

Electricity
Distribution

Webinar: Sharing EQUINOX Trial One Learnings

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Introductions



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Agenda

- **Project Overview**
- **Trial One Design**
- **Research Findings**
- **Next Steps**

Housekeeping

- If you have any questions during the presentation, please ask them using the Q&A function
- This session will be recorded and made available on the EQUINOX website

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Project Overview

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What is EQUINOX?



Scope: EQUINOX is testing new ways to reward households with heat pumps for modifying their heating choices without compromising on comfort. This modification in heating choices is a shift in electricity consumption, which enables households to provide flexibility to the energy system with their heat pumps



Funding: EQUINOX is supported by the energy regulator Ofgem and funded through the regulator's Network Innovation Competition



Lead: EQUINOX is led by National Grid Electricity Distribution (National Grid), who are the Distribution Network Operator (DNO) for the East and West Midlands, the South West and South Wales. As a DNO, National Grid is responsible for delivering power across its regions

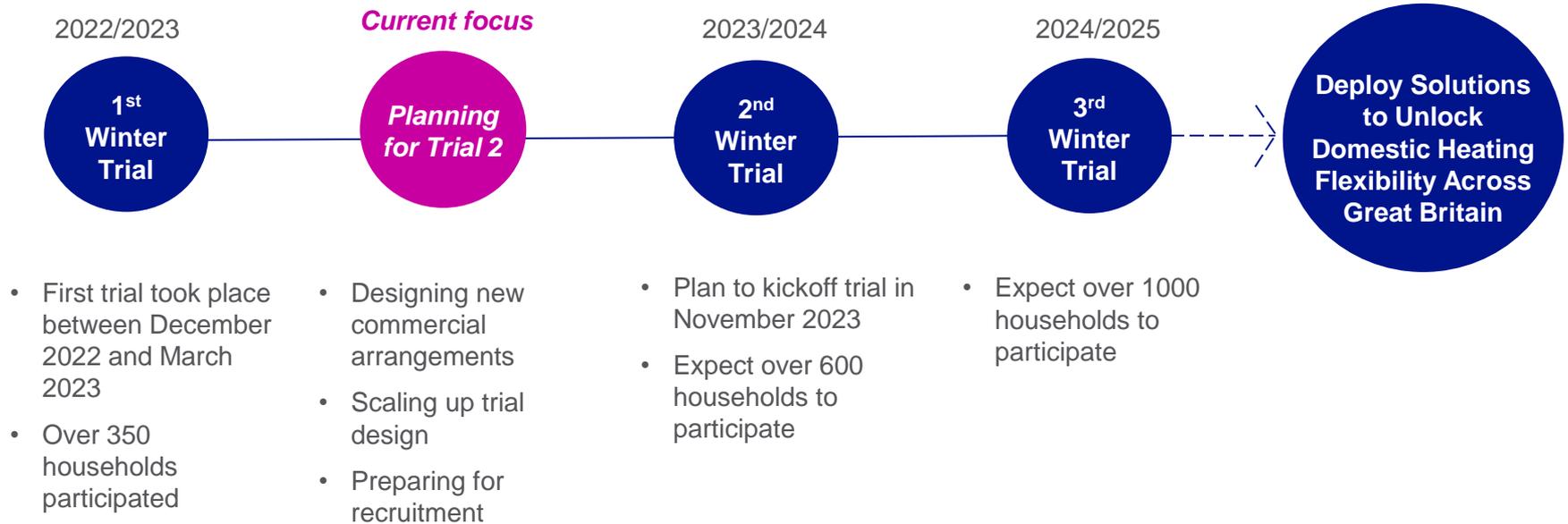


Partners and Collaborators: Octopus Energy, Sero, Scottish Power Energy Retail, Passiv UK, SP Energy Networks, Welsh Government, West Midlands Combined Authority, National Energy Action, and Guidehouse



Importance: National Grid expects about 600,000 heat pumps to connect to its distribution network each year by 2028, meaning a significant increase in electricity peak demand. Flexibility will help manage the extra demand on the network while providing value for money for customers

Where is the project now?



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Trial One Design

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EQUINOX trial one represented a proof of concept for heat pump flexibility. We were looking to answer these questions:



Network flexibility

- How much flexibility could you provide to the network with your heat pump?
- How predictable is this flexibility? How does it differ based on how you are paid and how you are providing the flexibility?

