



FROM INSIGHT TO INFLUENCE

## PROJECT COOLDOWN WP4 CUSTOMER ENGAGEMENT RESEARCH

Research report – Qualitative  
and Quantitative research

Prepared for ENWL

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# 1. Executive Summary

## *Background and Objectives*

Electricity North West Limited (ENWL) is delivering the **CoolDown** project, an innovative initiative addressing the impact of rising cooling demand on the UK electricity network. As demand for residential cooling solutions grows, the project aims to improve forecasting, develop effective demand management strategies, and create commercial models that optimise cooling usage. By managing demand more effectively, ENWL aims to reduce the need for costly network reinforcement while delivering greater value to customers.

This report presents findings from **Work Package 4**, a domestic customer research study designed to inform the development of cooling demand response (DR) programmes that support peak demand reduction. The key objectives of the research were:

- To gain a deeper understanding of current and future consumer cooling behaviours.
- To assess consumer acceptability of proposed cooling DR programmes that help manage electricity demand peaks.
- To provide insights that inform cooling demand modelling and the development of demand response mechanisms.

To achieve these objectives, **Impact** conducted a **mixed-method research programme**, including a **large-scale online quantitative survey** and **qualitative depth interviews and focus groups**.

## *Methodology*

A **1,000 interview online survey** was conducted in November 2024 with air conditioning (air con) users and considerers (those planning to purchase air con in the next two years). The process included questionnaire development, cognitive testing with five respondents, a pilot survey with 100 respondents, and a main-stage fieldwork phase. The final sample comprised **278 air con users and 722 considerers**, drawn from a UK-wide opt-in panel. Screening ensured accurate identification of air con users and considerers by including verification questions about specific cooling devices.

In December 2024, **six in-depth interviews** and **two online focus groups** were conducted with air con users and considerers. Interviewees included individuals with vulnerabilities, such as older adults, young children at home, or medical needs. The focus groups were segmented by experience: one group consisted of current air con users (n=7), and the other of considerers (n=8). The discussion guide was informed by insights from the quantitative survey, enabling deeper exploration of behaviours and attitudes towards cooling and demand management initiatives.

## *Key Findings*

Air conditioning use in UK households is increasing. **8% of households currently use air con, and 20% plan to purchase a unit within the next two years**. Portable air conditioning units are the most common (69%), while 33% of users have fixed systems. Many users also rely on plug-in electric fans (54%). **85% of air con users are satisfied with their unit**, with purchasing decisions driven by immediate need (e.g., during heatwaves), cost, and confidence in choosing a long-term fixed installation versus starting with a portable unit. **Vulnerable households**, including those with health conditions, menopause-related heat sensitivity, or young children, are a key segment of air con users and considerers.

The primary motivations for air con usage include **comfort, sleep quality, and health concerns**, but high energy costs and environmental guilt act as barriers. **Over three-quarters of users and considerers believe air con is becoming a necessity in the UK**, yet more than two-thirds recognise the expense of running it. **Nighttime cooling, particularly in bedrooms, is a priority**, while daytime use is often limited due to cost. Users generally have **limited understanding of efficient air con use**—many prefer ‘blasting’ the unit until the room feels cool rather than using the thermostat to

regulate temperature. **64% of users turn their air con on at 24°C or higher, with the most common cooling temperature preference being 19–22°C.**

There were **mixed reactions to network operator control of air conditioning use. Peak time rebate schemes were more acceptable than time of use tariffs**, as rebates were seen as an incentive rather than a penalty. **Consumers preferred at least 24 hours' notice** before a peak demand event, with many favouring longer lead times. While the quantitative survey indicated that half of air con users would accept events lasting **3–4 hours**, consumers preferred a **maximum of 1–2 hours**. However, in qualitative discussions, many current air con users agreed that **a 1–2-hour event was preferable**.

Clear communication, flexibility, and voluntary opt-in mechanisms were identified as **critical to engagement in demand management programmes**. Consumers value transparency and control over participation, reinforcing the need for well-structured commercial models that encourage sustainable cooling behaviours while balancing grid demand effectively.

## 2. Research background and Method

### 2.1 Background and Objectives

Electricity North West Limited (ENWL) is delivering a pioneering innovation project, CoolDown, which focuses on addressing the impact of increasing cooling demand on the UK electricity network. The project aims to enhance forecasting of cooling uptake and demand projections and develop innovative commercial models to optimise residential cooling solutions. This will benefit the network by reducing the need for network reinforcement to manage demand, thereby providing enhanced value for customers.

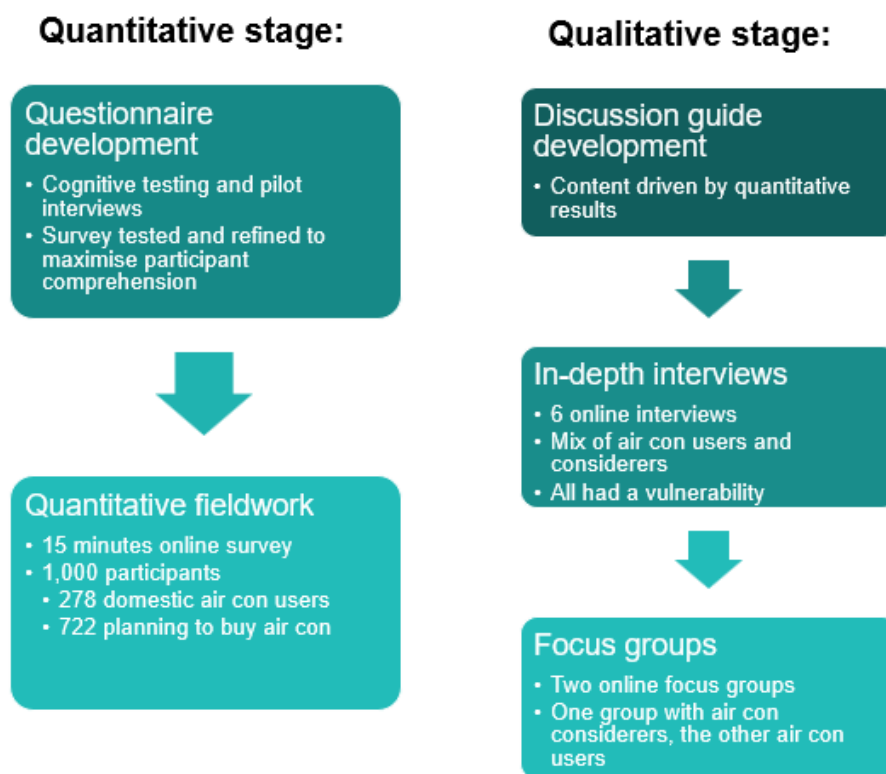
This report details the findings of domestic customer research from Work Package 4, which will inform the development of domestic cooling DR programmes as part of the CoolDown project.

The objectives of this customer research are:

- To gain a deeper understanding of consumer cooling behaviour and anticipate changes in the future.
- To assess the acceptability of proposed cooling DR programmes designed to support the electricity network in managing demand peaks effectively.
- To provide insights to feed into space cooling demand modelling and cooling DR programmes to unlock space cooling demand response.

To achieve these objectives, Impact has conducted a comprehensive domestic customer engagement program that includes an online quantitative survey, focus groups, and depth interviews.

Figure 1: Summary of methodology



## 2.2 Method: Quantitative stage

For this first phase of the research, Impact conducted 1,000 online surveys in November 2024 with domestic air con users and considerers (people planning to buy portable or fixed air con in the next two years). The process of the quantitative stage involved:

1. **Questionnaire development**, with input from ENWL, Guidehouse and UCL.
2. **5 cognitive depth interviews** to test users' understanding of the survey, and observe any areas which may require improvement. These interviews were conducted online via zoom, and consisted of a mix of air con users and considerers.
3. **Pilot interviews** with 100 online respondents via an opt-in market research panel. Following this, data quality checks were made before the main-stage fieldwork began.
4. **Main stage fieldwork** with 1,000 online panel respondents. This consisted of a mix of domestic air con users (n=278), and considerers (n=722).

### Quantitative survey screening

To be an **air con user**, respondents needed to have one or more of the following in their home:

- Portable air conditioning unit
- Fixed air conditioning in one or more rooms
- A 'reverse' heat pump connected to blowers / vents in the home and used for air cooling

To maximise data quality, we included a question asking about the specific air con unit they had. This helped us to clean the data to ensure that all users genuinely had an air con unit (rather than a cooling fan).

To be an **air con considerer**, respondents stated that they were planning to get a portable air conditioning unit or fixed air conditioning in one or more rooms, within the next two years.

To maximise data quality, the options of fixed or portable air conditioning were included in a wider list of potential home cooling purchases so that respondents were not aware of the answer we were looking for to qualify for the survey.

### Quantitative sample

7.7% of the UK-wide panel that answered the screening questions had air conditioning, and 19.9% were planning to buy air conditioning in the next two years. Air con usage is currently highest in the South of England (including London) and the Midlands as shown in figure 1 below.

*Figure 2: Percentage of Panel population that completed the screening questions and qualified for the survey*

Region of the UK	% qualified as Air Con Users	% qualified as Considerers
Midlands	2.2%	5.5%
North England	1.5%	5.1%
Northern Ireland	0.2%	0.4%
Scotland	0.4%	1.3%
South England	3.1%	7.0%
Wales	0.3%	0.6%
<b>Total</b>	<b>7.7%</b>	<b>19.9%</b>

## 2.3 Method: Qualitative stage

For this phase of the research, we conducted online focus groups and interviews in December 2024 with air con users and considerers. The process of the qualitative stage involved:

1. **Discussion guide development** which included input from ENWL, Guidehouse and UCL. The contents of the discussion guide were driven by findings from the quantitative survey.
2. **Six depth interviews** with a mix of air con users and considerers. All respondents had a vulnerability (e.g., pensionable age, young children at home, or medical needs).
3. **Two focus groups**, one of which was formed of air con considerers, and the other of air con users. The air con considerers group consisted of 8 respondents, and the air con users group consisted of 7 respondents. Both groups were conducted online.

### Qualitative interview and focus group screening

As with the quantitative survey to be classified as an air con user, respondents had to have had one of the following:

- Portable air conditioning unit
- Fixed air conditioning in one or more rooms
- A 'reverse' heat pump connected to blowers/ vents in the home and used for air cooling

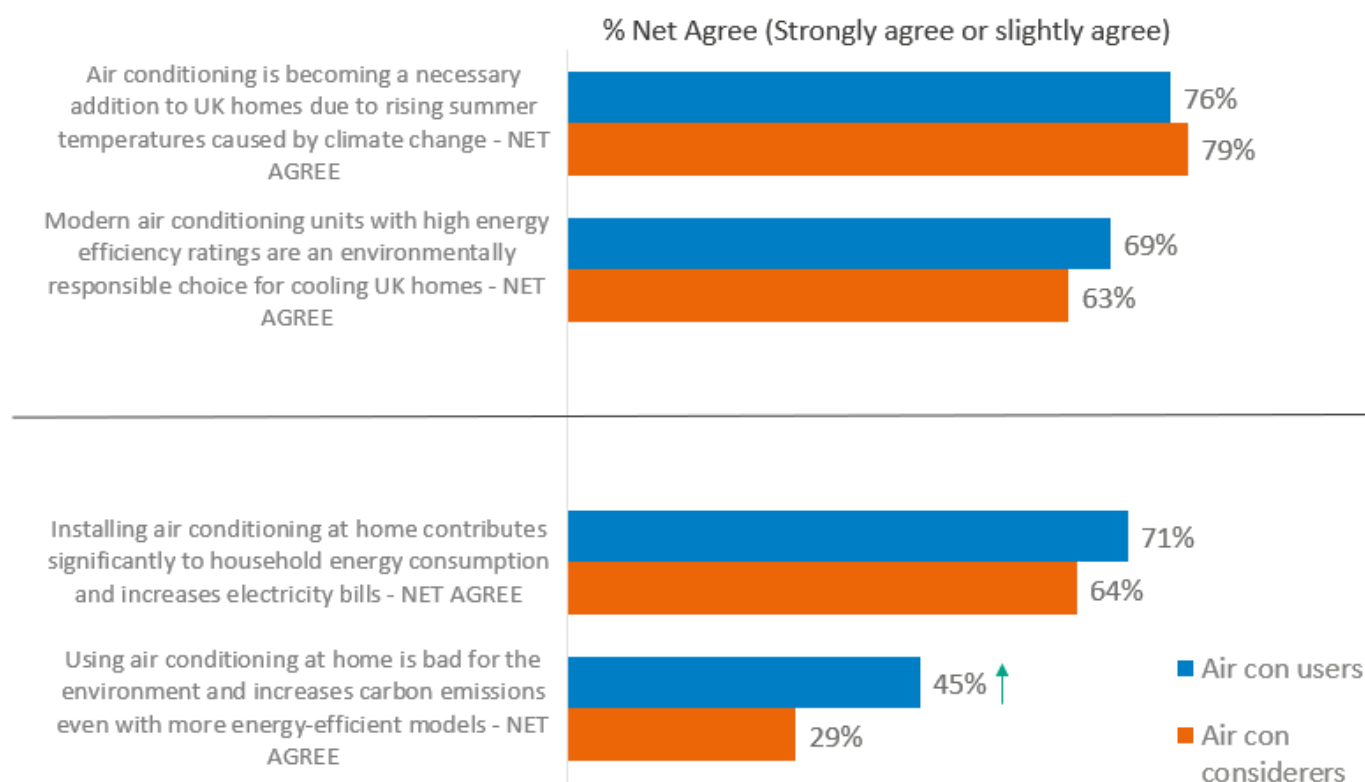
To be an air con considerer, respondents must have stated that they were planning to get a portable air conditioning unit or fixed air conditioning in one or more rooms, within the next two years.

### 3. Making the decision to get air conditioning at home

#### 3.1 Attitudes towards domestic air conditioning and ‘air con guilt’

More than two-thirds of respondents agreed that air conditioning is becoming a necessary addition to UK homes due to rising summer temperatures caused by climate change. That said, 71% of air con users and 64% of air con considerers agreed that installing air conditioning at home contributes significantly to household energy consumption and increases electricity bills. This suggests that UK households are becoming more open to installing air con at home although they are concerned about the financial implications. Respondents were not as concerned about the environmental impact, although 45% of air con users, and 29% of air con considerers agreed that “using air conditioning at home is bad for the environment and increases carbon emissions even with more energy-efficient models”.

Figure 3: Attitudes towards air con in the UK



C1. Here are some different things that people say about home air conditioning. How strongly do you personally agree or disagree with each of these statements? Base: All respondents. Air con users (278), air con considerers (722). Net agree = Strongly agree or slightly agree (the top two options on a 5-point scale)

↑ = Significantly higher than other group at 95% confidence

### Demographic differences:

Significant sub-group differences vs. all **air con users**:

- Those in detached houses: More likely to select air conditioning is becoming a necessary addition to UK homes (↑ 8 percentage points).
- Those living in flat: Less likely to select air conditioning with high energy efficiency rating are an environmentally responsible choice for cooling homes is becoming a necessary addition to UK homes (↓ 11 points).
- Those living in detached houses: More likely to select using air conditioning at home is bad for the environment (↑ 8 points).
- Under 35: More likely to select modern air conditioning units with high energy efficiency ratings are an environmentally responsible choice (↑ 7 points).

Findings from the qualitative research demonstrated that many air con users balance environmental concerns with their need for air con. Many consumers are aware that air con contributes to greenhouse gas emissions, due to running an air con unit requiring significant electricity, which may be generated from fossil fuels, adding to their personal carbon footprint. Additionally, it was raised that the production and use of air con often involves refrigerants that can have a high global warming potential if not handled properly.

Another attitude towards domestic air conditioning identified in the qualitative research was that it was generally perceived as a luxury purchase. This is because historically, the UK has had a temperate climate, and households feel that they are going against the norm by purchasing air con. As such, some felt using air con is excessive or indulgent. Additionally, there were fears that there may be societal judgment around installing or using air con, especially considering efforts to adopt greener lifestyles or reduce energy consumption.

Qualitative findings demonstrated that rising energy prices in the UK add to the guilt, as running air con can significantly increase household energy bills. This can lead to feelings of irresponsibility, especially during the cost-of-living crisis. This suggests that air con users therefore balance their need for air con (and sleep) in a heatwave with guilt about what they see as an indulgence in the UK climate. This 'air con guilt' helps to limit air con usage outside of the hottest temperatures and (as we will see later), can also increase acceptance of DNO demand management strategies.

