. Though the current Priority Services Register (PSR) helps identify those with traditional vulnerability characteristics, it is not designed to identify and support those who may face broader challenges participating in the emerging smart, flexible energy system. Added to this, service providers who are not energy suppliers do not currently have access to this register. More work is needed to understand how vulnerability interacts with the provision of domestic flexibility and the role of the existing Priority Services Register in a smart energy market. For example, whether there any new vulnerabilities that need to be added or changes to the category levels within the PSR.

Clear and engaging explanations on the purpose and importance of demand flexibility schemes will be crucial to ensuring people feel engaged and invested in these schemes. This research has shown that the biggest factor for survey respondents losing interest in the trial was whether they felt they were making a difference with their participation, with those who felt they were making a difference significantly less likely to say they were losing interest. However, as has been found in previous CrowdFlex reports, respondents felt they lack understanding of the impact of their participation.

Improved communication and greater understanding of why Power Up events are beneficial to the grid and how they can help optimise renewable energy use could help overcome some of the challenges we have reported around taking part in these events. As well as understanding the concept, greater understanding is needed around what appliances can be turned up, and how to avoid increasing bills in doing so. Further customer engagement research and guidance on this issue is needed.

Future service design

We continue to see relatively small but statistically significant differences in attitudes and experiences for the consumer groups considered in this research (for example around people's overall enjoyment of the trial, whether they feel good about shifting, or whether people feel they are making a difference through their participation). To ensure broad participation as demand flexibility is scaled up over the coming years. further in-depth consumer research and engagement is needed to explore what inclusive and accessible service design means for different consumer groups and different propositions.

With automation expected to be key to unlocking large amounts of domestic flexibility, more needs to be done to improve understanding and uptake. Expanded public participation in energy flexibility through automation will require increased awareness of the efficacy of smart technologies. The findings from CrowdFlex provide empirical evidence that automation results in better outcomes. Survey feedback shows that provision of free small measures, such as smart plugs, might help to build understanding and acceptance of automated methods.

Innovation in service design or targeted marketing of automation may be particularly beneficial for certain groups:

- Automation for people with specific health conditions. Whilst amongst survey respondents this group were slightly more likely to report manual shifting than those without a health condition, they were also slightly more likely to be positive about future automation, which could help increase safe and effective participation.
- Low participation rates due to being out of the house and difficulty fitting around established routines could be addressed with automation, implying that a targeted campaign promoting the benefits of automation to these individuals may be fruitful.
- Survey respondents renting privately were more likely to report being positive about future automation and supportive of fully automated services than respondents with other tenures. However, there are actual or perceived barriers

around landlord permission and compatibility of automated services with existing communal systems. Designing or marketing automation services and flexibility tariffs specifically for tenants could mitigate some of these barriers.

Further research or specific service design could help reduce risks around older people not taking up flexibility services. As we have seen, survey respondents in older households report a challenging combination of not being positive about future automation (and more likely to say nothing could convince them to automate) and being less likely to say they would make other energy investments or purchases.

Exploring the experiences of pre-payment customers with demand shifting schemes in more detail could be a valuable avenue for future research. This group already face more challenges and poor outcomes around their energy use, and they are currently excluded from almost all smart tariffs[10].

Further research

As we have reported in previous surveys, further research is still needed to understand whether the underrepresentation of ethnic minorities in the CrowdFlex Utilisation surveys reflects a wider issue of smart energy participation for these groups, and what mitigation measures can be put in place to reduce the risk of their exclusion from energy flexibility.

[10] CSE (2025), Insights from Smart and Fair research program

15. Appendices

Appendix 1: Extended methodology

R language was used to complete the quantitative analysis presented throughout this report, including the statistical testing outlined below.

The surveys were cleaned of PII before importing into R, and they were further cleaned to ensure correct routing, and to remove 'speeders' who we suspect of having rushed through a survey. We did this by removing anyone who completed the survey in a time shorter than two median absolute deviations below the median completion time.

To assess differences between survey respondents that fall within a group versus those outside the group (for example, older households versus non-older households) with regard to a given binary survey question, a chi-square test was performed. This is an appropriate test given that the group classifications are binary, and the sample sizes were sufficiently large.

A Welch Two Sample t-test was used when the dependent variable was ordinal (such as a Likert scale). This test allowed us to see whether the difference in the means between samples within groups and outside of groups were significantly different. The Welch's correction allows the test to deal with unequal sample variances; meanwhile the required normality assumption for this test was handled by the Central Limit Theorem, given the large sample size.

When evaluating continuous outcomes, generalised linear models (GLMs) were employed. When evaluating continuous variables against binary outcomes, a binomial GLM was used, and when evaluating them against ordinal outcomes an ordinal logistic regression was used.