How we measured this



octopusenergy

Half hourly smart meter whole household electricity consumption data



Smart meter, temperature sensors, and heat-pump system data from Sero households' advanced sensors

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Customer experience

- Did you feel like you could participate without difficulty and without compromising on comfort, control and safety?
- What were the reasons you chose not to or were unable to participate in events?

How we measured this

1. **Post-event survey** (2-5 Qs, 91% average participation)
2. **End of trial survey** (Longer survey to capture experience and satisfaction. 96% participation)
3. **Three focus groups and nine 1-to-1 interviews**

Event days were selected on temperature, not live network needs.

Participants were grouped by payment type and control method

We held 22 “EQUINOX Events”

- Event days were scheduled a week in advance based on forecasted temperature
- Aim was to achieve a wide temperature spread (ranged from -1 to 12C across the trial)
- Wanted to see whether there was a correlation between turndown and temperature

Payment types



1. **Pay Monthly:** participants paid four fixed £25 monthly instalments in advance of their participation in that month's events
2. **Pay per Event:** participants paid up to £6 after each event for their participation

Control methods



1. **Aggregator Control:** participants allowed suppliers to control heat pumps remotely, but could opt out before or during events
2. **Customer Control:** participants asked to turn off or down their own heat pumps

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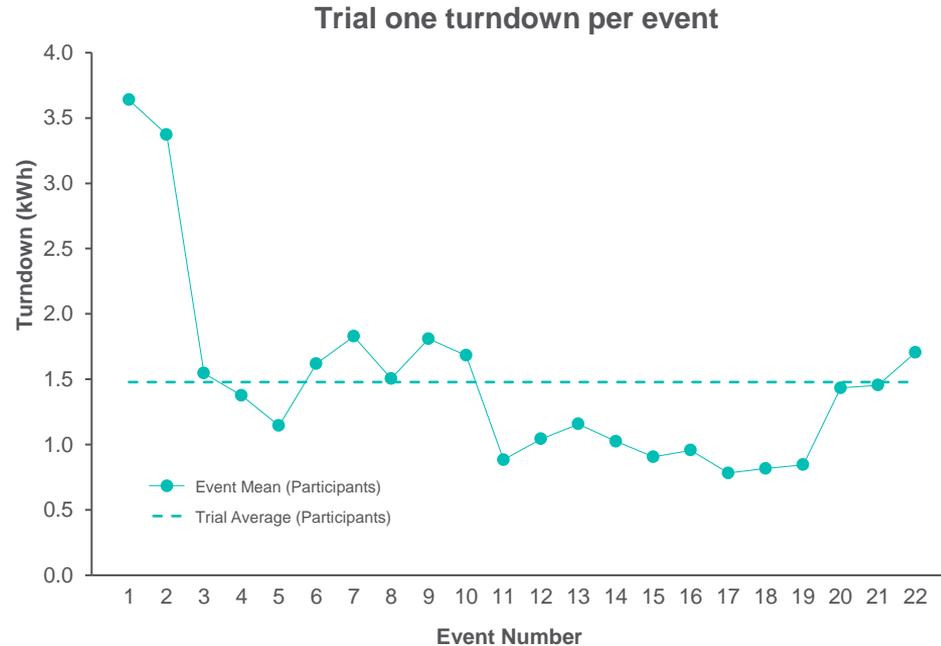
Trial One Findings

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Finding 1: Households were able to provide significant turndown when asked to shift their domestic heating habits