## 3.2 Drivers of air con adoption

Qualitative research found that the impact of hot weather when sleeping was the strongest driver of air con use/consideration. This was because not being able to get to sleep or stay asleep is unpleasant and impacts productivity and mood the next day. This impact was the most commonly mentioned by air con users and considerers in the qualitative stage.

*“So it's all about **getting a good night's sleep**, really more than anything else” (Male, aged 58, Air con user)*

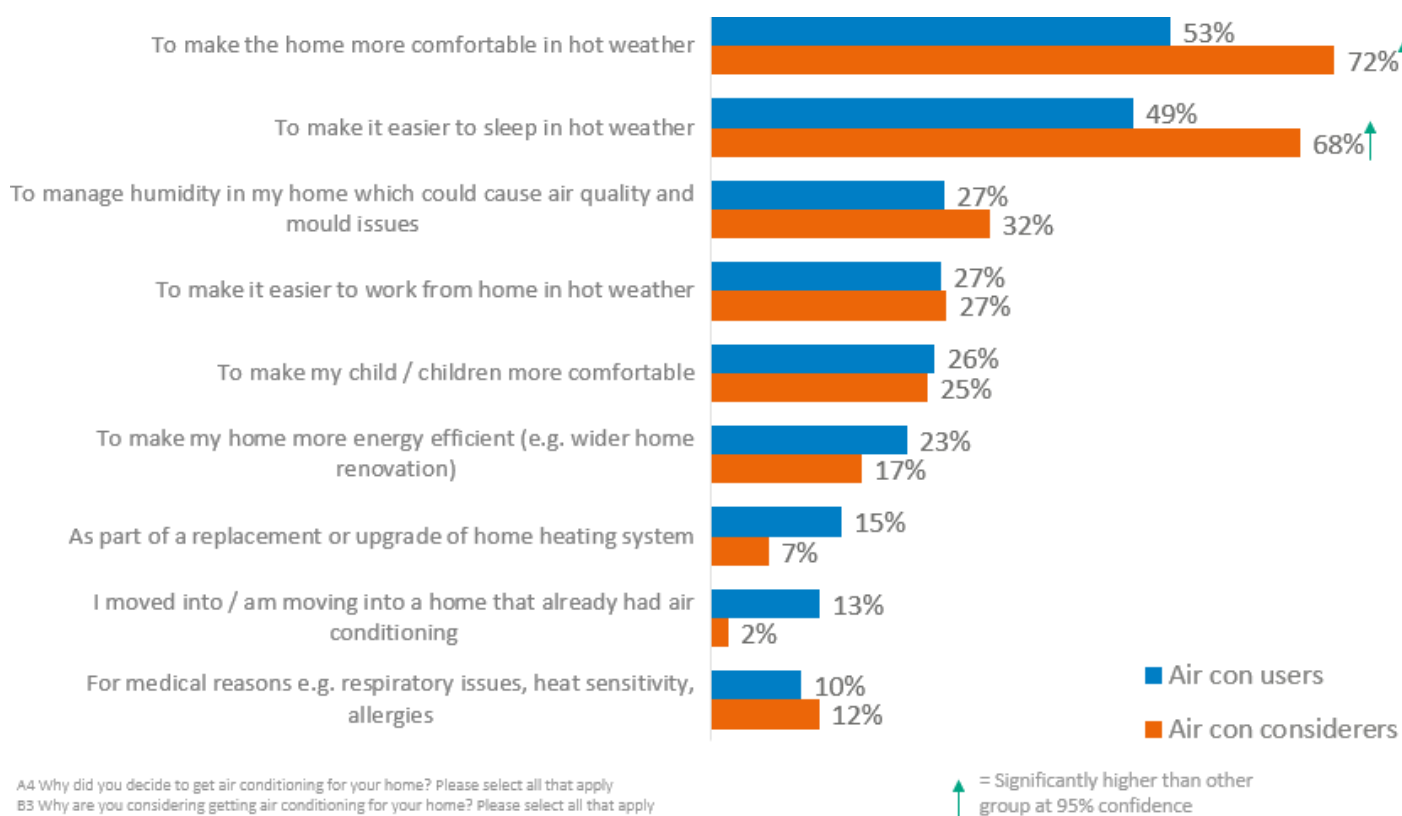
Other drivers of air con adoption included:

- Health concerns, especially for vulnerable people and babies who can't regulate their own temperature. Menopausal women also find temperature regulation difficult and may have related sleep problems. Health concerns was the 2nd most mentioned impact during the qualitative stage.

- *“So this year, especially having my baby, it was because you always have to worry about the sudden infant death syndromes, keeping the room the right temperature.” (Female, aged 42, Air con user)*
- *“I've got a fixed air con unit in my bedroom. I'm menopausal, so I find it really difficult in the hot weather. I find it really difficult to sleep, so I always put it on an hour or two before I'm going to bed, and I like a cool atmosphere.” (Female, aged 52, Air con user)*
- Productivity / being able to work after a poor night's sleep, especially when working nights as they need to sleep during the day. Answers surrounding productivity was the 3rd most mentioned impact.
  - *“The heat wave is really bad over here, so I suffer quite badly, especially because I work nights, so during the day if the heat wave is outside, I have difficulty sleeping, therefore it affects my work, and I just can't take high temperatures.” (Male, aged 43, Air con considerer)*
- Mental health concerns: Anxiety increases when sleep is poor. New parents are especially likely to have sleep deprivation, and this is worse in hot weather, which increases anxiety. This impact was joint 4th most mentioned.
- Disruption to routines: examples include the whole family moving into one cooler room or even sleeping in the bathroom where it is coolest. This was the joint 4th most mentioned impact.
  - *“We have various methods of cooling from filling the bath up with ice water to using floor standing fans windows open, obviously sleeping on the bathroom floor, coldest place in house to basically not sleeping.” (Female, aged 58, Air con considerer)*
  - *“In the heat wave then the three kids will get their mattresses, and they bundle in with us as well. So everybody gets, so it turns into a family kind of bedroom for the three or four days where it's really, really hot.” (Male, aged 58, Air con user)*
- Security / noise issues means people don't want to leave windows open at night (although many people do out of habit). Some respondents said that when they do open their windows it doesn't always help with nighttime cooling. This was the joint 4th most mentioned impact.
  - *“It can be hitting 30 degrees in our bedroom, and that's in the middle of the night. So opening windows doesn't touch the side. Putting a normal fan on makes a difference, but not a lasting difference. And that was why I think it was about three years ago, we decided to buy an aircon unit because we just thought night times are just ridiculous.” (Female, aged 58, Air con user)*

The quantitative survey results aligned with this more in-depth insight, showing that the most popular driver of air con adoption for both air con users and considerers, was to make the home more comfortable. This was selected by 53% of air con users and 72% of considerers. The second most popular driver of air con adoption was to make it easier to sleep in hot weather which was selected by 49% of air con users and 68% of air con considerers. Air con considerers selected more reasons than air con users which is not unusual when comparing planned behaviour with actual behaviour.

**Figure 4: Reasons for buying air conditioning**



### 3.2.1 Impact of housing type and tenure on air con usage

Housing build type also had an impact on air con uptake type and location. Households generally have a good understanding of if, and where their home overheats in hot weather. This can be noticeably different on different sides of the home, on different floors or in different rooms.

*“Our kitchen is probably the hottest room in the house. I have two portable ones I plug in, there's holes in the wall and I bring them in from the garage because the kitchen in the summer months is just, it is like a glass house really. It's just unbearable.” (Male, aged 58, Air con user)*

Other respondents expressed disappointment when expensive building ‘improvements’ e.g., insulation wall / roof insulation, or loft conversions increase their home overheating. Homeowners weren’t always aware of this when undertaking home improvement projects. Some however were aware and took the opportunity to install air con at the same time as a loft conversion.

*“When we had the loft converted, knowing that where the sun comes and how the windows would be in the loft, we just knew it was going to get too hot up here. So we planned it into the financing to get the loft done to get air con as well.” (Male, aged 37, Air con user)*

Rented households felt dependent on their landlord / housing association to address overheating issues. They might buy portable air con units but wouldn’t invest in fixed air con for a property that isn’t theirs. We heard a number of negative experiences of landlords trying to improve overheating. E.g., one respondent had an air con unit put in the hallway of his housing association flat, but it wasn’t effective, and he wasn’t given support to learn to use it effectively.

The final impact of housing on cooling needs identified in the research was that the Post-Covid increase in working from home hasn’t fallen off and workers now need to take more personal responsibility for heating and cooling their

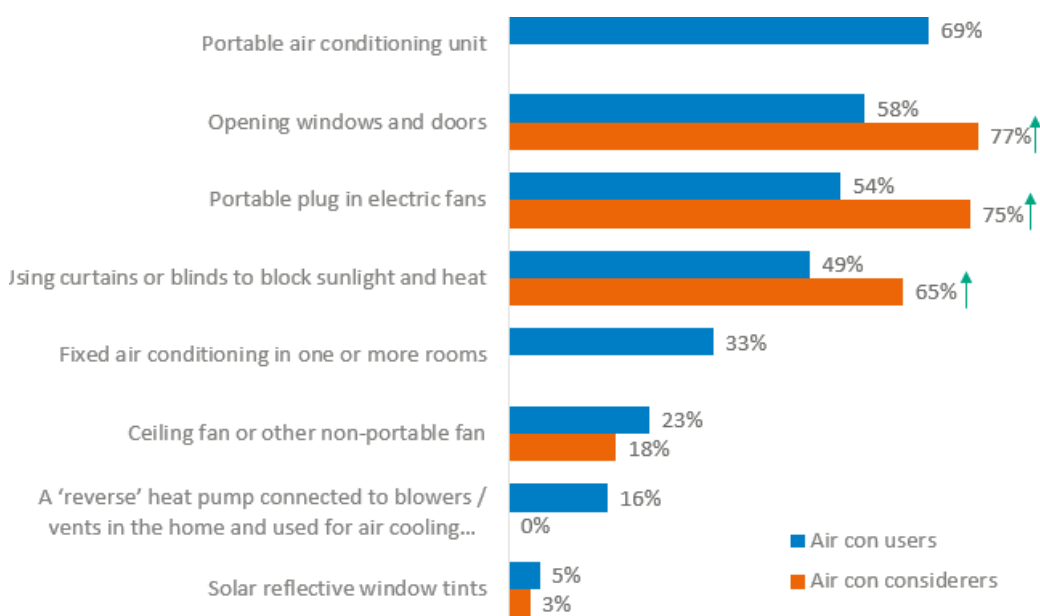
working environment. Keeping cool during day is more of an issue than in previous years when the workplace air con / ventilation would keep workers comfortable during the day in hot weather.

## 4. Drivers of air con product choice

### 4.1 Current cooling methods

Findings from the online survey found that the most common ways of cooling the home overall were portable plug-in electric fans and ventilating through windows and doors. 54% of those with air con also used electric fans in one or more rooms. Overall, among air con users, portable air con units were more popular than fixed units, with 69% having portable air con units and 33% having fixed air conditioning.

Figure 5: Methods of home cooling in hot weather



S8 - And which, if any, of the following do you use to cool your home when it is hot? Base: Air con users (278), Air con considerers (722)

↑ = Significantly higher than other group at 95% confidence

#### Demographic differences:

##### Significant sub-group differences vs. all **air con users**:

- Over 55: More likely to select portable air conditioning units (↑ 9 points)
- Over 55: Less likely to select fixed air conditioning units (↓ 15 points).
- Over 55: Less likely to select a reverse heat pump (↓ 9 points).
- Under 35: More likely to select fixed air conditioning (↑ 7 points).
- Aged 35-54: More likely to select fixed air conditioning (↑ 9 points).
- Those in detached houses: More likely to select fixed air conditioning (↑ 10 points).
- Those in flats: More likely to select portable plug-in electric fans (↑ 10 points).

##### Significant sub-group differences vs. all **air con considerers**:

- Those living in flats: Less likely to select open windows and doors (↓ 9 points).

Fixed air con users are most likely to be aged under 55 years, be a higher SEG (Socio-economic grade – an explanation of socioeconomic grades can be found in [appendix 8.3](#)) and live in a detached / semi-detached house in a city.

**Figure 6: Demographic differences – fixed vs portable air con unit users**

**Age:**

	Portable air conditioning unit	Fixed air conditioning unit
Under 35 years old	29%	37%
35- 54 years olds	35%	46%
55+ years old	36%	18%

**SEG:**

	Portable air conditioning unit	Fixed air conditioning unit
A, B, C1	62%	69%
C2, D, E	38%	31%

**Property type:**

	Portable air conditioning unit	Fixed air conditioning unit
Detached house	29%	36%
Semi-detached house	39%	39%
Terrace house	14%	8%
Flat	18%	16%

**Location of home:**

	Portable air conditioning unit	Fixed air conditioning unit
City location	35%	49%
Other urban location	34%	28%
Semi- rural	21%	17%
Rural	10%	7%

## 4.2 The air con adoption journey

Our research identified a structured journey that most air con considerers go through when adopting air conditioning for their home. This journey consists of four key stages, with various influences driving progression between them.

### 1. Traditional Cooling Methods

At the initial stage, homeowners rely on traditional cooling methods such as electric fans and natural ventilation. Many have experienced air conditioning while travelling abroad but do not initially consider it necessary (or 'normal') for their home environment.

**Key Influences:**

- Increasing frequency and intensity of heatwaves, making traditional cooling methods less effective.
- Awareness of air conditioning as a viable option based on experiences in other countries.

### 2. Considering Alternatives

As heatwaves become more frequent, individuals start to actively consider their options for cooling. Cost and effectiveness play a significant role in decision-making. Some people may face life changes, such as the arrival of a new baby or caring for an elderly relative, which increases the need for reliable cooling solutions. At this stage, potential buyers assess the affordability of air conditioning and whether they should invest immediately or wait until the next summer.

### ***Key Influences:***

- Changes in personal circumstances (e.g., a new baby, elderly family members, health concerns).
- Balancing urgency with financial considerations: "How quickly can I get it?" vs. "Should I save up for next year?"
- Comparison between fixed and portable air conditioning units, with most people initially opting for portable solutions.

### **3. Air Conditioning Purchase & Initial Usage**

Once an air conditioning unit is purchased, users go through a learning phase to understand how to best integrate it into their routines. They experiment with settings, placement, and usage patterns to optimise comfort and efficiency. During this phase, they also begin to assess which features are most useful, which are underutilised, and what may be missing from their unit. That said, we found that the majority of air con users do not have a good understanding of how to cool their room and use their air con most effectively.

### ***Key Influences:***

- Learning how to maximise effectiveness within their daily routines.
- Identifying features that enhance or hinder usability.
- Recognising the limitations of portable air conditioning units, prompting consideration of fixed systems.

### **4. Embedded Behaviour**

Over time, using air conditioning becomes habitual. Users start to evaluate whether they need additional units or whether a fixed system would be a better long-term solution. Some also consider how air conditioning might fit into future home renovations or relocations. However, this stage may also bring frustrations, such as higher than expected running costs, logistical issues related to venting and storage, and concerns over effectiveness (especially if they haven't learnt how to use it most effectively).