Respondents were asked, using a Likert scale, whether they participated in any of four risks whilst they participated in CrowdFlex: using less electricity than needed, using more electricity than needed, switching off essential appliances or changing their care routine without consulting a medical professional. Those who agreed they'd participated in these behaviours were then asked if they behaved in this way before the trial, using the same Likert scale. The answers were then compared for each respondent, and those who increased the frequency of that risk were assigned a binary 'yes' or 'no'. This new binary variable was then used in further analysis, for example when analysing to what extent different groups participated in ways that are not recommended.

In order to determine the most important factors in whether respondents were losing interest in the trial, an XGBoost model was created using the xgboost package to

complete a decision tree regression. This model is capable of dealing with missing data without imputing values, which is important for this dataset, given question routing meant certain questions were only available to some respondents. The regressors used in this analysis were variables derived from the following questions:

- Please say how much you agree with the following statements:
  a) the trial got easier as it went on
  b) I felt like I was making a difference by taking part
  c) I bought new technology during the trial, to help manage my electricity use
- Please say how much you agree with the following statements:
  a) the trial helped me to shift my energy demand
  b) changing my energy demand as part of the trial felt good
  b) I don't have many other options to shift my energy demand
  d) the trial has helped to remove some barriers to tackling our household's energy demand
- Why did you take part in Power Move Flex [CrowdFlex]?
  a) to save money
  b) interest in the challenge
  c) help achieve a cleaner and greener electricity grid
  d) got into the habit of responding to the events
- To what extent do you agree with the following statements:
  a) the frequency of events was manageable
  b) when I received an event notification, it made me feel negative about the trial
- How do you manage your energy to make the most of cheaper, off peak rates or rewards sessions?
- In the future, how would you feel about using an automated system to manage your electricity use?
- How often did you do any of the following during the trial?
  a) used less electricity than I needed (e.g., not eating dinner or sitting in the dark or cold)
  b) used more electricity than I needed (e.g., turning on appliances I didn't need)
  c) switched off essential electrical appliances (e.g., medical equipment, fridges / freezers)
  d) changed my care routine without consulting a medical professional
- How easy was it for you to take part in Power Move Flex [CrowdFlex]? For each of the following:
  a) noticing event notifications
  b) Power Up events
  c) Power Down events
  d) receiving rewards

- Did you or your household experience any of the following challenges in taking part?
    a) organising myself or others in the household
    b) remembering to take part
    c) having a routine which is hard to change
    d) don't typically use much electricity
    e) difficulty accessing or using technology (e.g., timers, smart appliances)
    f) difficulty accessing or using the internet (e.g., on a computer or app)
    g) not enough time
    h) none of the above
- Did any of the following aspects of the trial make it hard for you to take part?
    a) not enough notice of event
    b) overly complicated and technical language
    c) not enough communication about the results
    d) not enough advice on how to participate safely or effectively
    e) technical difficulties (e.g., not receiving notifications, smart meter not working)
    f) reward not worth it
    g) hard to combine the trial events with my existing tariff or bolt on service
    h) hard to combine the trial events with using the electricity I generate with my solar panels
    i) there are too many events
    j) none of the above
- We're interested in whether taking part is having an impact on how you think about energy. Please tick if any of the following statements apply to you
    a) I'm more aware of electricity usage in my home
    b) I'm more aware of how to shift my electricity use to other times of day or week
    c) I'm more likely to use timers, home energy apps, or smart technologies
    d) I'm interested in getting energy-efficient appliances and / or insulating my home
    e) I'm interested in getting a low carbon technology like an electric vehicle, battery, heat pump or solar panels
    f) I'm interested in signing up to a time of use tariff or getting my supplier to manage my electricity use
- What is your ethnic group?
- Would you describe yourself as [gender]

Along with these survey responses, the following groups were included as variables in the regression:

- Older household
- Financially insecure
- Health conditions

- Multiple vulnerabilities
- Private renters
- Social renters
- PAYG customers
- Solar photovoltaic owners
- Home battery owners
- Electric vehicle and charger owners
- Electric heating
- Households without low carbon technology
- Notification period
- Reward trial arms

The XGBoost model that was used had the hyperparameters of learning rate, maximum depth and number of rounds fine-tuned to improve the performance of the model. The root mean square deviation was used as the metric for evaluating the model's performance. The importance of factors in the model was then evaluated using the fractional contribution of each feature based on the gain of the feature's split, or how much information the feature provides during splits in decision trees within the XGBoost model.

This regression was used to provide an indication of important factors, which were then further quantified using significance tests.

For the longitudinal comparison between the four surveys over time, a series of pairwise t-tests were used to identify significant differences between surveys, where the reference level was changed as required to compare all surveys against each other. The assumption of normality was dealt with as above, and a visual inspection of boxplots was used to affirm a roughly equal variance amongst the survey responses. Due to the attrition rate and relatively low sample size of respondents completing all four surveys, we also conducted robustness checks using the same methods for respondents who had completed three surveys. We have not reported findings which failed this robustness check.