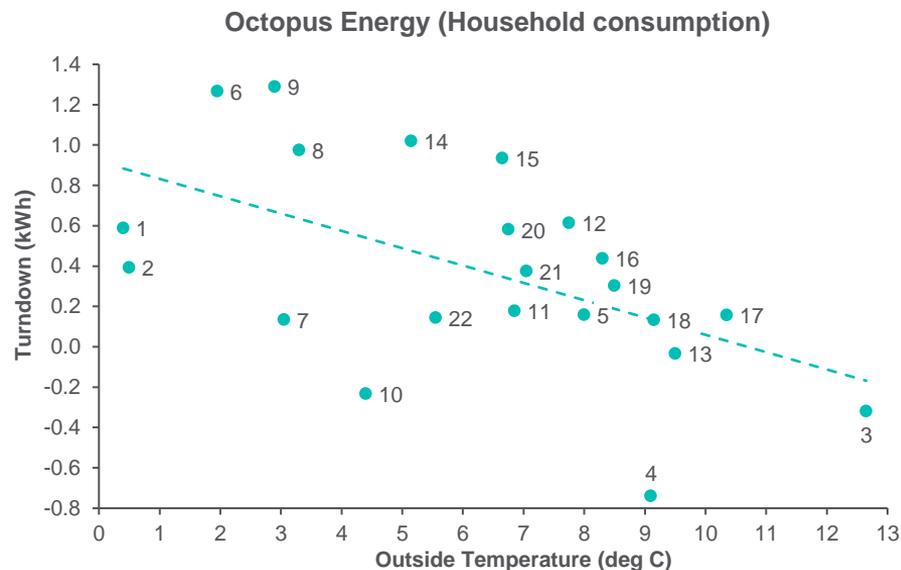
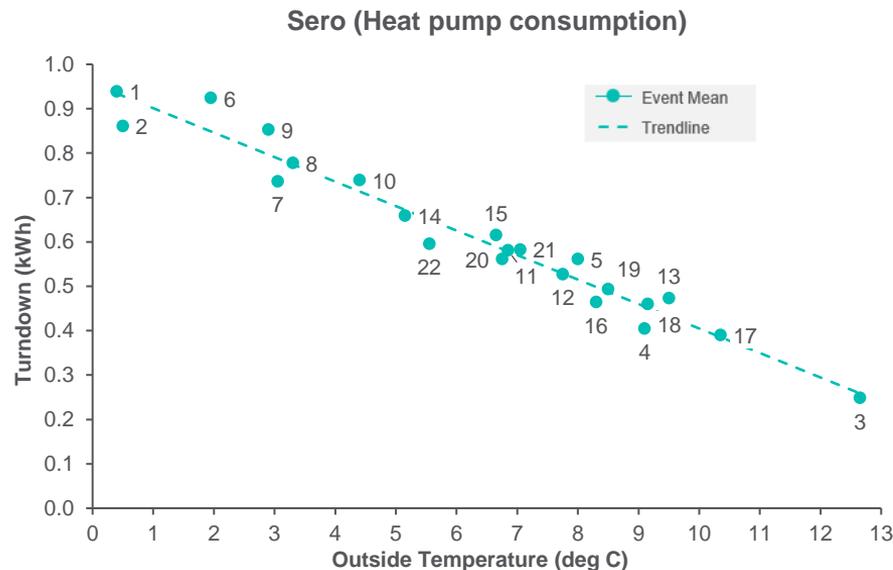
Participants provided 10.8 MWh of measurable electricity savings (turndown) across the EQUINOX trial. On average, each participant provided 1.43 kWh of turndown per event.



Finding 2: A colder day meant more turndown

There was a relationship between heat pump turndown and outside temperature in both Sero and Octopus Energy households, which reflects that heat pumps have to work harder in colder conditions.

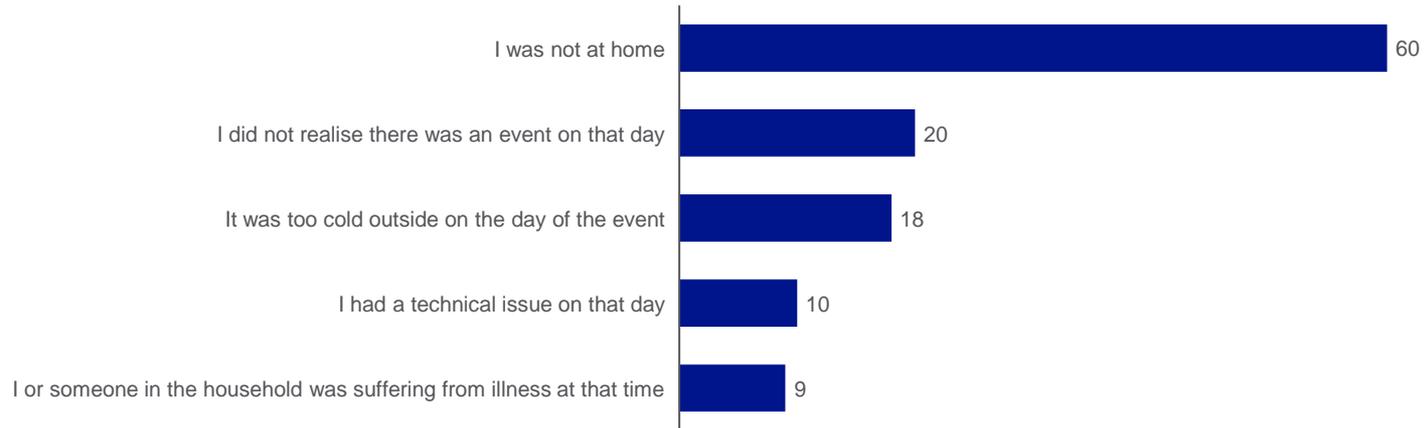
Mean event turndown per participating household across 5-7 pm vs. average outside temperature between 5-7 pm