### ***Key Influences:***

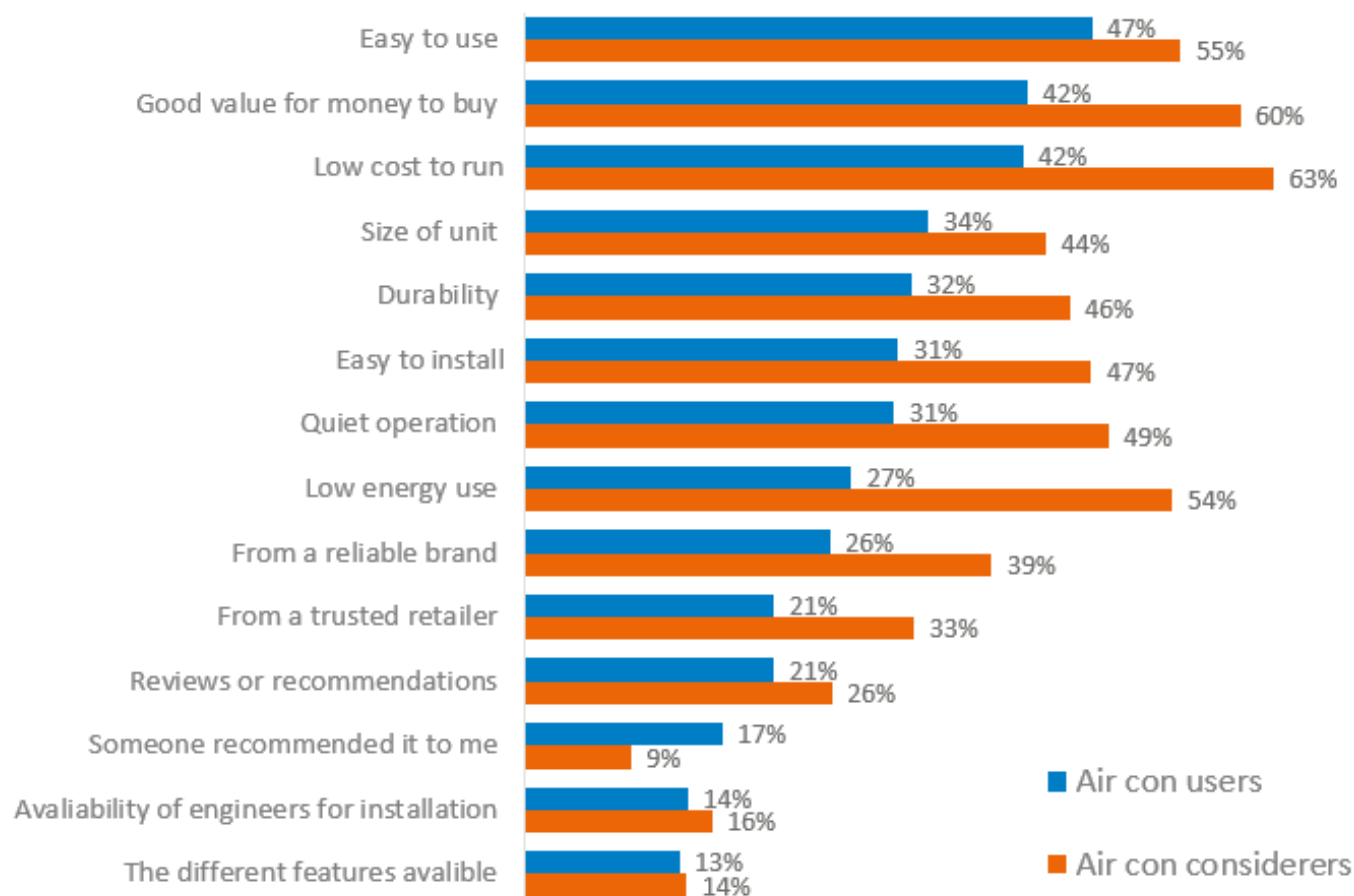
- Growing awareness of running costs, leading to engagement with energy tariff options.
- Desire for a more permanent solution: upgrading to fixed systems or expanding the number of units.
- Consideration of air conditioning as part of broader home improvement plans.
- Frustrations with performance, costs, or practical challenges leading to re-evaluation of needs.

**It is only once householders have reached the embedded stage and have a full understanding of their usage patterns and running costs that they are able to engage with the concept of different cooling DR programmes.**

## **4.3 Drivers of air con product choice**

Findings from the online survey revealed the top reason for choosing a specific air con product (for air con users) was ease of use. Good value for money to buy and low cost to run were also important when choosing an air con product. Considerers selected a larger number of factors than those that had already purchased as they were describing likely behaviour rather than actual behaviour.

Figure 7: Reasons for choosing an air con product



A5 Which factors were important to you when choosing which type, brand and model of air conditioning to buy for your home? Please select all that apply  
 B5 Which factors will be most important when choosing which type, make and model of air conditioning unit to buy for your home? Please select all that apply  
 Base: All respondents. Air con users (278), air con considerers (708).

### Demographic differences:

#### Significant sub-group differences vs. all **air con users**:

- Under 35: Less likely to select easy to use (↓ 10 points)
- Over 55: More likely to select easy to use (↑ 14 points)
- Over 55: More likely to select size of unit (↑ 9 points)
- Male: Less likely to select buying from a trusted retailer (↓ 9 points)
- Those living in flats: More likely to select easy to use (↑ 13 points)
- Those living in flats: More likely to select durability (↑ 8 points)
- SEG C2, D, E: More likely to select good VFM to buy (↑ 10 points)
- Vulnerable people: More likely to select low cost to run (↑ 8 points)

#### Significant sub-group differences vs. all **air con considerers**:

- Under 35: Less likely to select good VFM to buy (↓ 8 points)
- Over 55: More likely to select low cost to run (↑ 15 points)
- Over 55: More likely to select easy to use (↑ 8 points)
- Over 55: More likely to select low energy usage (↑ 15 points)

Portable air con units were generally chosen as the first experience of air con. Reasons for this included:

- Cheaper outlay compared to fixed air con.
  - *"It isn't very good and it's not very cost effective; but it's better than nothing." (Female, 25-34 years old, Air con user)*
- Being quick to buy and install, therefore helping with the urgency of needing something there and then during a heatwave/ the summer.
- Not permanent meaning users can put them away in the winter if small enough, and suitable for renters.
  - *"We've got nowhere to put it because it is so big. It's like a single chest of drawer size. So to be honest, we leave it where it is. And I tend to put the clothes that you wear day-to-day in the house kind of thing, I tend to pile those on top of it when we're not using it, I'll just think, I'll put my pyjamas there, I'll put tomorrow's leggings there." (Female, aged 58, Portable air con user)*
- Portable units don't feel like a long term 'lifestyle' commitment which results in less environmental guilt.
  - *"I live that kind of life where I do recycle or walk when I can. I'm very conscious of that. Even if electricity was cheap, I still wouldn't run the air con for the sake of it. But you've still got to use it. You've got to be comfortable. And if you're too hot, you're not productive, you can't work. So I use it as sparingly as I can to make yourself comfortable but not ridiculously." (Female, aged 52, Portable air con user)*
- Not everyone has a suitable window or vent for a fixed unit and UK windows don't always open in the most effective way (portable units generally also need a window to vent out of, but users are happy to make do the best they can).

Fixed air con units were therefore often chosen as an upgrade, as part of a home move, or part of a home improvement. Thus, the option of a fixed air con often involved planning in advance and higher costs. Findings revealed that most people did not know how air con units worked, or what the requirements/ running costs involved were. There was also a perception among respondents that air conditioning is not common in the UK, and that they therefore were "not for people like me".

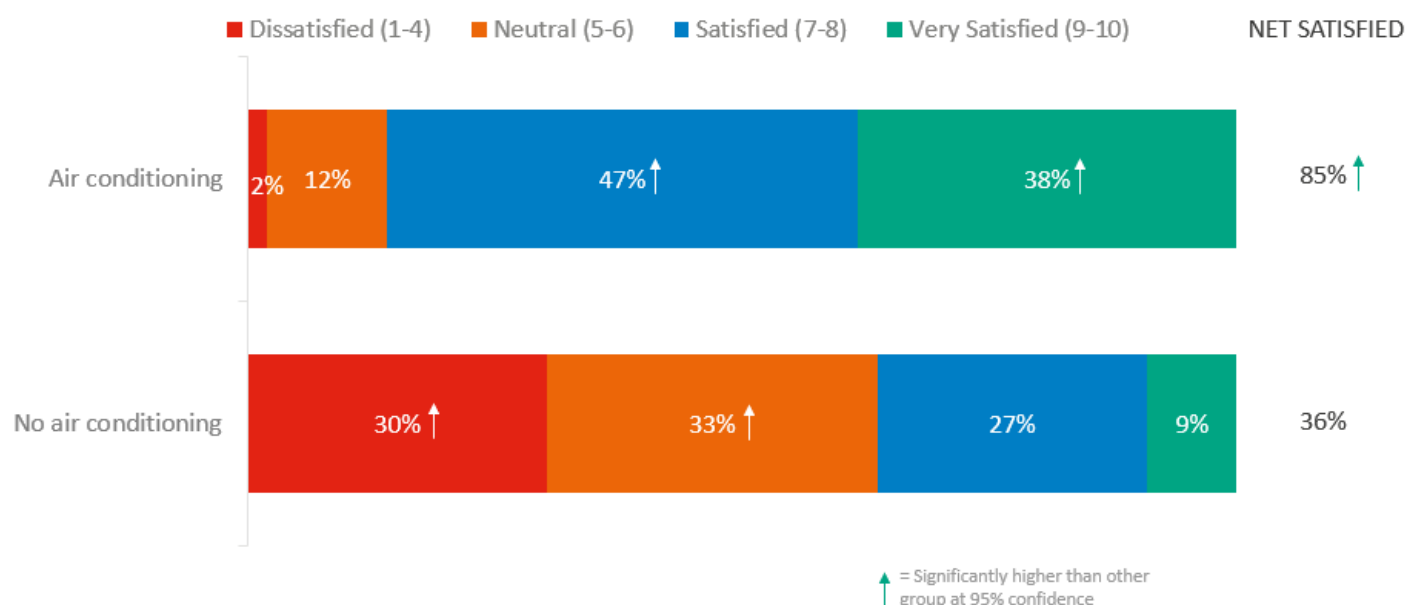
Whether portable or fixed, many air con users had a 'make do' attitude once they have bought an air con unit. Even if it doesn't completely meet their needs / doesn't cool their space as well as they hoped, they won't change it unless there is another reason to upgrade.

## 5. Air con usage behaviour

### 5.1 Satisfaction with cooling methods

Households that used air con were significantly more satisfied with how they cool their home than households that use electric fans or non-powered cooling (e.g., opening windows or closing curtains). 85% of those with air conditioning stated that they were satisfied with their cooling methods, compared to 36% of those with no air conditioning. Of those with air conditioning only 2% were dissatisfied, in comparison to 30% of those with air conditioning.

Figure 8: Satisfaction with methods of cooling the home



A1 - Using the below scale, where 1 is very dissatisfied and 10 is very satisfied, how satisfied are you with your air conditioning unit/s? Base: Air con users (278)  
B1 - Using the below scale, where 1 is very dissatisfied and 10 is very satisfied, how satisfied are you with how you currently cool your home when it's hot?  
Base: Air con considerers (722)

The top reasons for dissatisfaction with cooling for air con users included:

- Air con is ineffective for their needs (29%)
- Inefficient electricity consumption (15%)
  - "It can be a pain when you look at the energy bill and find out that most of your energy was burnt up via the air con running. Sometimes it's worth it, sometimes it's not." (Male, 45-54 years old, Air con user)
  - "I don't like air con, but it's kind of one of those things for us, you do it because it just gets you through the two months of the year when you need to do it." (Male, aged 58, Air con user)
- It's ability to cool the home does not meet expectations (15%)
- Being too noisy (12%)

Other reasons for dissatisfaction included: takes up space, hard to use, costly, creates condensation, requirement to top up with water is inconvenient, and the unit leaks.

The top reasons for dissatisfaction with cooling for those that don't have air con but are considering it were:

- My current methods (e.g. fans) are ineffective at cooling my home (72%)

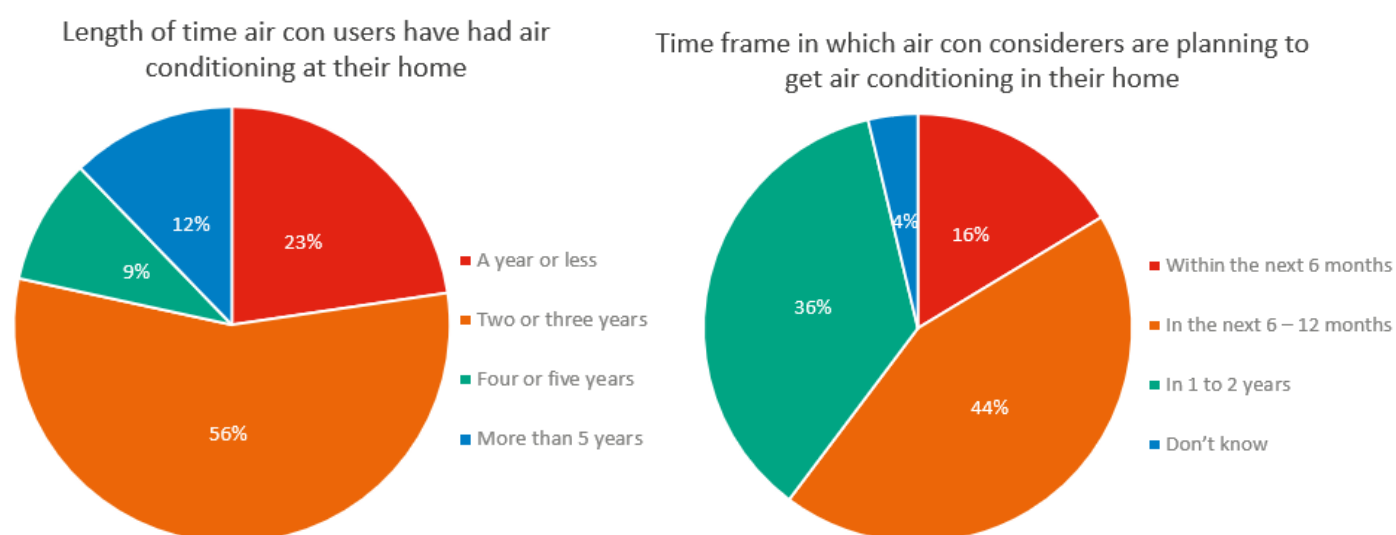
- *“The fans just move warm air around doesn't cool the room.” (Male, 45-54 years old, Air con considerer)*
- I am unable to regulate the temperature of my home (17%)
  - *“Even with the windows open, it becomes a hot box. This is made worse by the lack of solar reflection on the glass in the conservatory, and if the door to the conservatory is accidentally left open during the summer, the house becomes something of a blast furnace.” (Female, 45-54 years old, Air con considerer)*

Other reasons for dissatisfaction included: noise of fans, cost, being inconsistent at cooling the home, inefficient electricity consumption, no ventilation in the house and not owning enough fans to keep the home cool.

## 5.1 When and where air con was installed (or planning to be installed)

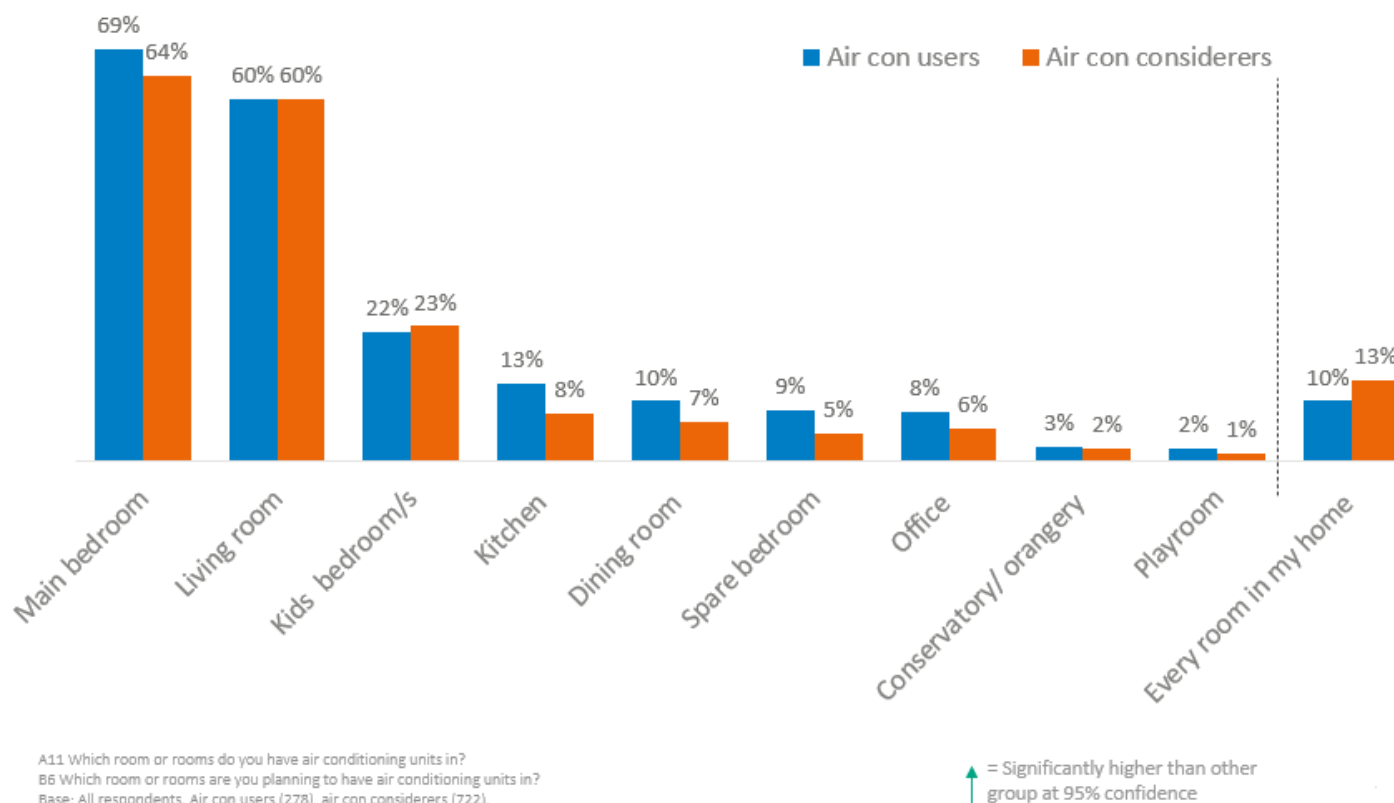
Findings from the online survey highlighted that the most common length of time for survey respondents to have had air con in the home was two or three years (56%). 60% of the air con considerers we spoke to were planning to buy air con in the next year.