Where the outcome variable was binary, the pairwise t-tests were replaced with a binomial logistic regression. Three separate reference levels (surveys 1, 2 and 3) were used to capture differences across all four surveys. Multicollinearity was not an issue with this logistic regression given there was only a single regressor (i.e. survey number).

Nine open-ended questions were analysed qualitatively. For most of these questions, all comments were coded thematically; this involved identifying and labelling recurring patterns or themes within the dataset. Each question had a different sample size – some questions were asked of all respondents, whereas others were only asked of a subset due to routing logic, or because the open-ended question was a follow-up to a

particular response option. Sample sizes for the open-ended data are as follows: Q8 (n=7356), Q11 (n=554), Q12 (n = 2344), Q20 (n = 488), Q31 (n = 715), Q35 (n = 165), Q39 (n = 164), Q43 (n = 72), Q51 (n = 8673).

Word clouds were created for several open-ended survey questions, consisting of bigrams (two words in a pair, which tends to be more informative about the data than a unigram). All word clouds were made using R. In the word clouds, the size of the bigrams are linear and proportional to their occurrence in the dataset (i.e. twice as big as another bigram = twice as frequent), with the most frequently occurring bigram being a fixed size. Each word cloud is unique, so comparisons of bigram frequencies cannot be made across word clouds.

Appendix 2: Consumer groups

Throughout the CrowdFlex study, customers groupings have been used to provide a lens for the effect of the CrowdFlex trial on particular demographics. Table 7 provides a description of each grouping along with a rationale for its inclusion.

Survey question	Rationale for inclusion
People self-reporting financial insecurity. Any respondent that selected "Finding it quite difficult" or "Finding it very difficult" in response to 'How well would you say you are managing financially these days? Would you say you are…'	People on lower incomes might be considered vulnerable in the energy market because they may be more likely to suffer detriment because of higher energy bills or inappropriate energy tariffs. We use a self-reported measure because income is not a suitable proxy for financial insecurity, since people's outgoings differ for complex reasons.
Households containing somebody with a long-term health condition. Any respondent that selected "Yes" to 'Do you (or any other adults / children in your household) have any physical or mental health conditions or illnesses lasting or expected to last 12 months or more?'	People with a health condition lasting 12 months or more, including chronic or long-term illness or disability, might be considered vulnerable in the energy market because they may be more likely to suffer detriment as a result of cold homes, or may rely on medical equipment that uses electricity.
Older households. Based on responses to 'How many people living in your home, including yourself… are adults (65 and above)'. Households with an equal number of, or more, members over 65 than adults under 65 were included in this category.	Older people may be considered vulnerable in the energy market because they may use more energy due to being at home for longer periods and may be more likely to suffer health detriment as a result of cold homes.
Households with multiple vulnerability factors. Any respondent that reported more than one factor (health condition, over 65, financial insecurity).	Vulnerability should be understood as intersectional. Multiple vulnerability factors increase the risk of detriment.
People living in social rented homes. Any respondent living in a home rented from a housing association or local authority.	People living in rented homes may be restricted in what measures they are permitted to install in their home or may not

('Which of these best describes your home?')	wish to spend money on a building which does not belong to them, preventing them from engaging in the smart energy transition. In the context of domestic demand shifting, participation may be limited as they are unable to change their heating, electrical systems, and appliances and unable to utilise low carbon technology such as battery storage or EVs. There are some key differences between these two groups, as social rented homes are likely to be more energy efficient and more likely to have low carbon technologies compared to private rented homes
People living in private rented homes. Any respondent living in a home rented from a private landlord, agency or other. ('Which of these best describes your home?')	
Electric vehicle + charger owners. Based on responses to 'Do you currently have any of the following low carbon technologies at home?'	Ability to charge an electric vehicle at home provides a large shiftable electricity load.
Home battery owners. Based on responses to 'Do you currently have any of the following low carbon technologies at home?'	Ability to store electricity supports shifting outside of peak demand times.
Solar photovoltaic owners. Based on responses to 'Do you currently have any of the following low carbon technologies at home?'	Potential to interact with shifting services differently given their existing focus on shifting to match solar photovoltaic electricity production.
Electric heating. Based on 'How do you heat your home? If you use multiple heating sources, select the one you use the most.'	Potential to interact more effectively with demand shifting, with a particular focus on heating.
No low carbon technology. Based on responses to 'Do you currently have any of the following low carbon technologies at home?' Those with none of the following technologies fall into this group: - Home battery - Electric vehicle	Those without any low carbon technologies may find it more difficult to participate in Power Up or Power Down events.

- Electric vehicle charger
- Solar photovoltaics
- Solar thermal array
- Other electricity generation
- Heat pump

Table 7 Group definitions

These groups are treated as non-exclusive throughout the analysis in that, for example, if a household has an electric vehicle + charger then they will be in the electric vehicle and charger group, regardless of the fact that they may also have renewable energy generation or a battery. Similarly, that same household would also be in the battery group, even though they also have an electric vehicle. This structure holds for all the above-mentioned groups.