Finding 3: Household participation was consistently high throughout the trial, with minimal fatigue observed

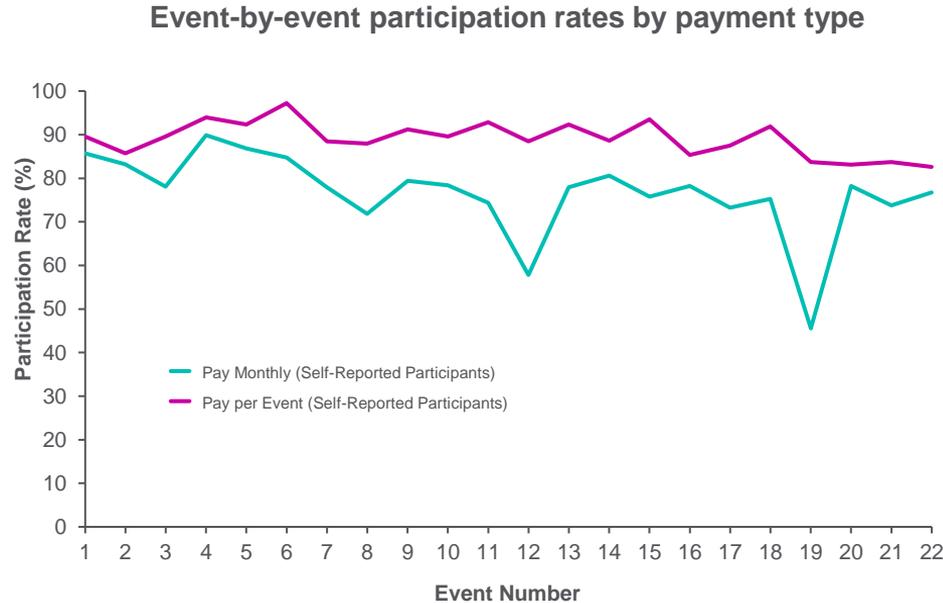
An average of 82% of households participated in events by turning down/off their heat pumps. The most common reason for non-participation was that no one was home to turn down the heat pump.

Top five reasons for choosing not to participate in an EQUINOX event



Finding 4: Participation in events was strong across the trial. Participants who were paid per event participated more reliably

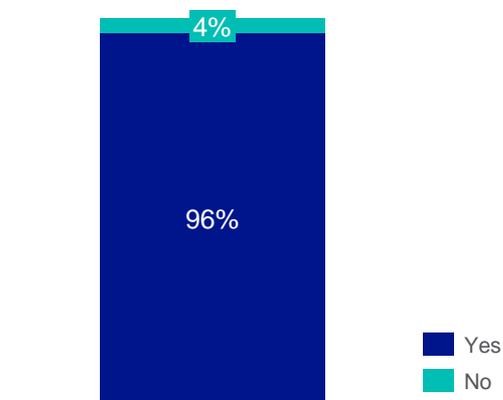
Pay per event participants consistently had higher participation than pay monthly participants. Only pay monthly participants showed significant dips in participation.