Figure 9: Air con usage / consideration timescales



The most common rooms in the home where people either had air conditioning units in place or were planning to have air conditioning units in, were the main bedroom and living room. This aligns with the finding that being able to sleep better in hot weather was the main reason for buying air con.

Figure 10: Rooms with air con



### Demographic differences:

Significant sub-group differences vs. all **air con users**:

- Those living in flats: More likely to have air con in the living room (↑ 14 points).

Significant sub-group differences vs. all **air con considerers**:

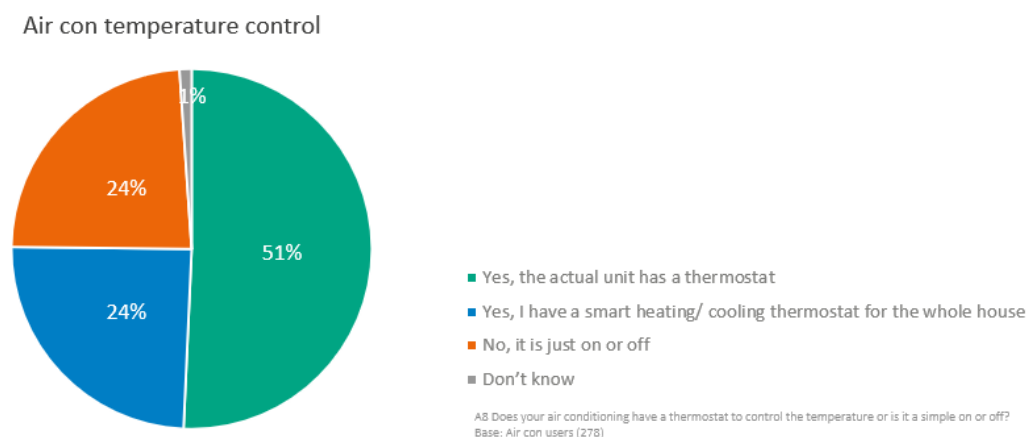
- Aged 34-54: More likely to have air conditioning in the kids' bedroom (↑ 7 points).

## 5.2 Current air con usage behaviour

We found that a range of technologies were used to control air conditioning units. Further exploration in qualitative research found that many users didn't use their thermostat in the most efficient way, even if the unit had one.

Half of air con users had a thermostat to control their air conditioning. Around a quarter of users had a smart heating / cooling thermostat for the whole house, and a further quarter of air con users didn't have any temperature control and just turned their air con unit on and off.

Figure 11: Air con temperature control method



Years of experience with using electric fans / traditional methods to cool their homes meant that this influenced the way that owners used their air con units. Users may be familiar with power levels and timers but there was little understanding of the nuances of how air con and room cooling works. The research also showed that air con users have very low engagement with thermostats and other controls. Most users put the power / temp reduction on maximum 'blast' to feel the fastest benefit and then turn off their air con completely once they felt cool. They held a perception that this uses less energy than leaving the air con on at a lower power or to be controlled with a thermostat.

*"Yeah, it does have a thermostat. **We've never quite figured out how to run the thermostat. We've just put it on the coldest setting possible and then mainly do the timer.**" (Female, aged 42, Air con user)*

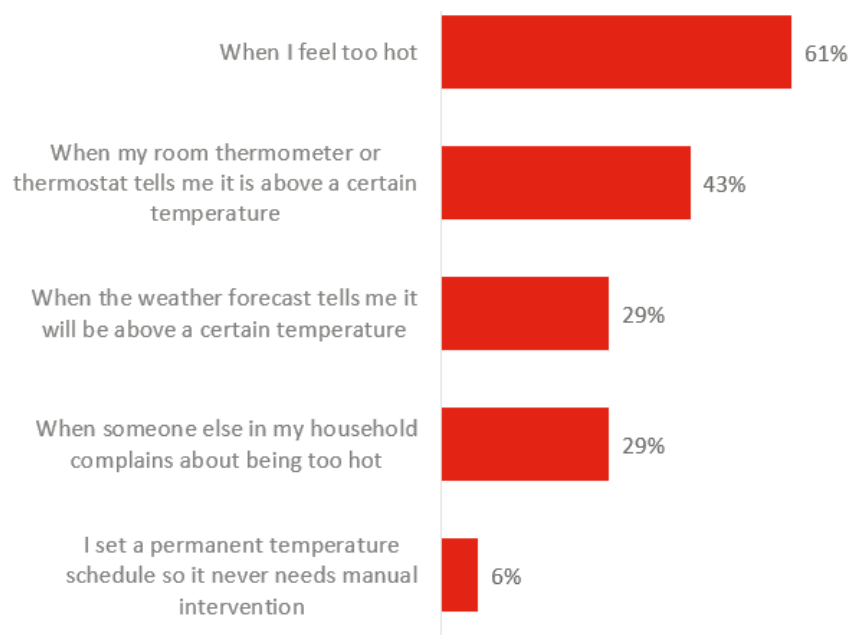
*"**I'll put her on full blast and then when the room's very, very cool I'll turn it off again because I believe I might be wrong, but I believe they do use a lot of electricity so it's not something and there is such a thing as too cold as well.**" (Female, aged 63, Air con user)*

Many air con users held little understanding of whether it is more energy / cost efficient to leave the unit on for longer, controlled by the thermostat. No air con users in the qualitative stage mentioned the technical abilities of their unit: Some have found a 'mode' they like on their remote control but there was little discovery beyond that.

Although air conditioning solves the problem of being comfortable and being able to sleep in very hot weather, it was not top of mind at other times. This meant that most users didn't spend much time learning about the different settings and modes on their air con units when they weren't in the crisis mode of needing urgent cooling. They therefore tended to stick to the same usage patterns as they were used to with fans.

This mirrors the survey finding whereby the top reason for turning on air conditioning was "when I feel too hot".

Figure 12: Triggers for turning on air con



A6 How do you decide when to turn your air conditioning on or turn your air con thermostat down?  
Base: Air con users (278)

Air con users varied as to how hot a room needs to get before turning on their air con unit. 61% of air con users would turn on their air con at a room temperature of 24 degrees Celsius or higher. 21% would wait until the temperature reached 26 degrees before turning on the air con.

Figure 13: A7. At what room air temperature do you tend to turn on your air conditioning? If it starts cooling automatically using a thermostat, at what temperature does it turn on? i.e., how warm does it have to be for your air con to turn on (on average)? Base: Air con users (278)

Lowest room temperature that air con is turned on at	
20°C – 21°C	6%
22°C – 23°C	20%
24°C – 25°C	25%
26°C – 27°C	20%
28°C – 29°C	13%
30°C or above	6%
I don't decide based on a specific temperature	10%

#### Demographic differences:

##### Significant sub-group differences vs. all **air con users**:

- Those living a flat: More likely to select will turn their air con on at 22°C – 23°C or above (↑ 10 points).
- Aged 35-54: More likely to select will turn their air con on at 26°C – 27°C or above (↑ 8 points).
- Over 55: More likely to select don't decide their air con temperature based on a specific temperature (↑

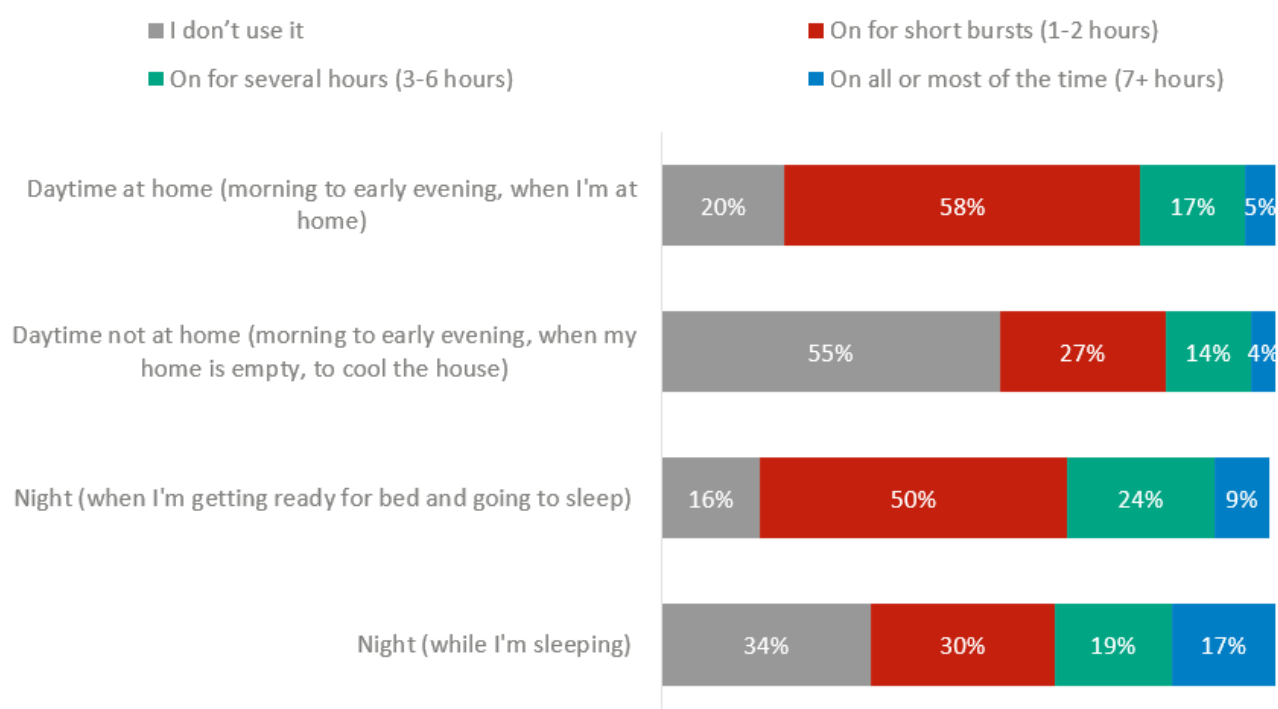
When it came to the temperature the air con thermostat is set to, the most common temperature to set the thermostat to during the day when it is hot was 19 to 22 degrees.

**Figure 14: A9. What is your preferred temperature to set your air conditioning thermostat to during the day when it is hot? i.e. What temperature do you want your room to be once the air con has cooled it (on average)? Base: Air con users (209)**

Temperature air con thermostat is set to cool to	
18 degrees or cooler	22%
19 to 22 degrees	42%
23 to 26 degrees	26%
Higher than 26 degrees	4%
It varies a lot	5%

Air con users were also asked about when they use their air con and for how long. The vast majority used air con during the day (when they were home) and at night when getting ready for bed and going to sleep. We also found that 45% would put their air con on during the day when they were not at home, to keep the home cool.

**Figure 15: Air con usage at different times of day**



A10. During a typical hot week in the summer, how do you use your air conditioning? SHOW IF HAS THERMOSTAT (A8 = 1 OR 2): Please choose the option that best describes how long you leave your air cooling switched on for during each time of day / night even if it is controlled by the thermostat during that time.  
SHOW IF NO THERMOSTAT (A8 = 3 OR 4): Please choose the option that best describes how long you leave your air cooling switched on for during each time of day / night. Base: Air con users (278)

### Demographic differences:

#### Significant sub-group differences vs. all **air con users**:

- Over 55: More likely to select don't use their air con in the daytime at home (↑ 11 points).
- Those living in a flat: Less likely to select use their air con for short bursts in the daytime at home (↓ 8 points).
- Those living in rural areas: More likely to select would not use their air con in the daytime when not at home (↑ 10 points).
- SEG C2, D & E: Less likely to select use their air con at night when getting ready for bed or going to sleep for several hours (↓ 11 points).
- SEG C2, D & E: Less likely to select use their air con at night when sleeping for short bursts (↓ 7 points).

Findings from the qualitative stage found that daytime usage of air con was more ad hoc than nighttime usage, as ensuring a good night's sleep is the priority during hot weather. The most common times of usage were afternoon and evening. Respondents stated that mornings aren't as hot and there was an attitude of 'sticking it out' as long as possible before it gets unbearably hot and using fans in rooms without air con.

Daytime air con usage was most prevalent for those with desk jobs **working from home, and parents with small children**. Parents would prioritise keeping a room cool for kids to nap or relax in after being outside in the heat.

*"It would be when I'm working from home on a hot day. But yeah, daytime wise, probably not too early in the morning. It doesn't tend to be sort of stifling hot until a little bit later in the day. But yeah, anytime it kind of warms up, I dunno, 11 o'clock onwards and then potentially running it the whole rest of the day if I'm going to be stuck indoors and then in the evenings maybe just for a few hours in the early part of the evening or sort of at bedtime, that's what I would think." (Male, aged 42, Air con considerer)*

Some air con considerers expected to use air con most of the day / afternoon; however, the reality for those that already had air con was that they would mostly use it for short bursts of time. Running costs were more of an issue for users than perceived running costs for considerers.

*"I just blast it until I get a temperature that's more comfortable. I do worry about the energy bills" (Female, aged 50, Air con user)*

A range of nighttime air con usage behaviours were described, including:

- Many air con users would put air con on **before bedtime**, so the room is cool before going to bed
  - *"On those days when it's really, really hot, stifling downstairs, I've come upstairs and I've just set it off running and then I've closed the bedroom door. So I've given it an hour before we go to bed." (Female, aged 58, Air con user)*
  - *"I tend to put it on to cool the room down and then when I'm about to fall asleep, I'd switch it off when it's getting too cold." (Female, aged 52, Air con user)*
- A minority of air con users **used it all night**, either on a low intensity setting or on a 'decreasing' mode
  - *"It seems it runs for eight hours, so it's kind of like the perfect balance, but I could increase or decrease the time on it, but I don't really go into it. I just like to keep it on its own level kind of thing. Let it do as it pleases, and it seems to work very well." (Female, aged 58, Air con user)*
- Others however said the noise was too high to leave it on all night although some users had a 'quiet mode' that they valued highly when getting to sleep
- Some air con users use timers to **turn it off after going to sleep** (rather than using a thermostat control)
  - *"During the night I'd often wake up because I was getting really hot and then I'd put it on the timer for maybe another 45 minutes just to call the room down again." (Female, aged 42, Air con user)*
- Some air con users who were more tech savvy / less cost sensitive users would also **set a timer to come on before waking up** in the morning

There were many users with electricity cost concerns which prevented them from leaving it on all night. Although there was only a minority of respondents who kept track of how much electricity their air con used, and most had no real understanding of the costs of using air conditioning in comparison to fans.

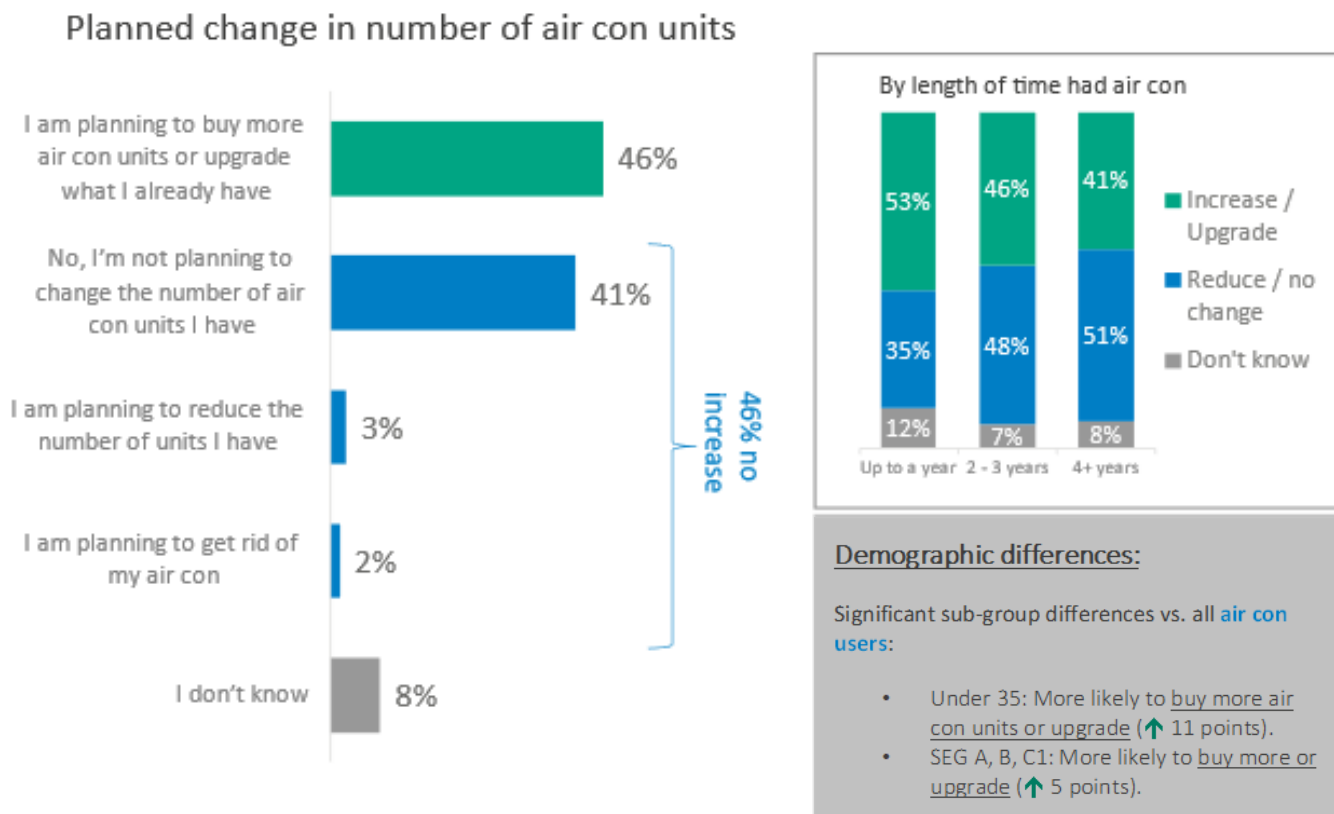
## 5.3 Future air con usage

Nearly half of air con users were planning to increase the number of air con units, or upgrade their air con set up in the next two years indicating a potentially significant increase in overall UK air con demand. Those that had owned air con for a year or less were slightly more likely to increase / upgrade than those whose air con behaviour was

more embedded. This is likely to be because they are planning to upgrade from portable to a fixed unit or increase the number of portable units now they have tried them out.

Two-thirds of air con users thought their usage in summer 2025 would be about the same as summer 2024, and a quarter expected to use it more this summer.

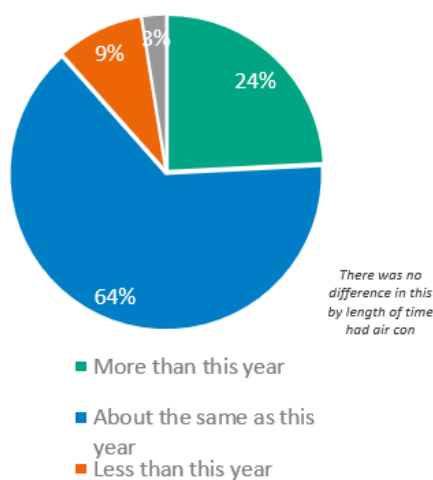
Figure 16: Likely future change in air con usage



A12. Are you planning to change the number of air conditioning units you have in the next two years? By "units" we mean number of individual plug in portable units or rooms with fixed units in them that you have. Base: Air con users (261)

A13. How often do you expect to use your air conditioning / air cooling next summer? Please assume the temperatures will be similar to recent warm summers. Base: Air con users (278)

### Planned change in frequency of air con usage



5% of air con users were planning to reduce the number of units or get rid of their air con altogether. 9% thought they would use their air con less in 2025 than in 2024. This was for a number of reasons including moving home to a property that overheats less, not wanting to replace old or broken units, and trying to save money on their electricity bill.

## 6. Evaluation of demand control cooling demand response (DR) programmes

### 6.1 Acceptability of network demand control

Respondents in the online survey were shown two screens of information explaining that as the UK's temperature increases due to climate change, so will the demand on the network for electricity for cooling. They were also shown that energy suppliers might ask customers to be more flexible with how they use air con to help the network operators to balance the demands on the grid.

*Figure 17: Information on network demand control shown to online survey respondents*

#### SCREEN 1:

In the future, it is predicted that more homes in the UK will have air conditioning due to environmental reasons such as climate change. This will increase the demand for electricity during hot weather.

The electricity network operators will need to manage this extra demand for electricity to ensure households have the electricity they want. The network operators may need to make small changes to the amount of electricity you can use for air conditioning to make sure that all households' energy needs are met.

To make small changes to your air conditioning power usage, you would need to opt-in to this service. This would not happen without your permission.

#### SCREEN 2:

In this section, we are going to ask you how acceptable it would be for your energy supplier to ask you to change the way you use electricity on hot days on behalf of the electricity network operator.

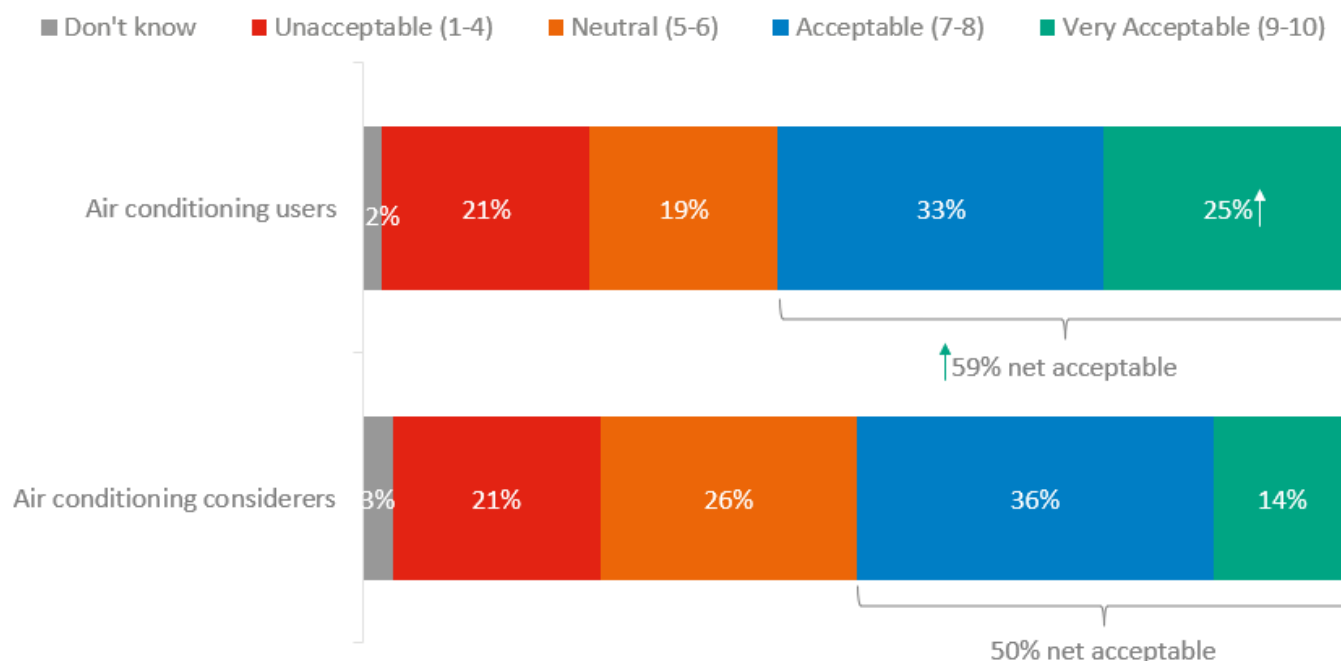
This could mean you turning off your air con or turning up your thermostat higher than you normally would for 1-4 hours at a time. This wouldn't happen all the time but might be needed at times of particularly high electricity demand or to address unexpected network outages.

**SHOW TO THOSE WITH OR CONSIDERING SOLAR PV (S7=5 OR 6 / S7B = 3 OR 4):** If you use solar panels to power air conditioning units, you would still be asked to reduce your air con usage as above, but you may benefit from selling more of this unused power back to the grid depending on your tariff.

The purpose of this survey is to gather views to understand whether this approach would be acceptable to customers in the future and what could make you more likely to participate.

Changing air con usage behaviour to help the network was acceptable to 59% of air con users and 50% of considerers. Users that were under 55 years of age, those that had been using air con for at least two years and those living in detached houses were most likely to accept the concept of network demand management. This aligns with the air con adoption journey described earlier in this report: Only those users that have a good understanding of their air con usage patterns and electricity costs are educated enough to engage with network control and associated cooling DR programmes.

Figure 18: Acceptability of network operator controlling demand



C2. How acceptable is it to you that your energy supplier could ask you to change the way you use electricity on hot days on behalf of the electricity network operator. This could mean you turning off your air con or turning up your thermostat higher than you normally would for 1-4 hours at a time. This wouldn't happen all the time but might be needed at times of particularly high electricity demand or to address unexpected network outages. Base: All respondents. Air con users (278), air con considerers (722).

### Demographic differences:

#### Significant sub-group differences vs. all **air con users**:

- Aged 35-54: Higher net acceptability (↑ 10 points).
- Over 55: Lower net acceptability (↓ 19 points).
- Had air con for 2-3 years: Higher net acceptability (↑ 7 points) than those that have had air con for less or more time
- Detached house: Higher very acceptable (↑ 14 points. 39% vs 8% for flats)

The qualitative research revealed mixed reactions to the idea of DNOs asking customers to be flexible with their air conditioning usage. While some respondents saw the potential benefits of reducing electricity demand, many were resistant to the idea of having restrictions placed on their air con use. There was a general consensus that people want control over their own energy consumption, particularly during the hottest periods when air conditioning is most needed.

*“Because the cost of energy at the moment is such a concern for most people, giving people the choice of you can use it if you want or we'll give you a bit of a reward if you just manage it in a different way. I would imagine a lot of people, if they're not absolutely roasting or whatever, then they'd be quite happy to change just for the financial return.” (Male, aged 37, Air con user)*

A significant proportion of respondents expressed strong opposition to the idea of limiting air con use during peak demand periods. Many felt that the whole point of having air conditioning was to use it when temperatures are at

their highest. Some respondents acknowledged that cost savings on electricity bills would be appealing but only if the temperature was not excessively hot. A few individuals stated they might adjust their behaviour in response to network control, such as going to air-conditioned public places like supermarkets, but this was a minority view.

*"If you need it, you need it. I mean the ones that I've been looking at are the three in ones with Wi-Fi so I can stick it on before I get to the house. So I'm going to be using even more energy than most people."*  
(Male, aged 50, Air con considerer)

Another key concern raised was that electricity companies should have anticipated the rising demand for air conditioning and taken proactive steps to plan for it. Many respondents felt that it should not be the responsibility of individual households to adjust their energy use to compensate for inadequate infrastructure planning. Instead, they believed that energy providers should have invested in improving grid capacity to meet growing demand rather than relying on consumer behaviour changes.

A small minority of respondents raised concerns about what they perceived as an increasing level of control over household energy usage. They worried that allowing DNOs to influence air conditioning usage could set a precedent for further restrictions in the future. Some described this as the 'thin end of the wedge,' fearing that such measures could gradually lead to more intrusive controls over personal energy consumption.

*"I wouldn't sign up to something and then be restricted. So we are here all day. I'm not going to not turn it on until six because my tariffs from six. I'm not going to sit in the house, sweltering, and everybody being sticky and agitated. If we need the cooler, we need to have it just when we need it."* (Female, aged 42, Air con user)

The research also explored whether respondents would be willing to modify their air con usage for broader environmental benefits. Overall, there was very little willingness to do so. Many respondents saw air conditioning as a short-term necessity during extremely hot weather, meaning that even those with strong environmental values prioritised their immediate comfort over potential environmental benefits.

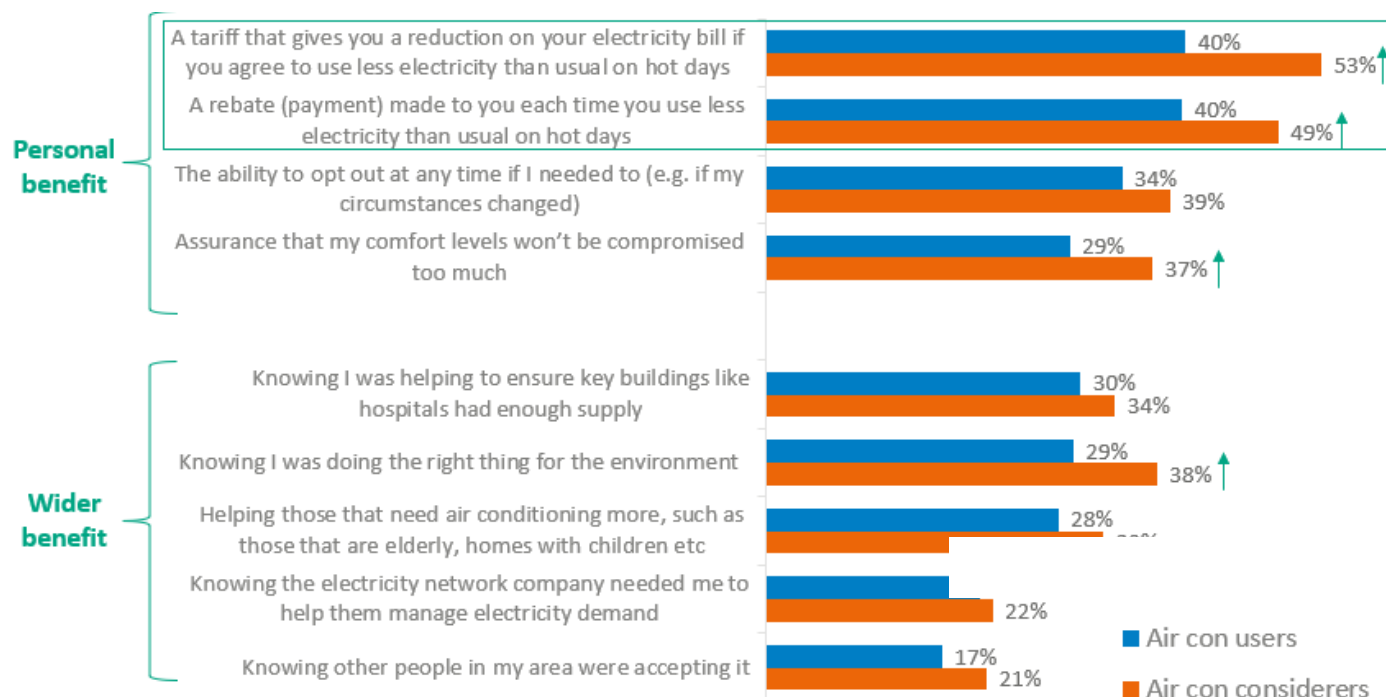
As described earlier in this report, some respondents reported a sense of 'air con guilt' when using their units, as they viewed air conditioning as a luxury rather than a necessity. This feeling of guilt made some more open to the idea of network control, as they recognised that reducing air conditioning use could contribute to a fairer energy distribution. However, even among these individuals, the preference was for voluntary measures rather than enforced restrictions.