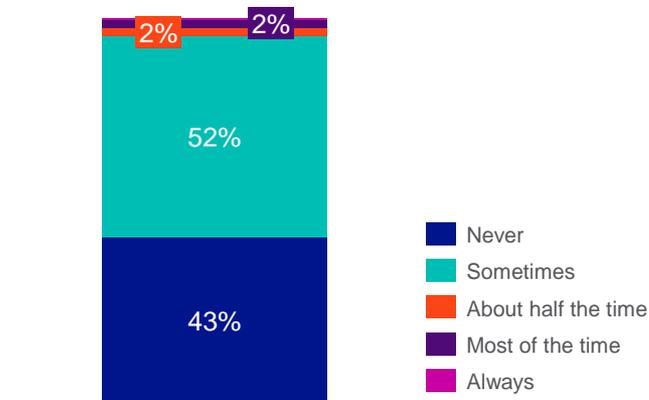
Finding 5: Customers felt in control of their heating and generally did not feel thermal discomfort

96% of all participating households felt in control of their heating during the trial. 95% of households never or only sometimes felt discomfort during events.

Have you felt sufficiently in control of your heating during the EQUINOX trial?



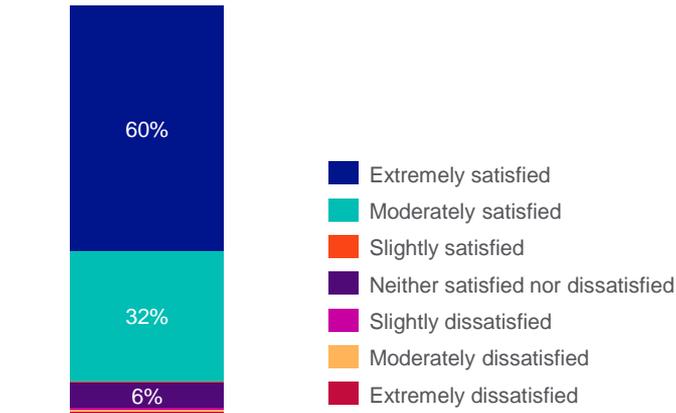
How frequently has participating in events caused any discomfort for you or someone else in the household?



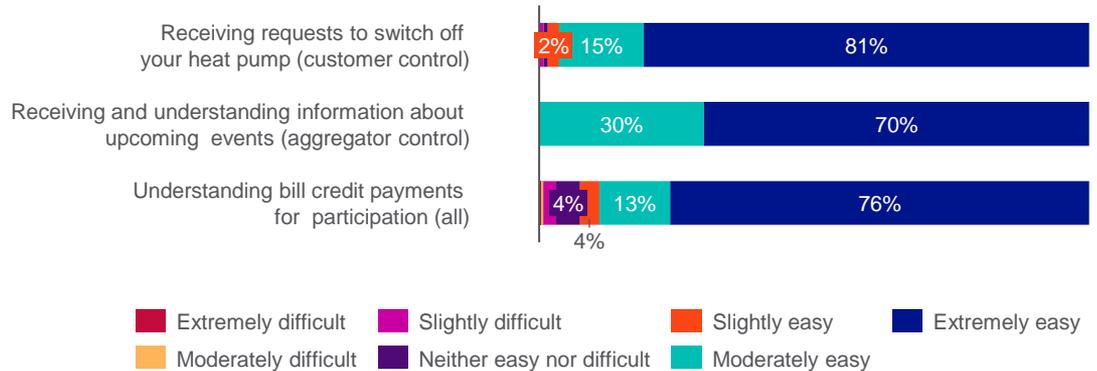
Finding 6: Satisfaction was high across all variables and participants found the trial easy to navigate

Over 90% of customers were extremely or moderately satisfied with the EQUINOX trial. Participants understood different elements of the trial and therefore found it easy to participate.

Overall, how satisfied are you with the trial?



How easy have you found the following elements of participating in EQUINOX?



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Next Steps



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Trial two will begin soon

Recruitment for trial two will begin in October 2023, we would love to have you participate again!
Trial two will be similar to trial one, with some new features:



Event times: the events in trial two will still be two hours long, but we are trialling different time slots



Notice periods: as well as day-ahead notice, trial two will look at different notice periods for events



Payment: we calculated your payments last year based on engagement with the trial. Trial two will pay you for the reduction in energy use (kWh) provided by turning down your heat pump

Q&A



We look forward to continuing to share with you!

Full research findings are available here:

<https://www.nationalgrid.co.uk/downloads-view-reciteme/639583>

If you have any additional questions, please feel free to contact us at NGED.Innovation@nationalgrid.co.uk



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