## 6.2 Cooling DR programmes

Two cooling DR programmes were evaluated in the domestic customer research: a Peak Time Rebate scheme and a Time of Use tariff.

In the quantitative research respondents were shown a very short description of each of these alongside a number of less financial incentives to change air con behaviour at times of peak demand. Incentives that have a personal benefit were more popular than incentives that only had a wider network or community benefit. The tariff and rebate arrangements were both well received by air con users and considerers. Around a third also wanted the opportunity to opt out of any arrangements.

Figure 19: Appeal of incentives for accepting network control



C4. Which of the following would make you more willing to allow your energy supplier to ask you to change the way you use electricity and air con on hot days on behalf of the electricity network operator? Please select all that would have an influence on you personally. Base: All respondents. Air con users (278), air con considerers (722). None of the above = 6% users, 4% considerers

↑ = Significantly higher than other group at 95% confidence

### Demographic differences:

#### Significant sub-group differences vs. all **air con users**:

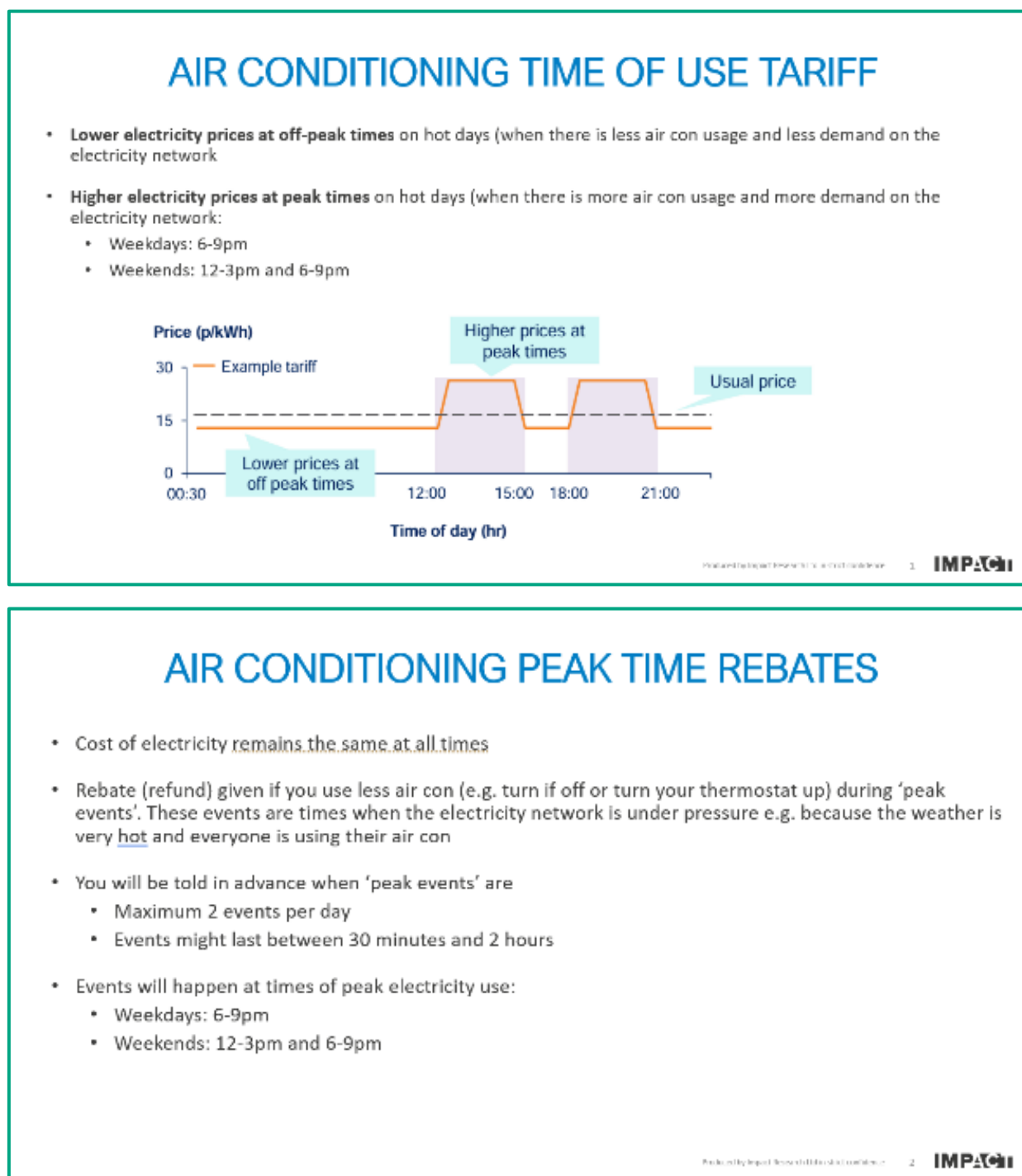
- Under 35: Less likely to opt for a tariff (↓ 9 points).
- Over 55: More likely to opt for a tariff (↑ 8 points).
- Under 35: Less likely to opt for a rebate payment (↓ 10 points).
- Over 55: More likely to opt for a rebate payment (↑ 13 points).
- Those living in a detached house: Less likely to opt for a tariff (↓ 7 points).

#### Significant sub-group differences vs. all **air con considerers**:

- Over 55: More likely to opt for a tariff (↑ 11 points).
- Over 55: More likely to opt for a rebate (↑ 12 points).

The Peak Time Rebate and Time of Use concepts were further developed by ENWL and Guidehouse ready for more in-depth evaluation in the qualitative research stage.

Figure 20: Information on cooling DR programmes shown in the qualitative research



### 6.2.2 Peak Time Rebate scheme

The research found similar levels of interest in both peak time rebates and time-of-use tariffs in the quantitative survey. However, when respondents were given more detailed explanations during the qualitative research, rebates emerged as the preferred option. This preference was largely driven by the perception that rebates acted as a reward rather than a penalty, making them more appealing and easier to accept.

Rebates were seen as a "carrot" rather than a "stick" because participation was entirely optional. This meant that if extreme temperatures made reducing air conditioning use impractical, there was no downside to opting out. Respondents appreciated this flexibility, as it allowed them to engage only when it suited their needs. Many viewed the rebate scheme positively, perceiving it as the electricity company offering something "for free." This positive sentiment was reinforced by previous good experiences—or hearing about positive experiences from others—regarding similar rebate schemes, particularly those run by Octopus Energy.

*"I'll be quite happy to sign up to this one because it's almost like it's a little bit of a bonus really. Sometimes it doesn't work out and I can't really turn things down, but other times you can do so you kind of get a bit of a bonus for it. So, it's kind of a win-win in a way. The only thing I did think is that it does seem a bit strange that it's just air conditioning to me, but obviously that must be a big user of power, but it almost seems like it would make more sense to just turn down everything." (Male, aged 42, Air con considerer)*

Despite the enthusiasm, some respondents found it difficult to estimate how much money they could realistically earn from participating. Without prior experience, many struggled to judge whether the financial benefit would be worthwhile. One respondent who had used Octopus Energy's rebate scheme reported saving around £12 per month, but others remained uncertain about whether the effort required would justify the rewards. There was also some hesitation from individuals who felt that unless the potential savings were "meaningful," they would not want the hassle of participating.

*"I'm always looking for bargains and extra incentives, cashback, things like this. So, whatever is to do with rebates, things encouraging me to save money, I usually go for it." (Male, aged 43, Air con considerer)*

In terms of event scheduling, most respondents agreed that a minimum of 24 hours' advance notice was necessary to allow for planning. Considerers—those who were open to the idea but had not yet fully committed—were generally willing to accept three to four rebate events per day. Regular users, however, preferred fewer events, with one or two per day being seen as more manageable.

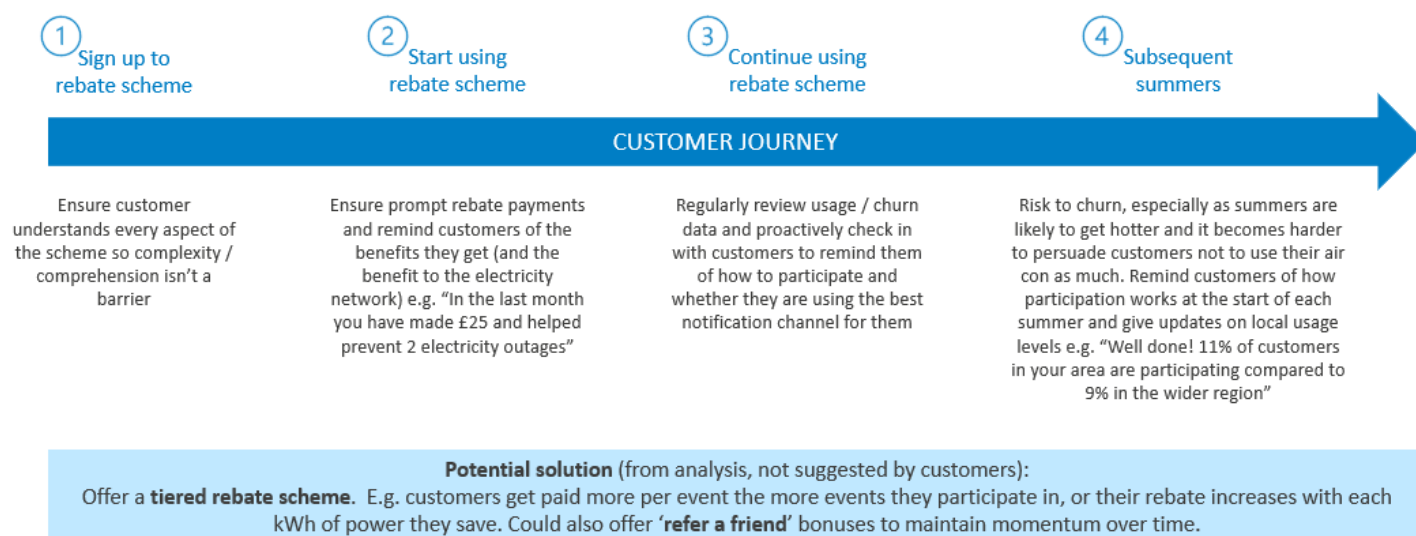
*"I think they just need to keep it simple for people to do it. Otherwise, it's just going to be that people are just not going to be engaged with it, I don't think if it's too bitty and complicated." (Female, aged 48, Air con considerer)*

Respondents wanted to incorporate rebate events into their daily routines without constantly checking notifications or feeling that the process was disruptive. Many expressed concerns that if too many events were scheduled, they would eventually stop paying attention altogether.

*"I think the rebate one would be best for me because I think that it would change my behaviour and I'd be more careful about when I put appliances on, whether it be the air conditioning or charging the car or whatever. Anything that I can get a little bit of deal on." (Female, aged 40, Air con user)*

To sustain engagement, it was deemed crucial to maximise interest at the start of the sign-up process. Encouraging users to integrate rebate participation into their long-term energy habits was seen as essential, as respondents acknowledged that, over time, they would be less likely to check rebate event timings consistently. Clear communication, user-friendly notifications, and meaningful financial incentives would be key to maintaining long-term participation in peak time rebate schemes as detailed in the diagram below:

Figure 21: Recommendations for maintaining engagement with Peak Time Rebate scheme



### 6.2.3 Time of Use tariff

The Time of Use tariff was appealing to a specific group of respondents whose existing schedules naturally aligned with off-peak periods. Shift workers and those who primarily used their air conditioning at night—after peak hours—found the tariff a good fit, as they would benefit from lower off-peak rates without needing to change their behaviour.

*See, for me, this would work because I wouldn't put it on during the day. I would go out first of all, but secondly, 80% of my usage would be after nine o'clock at night anyway. So, this personally would fit my lifestyle quite nicely." (Male, aged 58, Air con users)*

However, for most respondents, the idea of modifying their air conditioning usage to align with peak and off-peak pricing was unappealing. Many already limited their use of air conditioning due to cost concerns and what some described as "air con guilt"—a reluctance to use it unless absolutely necessary. While respondents were open to adjusting other aspects of their energy consumption, such as running washing machines or dishwashers at off-peak times, they were unwilling to do the same for air conditioning during a heatwave.

*"You are almost being punished, penalised for using more aircon and sometimes it's out for your control, dependent on your circumstances where at least the first one you've got the incentive of a rebate to encourage you to reduce your usage." (Female, aged 48, Air con considerer)*

A key concern was the perception that the Time of Use tariff would make air conditioning even more expensive precisely when people needed it most. Some respondents also questioned how the tariff would be enforced if it applied only to air conditioning usage, suggesting that a broader approach—encouraging reduced overall energy consumption during peak periods—might be more effective.

*"I understand the concept and I understand obviously why they're doing it, but I'm just thinking that those peak times are the times that I would probably use the air con. So, I'm just wondering, I'm in a catch 22 position. Either I'm just going to have to pay the extra money or I'm just going to have to swelter. So, I'm just wondering what I would personally do." (Female, aged 52, Air con user)*

The fairness of the tariff structure was another point of contention. Many respondents felt that the peak rate was overly punitive compared to the limited discount offered during off-peak hours. This imbalance made the tariff seem less attractive, as it appeared to penalise rather than incentivise behaviour change.

*“Psychologically the other one was better because it's got the word rebate in it. This one doesn't say that you're going to save any money,” (Male, aged 50, Air con considerer)*

Ultimately, while respondents acknowledged that they would try to adjust their energy use to save money where possible, they wanted to feel in control of their decisions. This was a key reason why rebates were generally preferred over the Time of Use tariff—rebates allowed respondents to choose when and how they engaged, whereas the Time of Use tariff felt more restrictive and financially risky.

## 6.2 Acceptable duration and frequency of network control events

When considering the logistics of air conditioning control, it is crucial to recognise that in extreme temperatures, respondents felt they had no choice but to use their air conditioning, regardless of cost. During less extreme temperatures, many respondents stated they would be less likely to use air conditioning at all, instead opting for alternatives such as fans or simply enduring the heat without cooling. This suggests that network control would have minimal impact outside of the hottest days.

Respondents generally noted that extreme heatwaves tend to last for only a few days or, at most, two weeks per year. As a result, they were willing to pay for air conditioning usage during these “crisis” periods, valuing comfort over cost savings. However, there was a notable lack of awareness about how long a room remains cool once air conditioning is turned off or reduced. Many respondents perceived that the cooling effect dissipates quickly, which could reduce their willingness to participate in peak-time restrictions. Educating air conditioning users on how to run their units efficiently and how to maintain a cooler indoor environment could help improve the acceptability of peak-time usage controls.

*“If say we're in June, July and I imagine what would be a good time is probably a day before so it's still fresh in people's mind. August is obviously the hottest months of the year. So, a few days before a bank holiday or an event that's celebrating summer really would be a way of encouraging people not to use the air conditioning units at that time. And saying just to let you know if you don't use your air conditioning unit from say, two o'clock in the afternoon to the evening on your days off, you'll save this much money and you'll save this much CO2 and so on for the environment, the country. The problem is there's a lot of emails.” (Male, 41, Air con user)*

### 6.2.1 Peak Event Timing

Both the qualitative and quantitative research indicated that a peak event duration of one to two hours was the most acceptable for consumers. The data from the quantitative survey below shows that many respondents would accept a longer duration of up to 4 hours, although this was without the in-depth discussion of the cooling DR programmes that qualitative respondents had. Respondents generally felt that this period struck a balance between reducing demand on the network and maintaining comfort. Some respondents preferred a greater number of shorter peak events rather than a few long ones, as shorter interruptions felt less intrusive. If the required adjustment involved switching off air conditioning for only a short time, they felt it would be more manageable.

Figure 22: Maximum acceptable duration of network control (from quantitative survey)

	Accepting of network control (8-10/10)				Less accepting of network control 4-7/10	
	AIR CON USERS	AIR CON CONSIDERERS	AIR CON USERS	AIR CON CONSIDERERS	AIR CON USERS	AIR CON CONSIDERERS
Less than an hour	7%	8%	3%	4%	17%	14%
1 or 2 hours	38%	50%↑	33%	47%↑	51%	55%
3 or 4 hours	45%↑	29%	53%↑	38%	22%	16%
5 or 6 hours	7%	5%	8%	5%	3%	4%
All day	1%	2%	1%	2%	2%	1%
	n=163		n=360		n=63	n=229

C3. What is the maximum duration you think would be acceptable for your electricity supplier to ask you to reduce the amount of power you can use on a hot day, including for air con? Base: All that said network control is fairly acceptable at C2 (4-10 out of 10). Air con users (226), air con considerers (589).

↑ = Significantly higher than other group at 95% confidence

A fixed schedule for peak events, particularly in the case of time-of-use tariffs, was seen as beneficial. This would allow respondents to plan ahead and gradually adapt their daily routines to incorporate energy-saving behaviours. However, respondents strongly emphasised the need for as much advance notice as possible, with a minimum of 24 hours being the preferred timeframe. Additionally, many respondents stated they would require reminders either on the day of the event or the day before, as they were unlikely to remember or actively check a calendar.

*"It's always good. But then saying that, yeah, you want to be able to plan in advance a bit. You wouldn't want to be like, there's an event in 30 minutes, I guess turn your air con off or whatever. So maybe just say as long as possible, at least a couple hours before." (Male, aged 30, Air con considerer)*

There was no clear consensus on how peak tariff windows should be priced in comparison to off-peak costs. Respondents wanted to feel they were saving money by using electricity outside of peak times but did not want to feel excessively penalised for usage during peak hours. The challenge for pricing structures will be to find a balance that encourages behavioural change while maintaining consumer goodwill.

*"Well, it just doesn't seem fair that the off peak is only say too, I dunno, two pence lower and yet a higher peak looks like 10p higher." (Female, aged 52, Air con user)*

Communication preferences varied among respondents. Those who had experience with time-of-use schemes, such as those from Octopus Energy or Ovo Energy, were comfortable receiving notifications through an app. However, the majority of respondents preferred more direct communication, such as text messages or emails, ensuring they would receive timely alerts about peak events.

### 6.2.2 Delivering Flexibility to the Network

Respondents expressed different approaches to adjusting their air conditioning use in response to network requests. The most common response was to turn the unit off entirely rather than adjusting the temperature settings or reducing power consumption. This suggests that many consumers may perceive "turning down" their air conditioning as ineffective or inconvenient, whereas switching it off completely is a clearer, more decisive action.

The extent to which people would adjust their behaviour depended heavily on the financial incentive offered. Many respondents struggled to assess whether a £1 per kWh rebate would be appealing, as they found it difficult to relate this figure to their actual electricity bills. This indicates that clearer, more tangible explanations of potential cost savings would be necessary to drive engagement. Future initiatives should consider how best to communicate these financial benefits in a way that is easily understandable and compelling for consumers.

## 7. Summary and recommendations

### 7.2 Report summary

Air conditioning usage in UK households is on the rise. Based on a UK-wide opt-in panel of consumers, approximately 8% of households currently use an air conditioning unit at home, with a further 20% planning to purchase one in the next two years. This indicates a growing trend as more people seek ways to manage increasing temperatures. Among current users, 69% have a portable unit, while 33% have a fixed system. Additionally, 54% of air conditioning users also rely on plug-in electric fans to supplement cooling. Satisfaction levels are high, with 85% of users reporting they are satisfied or very satisfied with their unit. The choice of unit is primarily driven by the urgency of the need—often purchased during a heatwave—along with cost considerations and confidence in investing in a long-term fixed solution versus starting with a portable unit. Vulnerable households, such as those with health conditions, age-related issues like menopause, or young children, represent a significant segment of air conditioning users and considerers.

The key motivations for using air conditioning include improving comfort, ensuring better sleep in hot weather, and addressing health-related heat concerns. However, there are also significant barriers to usage. High energy costs remain a major deterrent, along with concerns about the environmental impact and social ‘guilt’ around air conditioning usage. Noise from the units is also a factor limiting their use. More than three-quarters of both users and considerers agreed that air conditioning is becoming more of a necessity in the UK due to rising temperatures, while over two-thirds acknowledged that running an air conditioning unit is expensive.

Nighttime cooling, particularly in bedrooms, is a priority for many households, with cost concerns often limiting daytime usage. However, there is limited understanding of the most efficient ways to operate air conditioning and maintain a cool room. Many users engage in ‘blasting’—turning the unit on at full power until the room feels cool—rather than allowing it to run steadily under thermostat control. In terms of temperature preferences, 64% of users turn their air conditioning on when the room reaches 24 degrees or higher. The most commonly preferred daytime temperature setting during hot weather is between 19 and 22 degrees.

When considering network operator control of air conditioning usage, there were mixed reactions. Peak time rebate schemes were generally more acceptable to consumers than time of use tariffs, as rebates were perceived as an incentive rather than a penalty. Consumers expressed a strong preference for at least 24 hours’ notice before a peak demand event, with many preferring even longer lead times. In the quantitative survey, half of air conditioning users said they would accept peak demand events lasting 3–4 hours, while considerers favoured shorter events of 1–2 hours. However, in qualitative discussions, many existing air conditioning users agreed that a 1–2-hour event would be preferable, reinforcing the need for careful event planning.

Ultimately, clear communication, flexibility, and ensuring customer opt-in are critical to securing engagement with demand management programmes. Consumers want transparency and control over their participation, and any successful scheme must provide them with the necessary information and flexibility to make informed decisions about their energy use.

## 7.1 Recommendations for further development of cooling DR programmes

### 1. Prioritise Incentive-Based Approaches

Encouraging participation in peak demand reduction schemes is most effective when consumers feel they are being rewarded rather than penalised. Incentive-based approaches, such as rebates, have been shown to be more attractive to consumers than punitive measures like higher peak-time tariffs.

### 2. Ensure Programmes Are Voluntary and Flexible

Consumers are more likely to engage with demand management initiatives when they have control over their participation. Programmes should be designed to be entirely voluntary, allowing users to opt in and out as needed without facing penalties for non-participation.

### 3. Introduce Tiered Rebate Structures

To sustain engagement over time, rebate structures should offer increasing rewards for continued participation. While initial enthusiasm for rebate programmes may be high, a tiered approach could help maintain long-term involvement once the novelty wears off.

### 4. Provide Adequate Notice for Peak Demand Events

Respondents need sufficient time to adjust their plans and energy usage accordingly. At least 24 hours' notice should be given before any peak demand event, ensuring that users have the opportunity to prepare and make informed decisions.

### 5. Limit Peak Event Duration and Establish Consistency

Peak demand events should be limited to no more than two hours at a time to minimise disruption. Where possible, events should follow a regular schedule to allow users to integrate demand management into their daily routines more easily.

### 6. Use Multiple Communication Channels for Notifications

To maximise awareness and engagement, peak demand events should be communicated through various channels, including app notifications, text messages, and emails. This ensures that respondents receive timely reminders in their preferred format.

### 7. Develop a Cost Savings Calculator and Tailored Advice

Consumers find it difficult to estimate the financial benefits of participation without clear guidance. A personalised calculator or tailored cost savings quote could help different types of households understand the potential benefits. Additionally, providing efficiency advice and support can further encourage participation.

### 8. Integrate Demand Management with Consumer Education

To improve the acceptability of demand management schemes, they should be accompanied by educational resources on how to use air conditioning efficiently and maintain a cool indoor environment. These resources should be tailored to different user groups, such as those with portable vs. fixed air conditioning, young families, older couples, and people working from home.

## 8. Appendix

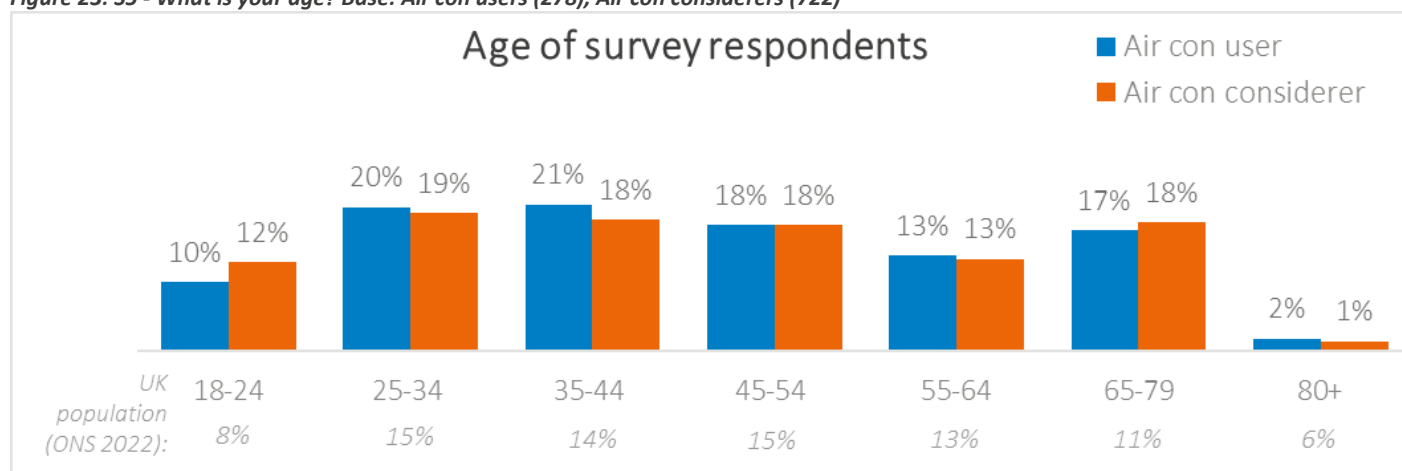
### 8.1 Quantitative survey demographics

In order to ensure that we surveyed a representative mix of UK consumers, we set quotas on age and gender in line with UK nat rep (nationally representative) distribution targets.

Of the 1,000 online survey respondents, 49% were male and 51% female. When looking at this amongst air con users and considerers, 53% of the males taking part in the survey were air con users and 47% were air con considerers. For females, 47% of the females taking part in the survey were air con users, and 53% were air con considerers.

The age breakdown of air con users and air con considerers, as well as the comparison to the UK population can be found in figure 2 below.

Figure 23: S5 - What is your age? Base: Air con users (278), Air con considerers (722)



Survey respondents were across the whole of the UK with the highest numbers of air con users and air con considerers in London / Greater London. Other than London the highest concentrations of air con users and considerers were in the South East and the North West.

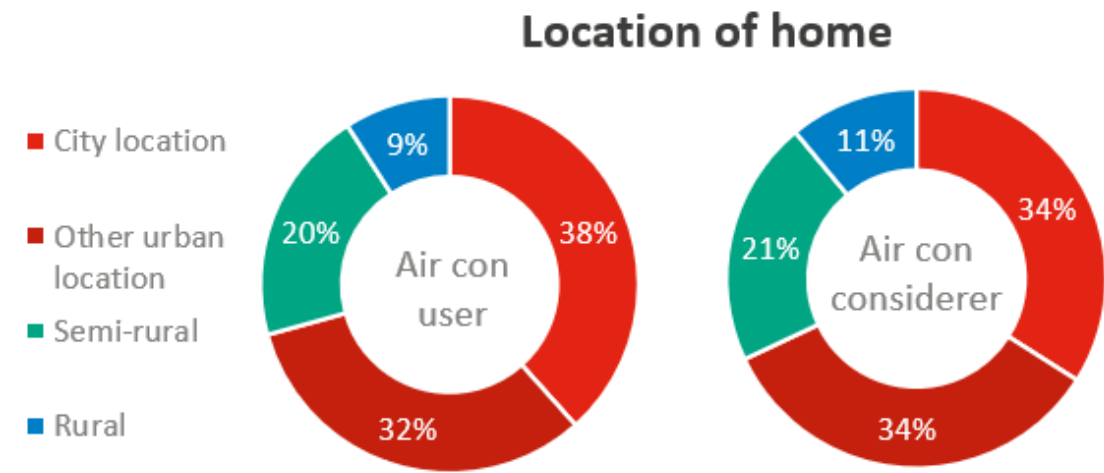
Figure 24: S2 – Please can you confirm where you live? Base: Air con users (278), Air con considerers (722)

Region	UK pop (ONS 2022)	Air con user	Air con considerer
London / Greater London	13%	24%	17%
South East	14%	10%	12%
South West	9%	7%	6%
East of England	10%	10%	9%
East Midlands	7%	8%	9%
West Midlands	9%	10%	10%
Wales	5%	4%	3%
Yorkshire & the Humber	8%	8%	8%
North East	4%	4%	4%

North West	11%	9%	14%
Scotland	8%	5%	7%
Northern Ireland	3%	2%	2%

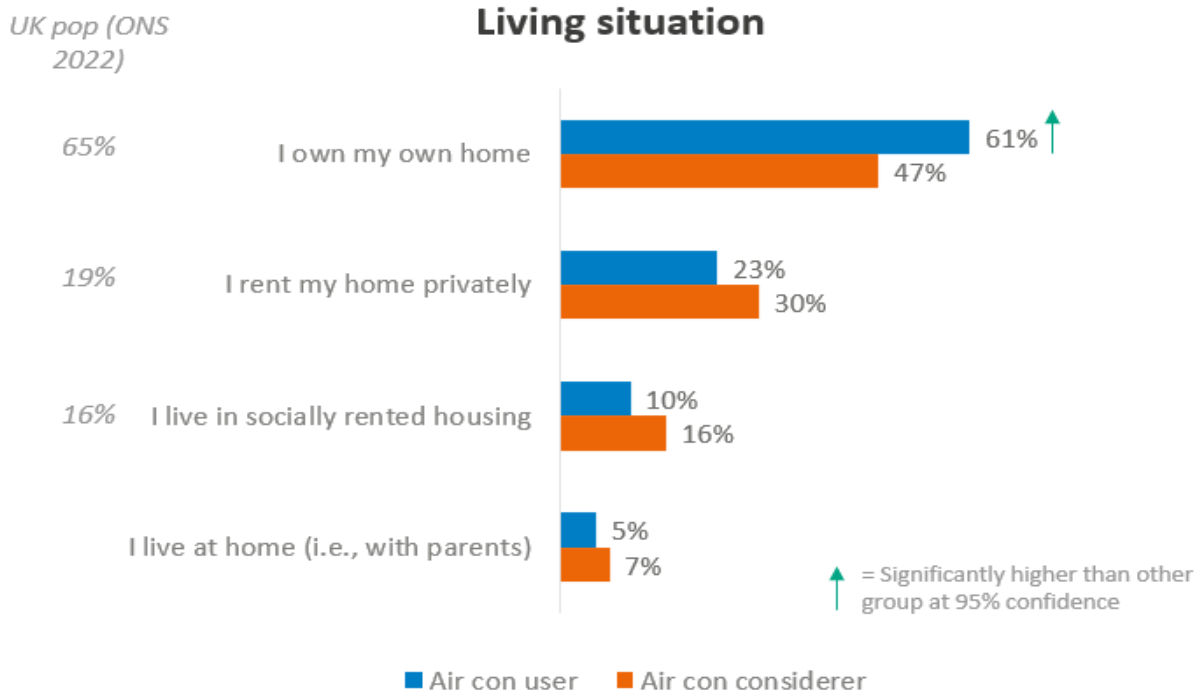
As figure 25 shows below, most respondents lived in urban areas with no notable differences between air con users and air con considerers.

Figure 25: P1 - Which of the following best describes the area where you live? Base: Air con users (278), Air con considerers (722)







When looking at respondents’ living situations, air con users were significantly more likely to own their own home than air con considerers. This aligns with our finding described later in this report that rental tenure is a barrier to uptake of air conditioning.

Figure 26: P3 - Which of the following best describes your living situation? Base: Air con users (278), Air con considerers (722)



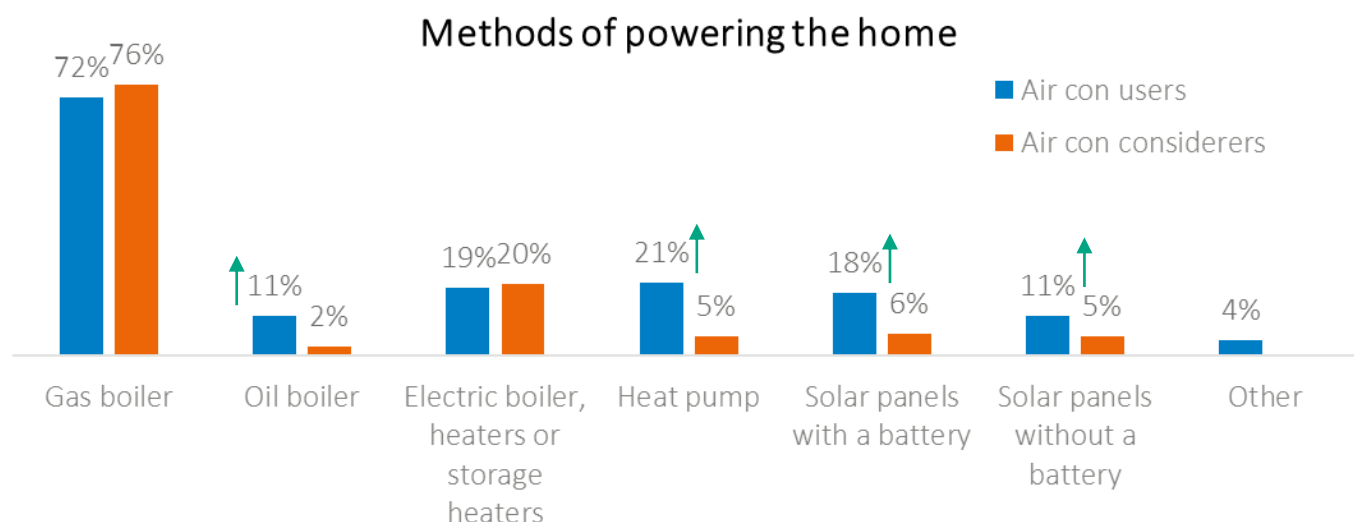
Air con users were also more likely than considerers to live in a detached house, which aligns with a higher SEG for air con users:

Figure 27: P2- What type of property do you live in? Base: Air con users (278), Air con considerers (722)

		UK pop (ONS 2022)	Air con user	Air con considerer
Detached house		23%	29% ↑	20%
Semi-detached house		31%	40%	39%
Terrace house		25%	13%	20% ↑
Flat		22%	18%	20%
Other		<1%	1%	2%

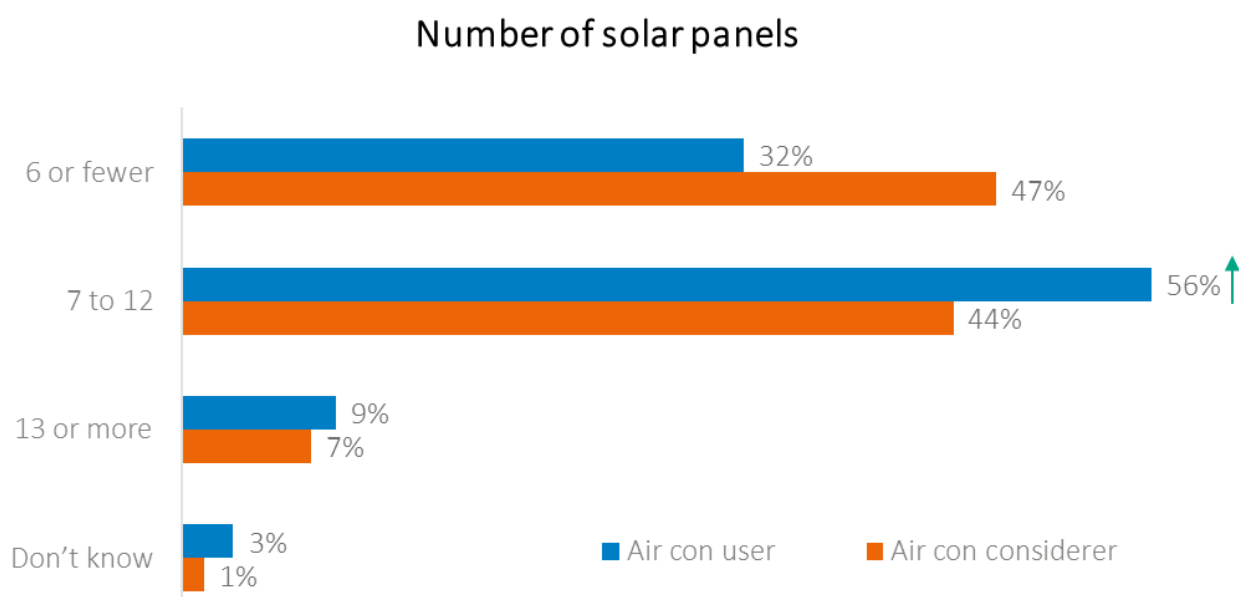
In line with the UK overall, the most common method of heating the home for air con users and considerers was a gas boiler, with 72% of air con users having one, and 76% of air con considerers. Air con users were more likely than considerers to have renewable energy sources at home.

Figure 28: S7 - Which of the following do you have at home? Base: air con users (278), air con considerers (722)



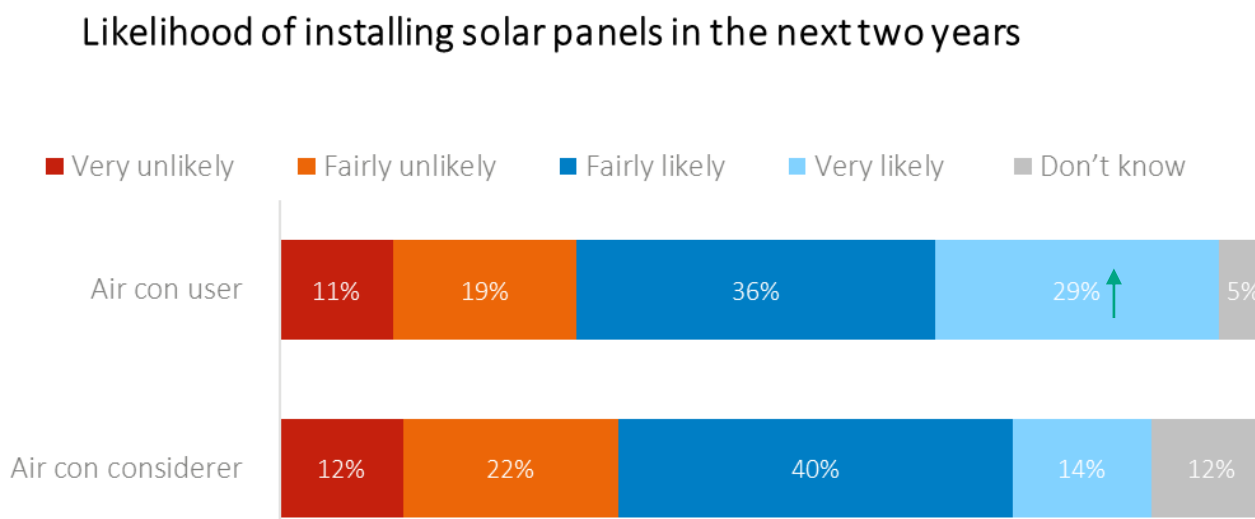
Further questions about solar panels were included in order to inform future demand planning (and the likely demand that might be offset by household solar generation). For those with solar panels, most respondents had either 6 or fewer, or 7-12. For air con users 56% had 7-12 solar panels, whereas for air con considerers, 44% had 7-12 solar panels.

Figure 29: S7a - How many solar panels do you have? Base: air con users that have solar panels (68), considerers that have solar panels (81)



The likelihood of installing solar panels in the next two years was slightly higher among air con users than considerers, with 65% of air con users being likely to install solar panels in the next two years, in comparison to 54% of air con considerers.

Figure 30: S7b - How likely are you to install solar panels on your home in the next 2 years? Base: air con users (210), air con considerers (641)



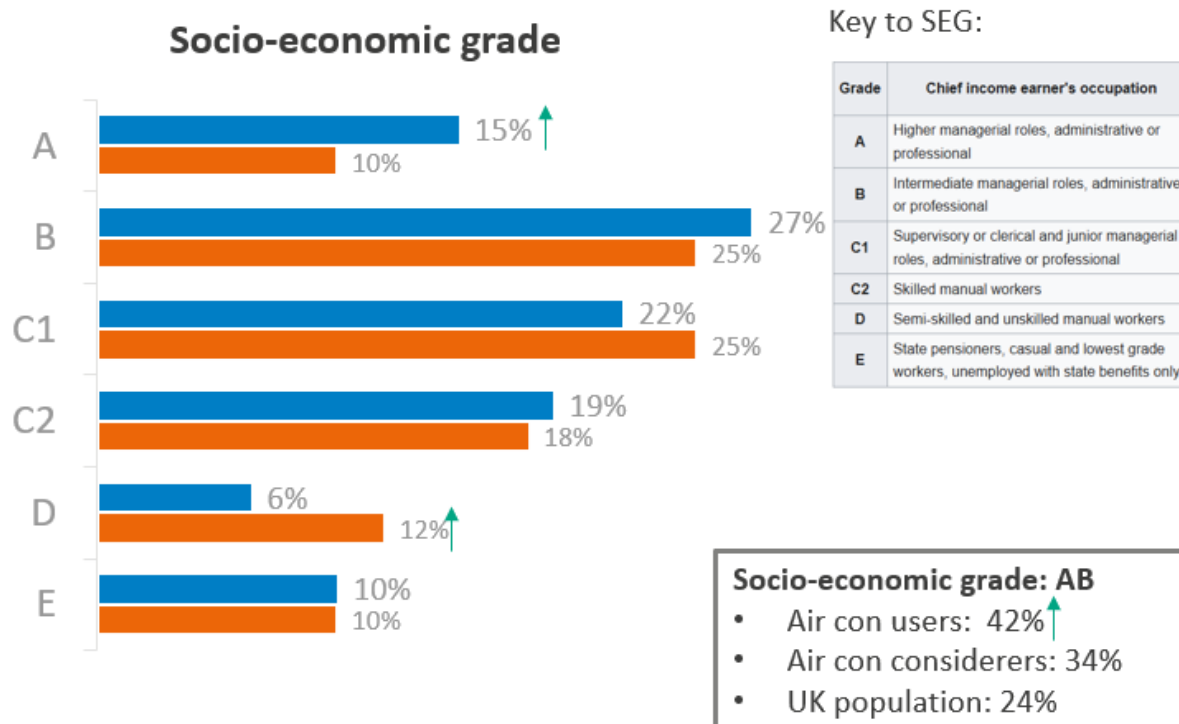
13% of both air con users and considerers were classified as Fuel Poor which is in line with estimates within the UK population as a whole (although there is variation across metrics and nations). Fuel poverty status was determined in the survey by respondents selecting one of the following options at the bill payment question:

- I/ my household struggle to pay my energy bills and I/we am often behind in my payments
- I/ my household always struggle to pay my energy bills, and I/we am nearly always behind in my payments

**Figure 31: P5 - We would like to understand a little more about how your household's financial situation is affected by your energy bills. Which of the following statements best describes your situation? Base: Air con users (278), Air con considerers (722)**

	Air con user	Air con considerer
Fuel poor	13%	13%
Not currently fuel poor	87%	87%

When looking at the socio-economic grade of respondents, 42% of air con users were SEG A or B, in comparison to 34% of air con considerers.



**Figure 32: P4 - Which of the following categories best describes the employment status of the highest income earner in your household? Base: Air con users (278), Air con considerers (722)**

24% of air con users and 15% of air con considerers are currently registered on the extra care/ priority services register. 44% of air con considerers and 44% of air con user households were classified as vulnerable and therefore may need extra support from utilities companies. We defined vulnerability as selecting at least one of the categories listed within figure 12.

**Figure 33: P6- Do you feel that any of the following factors apply to you or anyone in your household at the moment that might mean you need extra support or help during a power cut? Base: Air con users (278), Air con considerers (722)**

	Air con user (respondent completing the survey)	Air con considerer (respondent completing the survey)	Air on user (others in the respondent's household)	Air con considerer (others in the respondent's household)
Chronic/serious illness	7%	7%	4%	4%
Medically Dependant Equipment	4%	0%	1%	1%
Oxygen use	3%	1%	3%	1%
Poor sense of smell	4%	2%	3%	1%
Physical Impairment	6%	3%	3%	3%
Unable to answer door	3%	1%	4%	1%
Restricted hand movement	4%	1%	2%	1%
Pensionable Age	8%	5%	5%	6%
Young children aged 5 or under	3%	7%	3%	6%
Blind	0%	0%	1%	0%
Partially sighted	3%	2%	0%	1%
Hearing /speech difficulties (including deaf)	1%	3%	1%	2%
Unable to communicate in English	0%	0%	2%	1%
Dementia	1%	0%	1%	1%
Developmental condition	1%	0%	2%	2%
Mental Health issues e.g. anxiety	13%	19%	6%	8%
Temporary - life change, for example post hospital recovery, unemployment, infant in the house	2%	2%	1%	2%

## 8.2 Qualitative sample demographics

The qualitative sample was aged between 30 and 63. We found that under-30s were less likely to have, or be actively considering air con.

The depth interview sample consisted of a mix of air con users and considerers, all with varying vulnerabilities.

**Figure 34: Depths respondent profile**

Air con users	Air con considerers
Female, aged 42, lives in southeast, co-habiting with one child, employed full time, C1 SEG, vulnerability: young children aged 5 or under.	Female, aged 58, lives in greater London, married with two children in the household, self-employed, C2 SEG, vulnerability: physical impairment, medically dependent on equipment, chronic/ serious illness.
Female, aged 42, lives in Northern Ireland, married with two children, employed full time, C1 SEG, vulnerability: young children aged 5 or under.	Male, aged 30, lives in greater London, co-habiting, self-employed, C1 SEG, vulnerability: chronic/ serious illness.

Female, aged 58, lives Yorkshire & Humber, Married, stay at home partner, C2 SEG, vulnerability: chronic/serious illness, medically dependant on equipment.

Male, aged 41, lives in Yorkshire and Humber, single, employed full-time, vulnerability: oxygen use.

The focus group sample consisted of a group of air con users and a group of air con considerers.

**Figure 35: Focus group respondent profile**

Air con users group	Air con considerers group
Female, aged 50, lives in greater London, divorced, employed full time, C1 SEG.	Female, aged 47, lives in greater London, single with children, self-employed, B SEG
Female, aged 52, lives in greater London, cohabiting with children, employed full time, B SEG.	Female, aged 48, lives in Wales, married, employed part time, C1 SEG
Male, aged 37, lives in North West, cohabiting with children, employed full time, C2 SEG	Female, aged 62, lives in North West, widowed, semi-retired, C1 SEG
Male, aged 43, lives in South East, single, self-employed, B SEG	Male, aged 42, lives in East of England, co-habiting with children, employed full time, C1 SEG
Male, aged 58, lives in South East, married with children, employed fulltime, B SEG	Male, aged 43, lives in Wales, single, employed part time, C2 SEG
Female, aged 58, lives in North West, co-habiting, not currently employed, C1 SEG	Male, aged 41, lives in Yorkshire & Humber, divorced, with children, employed full time, C1 SEG.
Female, aged 63, lives in North West, single, employed fulltime, C1 SEG	Female, aged 48, lives in greater London, married with children, employed full time, B SEG.
	Male, aged 50, lives in greater London, married with children, employed full time, C2 SEG.

### 8.3 Socio-economic grade (SEG explanation)

Grade	Chief income earners occupation
<b>A</b>	Higher managerial roles, administrative or professional
<b>B</b>	Intermediate managerial roles, administrative or professional
<b>C1</b>	Supervisory or clerical and junior managerial roles, administrative or professional
<b>C2</b>	Skilled manual workers
<b>D</b>	Semi-skilled and unskilled manual workers
<b>E</b>	State pensioners, casual and lowest grade workers, unemployed with state benefits only.

## 8.4 Key documents

[\*Link to quantitative questionnaire\*](#)



1613 ENWL  
CoolDown Questionn.

[\*Link to qualitative discussion guide\*](#)



1613 ENWL  
CoolDown Discussion

[\*Link to qualitative stimulus\*](#)



1613 ENW  
CoolDown Qual stimu