Unlocking consumer-led flexibility among vulnerable customers



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Glossary of key terms

Term	Definition
Consumer-led flexibility	Households changing when or how they use electricity in response to price signals, rewards, automation or technology, to reduce costs and support the energy system.
CIVCs	Consumers in vulnerable circumstances; in this report, this includes people on low incomes, prepayment meter users, people with disabilities, those aged 75+, and those without fundamental digital skills.
Current flex users	Participants already engaging in consumer-led flexibility, such as through time-of-use tariffs, supplier reward schemes, manual shifting or smart automation.
Potential users / potential beneficiaries	Participants not currently engaging in flexibility but who could potentially benefit from future flexible energy products, tariffs or services.
Flex / flexibility	The ability to shift, reduce, increase or automate electricity use at certain times to take advantage of cheaper or cleaner electricity.
Flexible tariff	An energy tariff where the price of electricity varies by time of day or demand conditions, creating incentives to use energy at cheaper times.
Time-of-use tariff	A tariff that charges different electricity prices at different times, such as cheaper overnight or off-peak rates.

Dynamic pricing	Pricing that changes more frequently in response to real-time or near-real-time system conditions, such as demand, supply or grid constraints.
Flexible scheme / reward scheme	A supplier-led offer that rewards customers for changing their electricity use during specific periods, often through points, credits, bill savings or free electricity windows.
Manual shifting / manual load-shifting	Households actively moving energy use, such as laundry, dishwashing or charging devices, into cheaper or rewarded time periods.
Automation	Technology that automatically adjusts or schedules energy use, such as smart appliances running during cheaper periods.
User-governed automation	Automation that keeps the household in control through clear settings, boundaries, overrides and the ability to pause or stop automated actions.
Set-and-forget	A model where households set preferences once and the system then automatically optimises energy use with minimal ongoing effort.
"Safe savings" model	A protected model that caps households' costs at what they would have paid without participating, while still allowing them to benefit from savings when cheaper electricity is available.
No worse off guarantee	A safeguard ensuring that participation in a tariff, scheme or automated service will not leave consumers financially worse off.
Self-rationing	Cutting back on essential energy use, potentially to the detriment of comfort, health or wellbeing, usually due to financial pressure.

Flexibility fatigue	The mental and practical burden caused by repeatedly monitoring prices, remembering time windows and reorganising routines for small or uncertain rewards.
Trusted intermediary	An independent or familiar organisation that can explain, validate or support flexibility offers, such as consumer bodies, charities, housing associations or advice services.
Digital exclusion	Barriers faced by people who lack access, confidence or skills to use digital tools needed for smart-enabled energy services.
Fundamental digital skills	Basic digital capabilities, such as connecting to Wi-Fi, using apps or managing passwords without support.
Smart-enabled flexibility	Flexibility supported by smart meters, connected devices, apps or automated systems.
In-home display / IHD	A device linked to a smart meter that shows household energy use and costs.
Smart appliance	An appliance that can be programmed, remotely controlled or automated to run at certain times.
Low-carbon technology / LCT	Technologies that reduce carbon emissions from household energy use, such as heat pumps, solar panels, batteries and EV chargers.
Home battery / battery storage	A system that stores electricity, often from solar panels or cheaper grid periods, for later use.
Heat pump	A low-carbon heating technology that uses electricity to transfer heat into the home.
Asset-enabled flexibility	Flexibility enabled by technologies such as solar panels, batteries, heat pumps or EVs, rather than only manual behaviour change.

Post-installation support	Guidance and aftercare provided after technologies are installed, helping households understand settings, optimise use and troubleshoot issues.
System optimisation	Adjusting technologies, tariffs and routines so a household energy system works efficiently and cost-effectively.
Interoperability	The ability of different technologies, platforms or systems to work together effectively, such as a heat pump, battery, solar panels and tariff.
Smart prepay	A smart-enabled prepayment system that allows customers to add credit to their account remotely, rather than topping up in-store, and can support more flexible energy account management.
Market-wide Half-Hourly Settlement / MHHS	A reform that will settle electricity use in half-hourly periods, supporting more widespread time-based pricing and flexible tariffs.

Executive summary

As we electrify and decarbonise our energy system, it is becoming increasingly important to engage households in consumer-led energy flexibility. This will keep system and household costs down, accelerate our progress towards clean power goals and improve national energy security.

One key question, explored in this report, is how to effectively and fairly engage consumers in vulnerable circumstances (CIVCs) with new tariff, technology and service offerings that enable flexible consumption. Whether it is disability, cognitive impairment, low income, digital exclusion, insecure housing or restrictive domestic schedules, there are myriad reasons why some consumer groups may be disadvantaged in the more complex and dynamic energy system of the future.

This report summarises our findings from qualitative research with these consumer groups. After a strategic review of existing literature, we conducted 22 in-depth interviews with CIVCs across Great Britain, including low income households, prepayment meter (PPM) users, disabled people, those aged 75+ and those without fundamental digital skills. The sample included a mix of "current users" (CIVCs already engaging in actions such as manual shifting to take advantage of flex offers) and "potential users" (who have the potential to benefit from future flex).

The structure of the interviews broadly sought to surface three perspectives: First, we looked at pathways to greater engagement in the near-term, by exploring barriers experienced by CIVCs, alongside current attitudes, understandings and motivations towards participation. Second, we explored how CIVCs are already benefitting from consumer-led flex, demonstrating that inclusivity in the future energy system is not only a matter of fairness, but is already eminently possible and value-adding. Third, we pivot these questions to the future, exploring what needs to be done to maximise engagement, and in turn benefits, in a 2030 energy system characterised by greater technology penetration and dynamic tariff availability.

Overall, we find a strong case that CIVCs can and do benefit from consumer-led flexibility. Across the research, we found real-world examples of CIVCs already participating through manual load shifting, flexibility schemes, time-of-use tariffs and

more advanced technology-enabled approaches. Many described meaningful financial benefits, while others valued the sense of control, achievement or reassurance that participation provided. There is also clear interest from those who do not currently participate. While barriers and challenges do exist, participants' responses suggest these are not insurmountable and there is strong enthusiasm to take part. With better product design, clearer communications, appropriate safeguards and trusted support, many more CIVCs could access the benefits that consumer-led flexibility can provide.

Crucially, the research also shows that CIVCs do not form a single, uniform group in terms of their ability to engage with flexibility. Households vary substantially in their capability to respond to price signals, shift energy use, adopt enabling technologies and benefit from flexibility offers. These differences reflect financial resources, technical and digital confidence, physical and cognitive capability, household routines, caring responsibilities and housing circumstances. As a result, inclusive flexibility depends not only on whether opportunities exist, but on whether they are designed to accommodate varied, changing and often constrained capabilities and motivations within the energy system of 2030.

Key findings:

1. Some CIVCs are already participating in consumer-led flexibility, often successfully, but largely through personal effort rather than system design. Participation in consumer-led flexibility among CIVCs today involves manually shifting appliance use to take advantage of flexible tariffs and schemes.

For some, flexibility is enabled not only through manual shifting but through more advanced technology bundles, such as solar panels, batteries and heat pumps, which allow households to store, schedule and use electricity more strategically. These more advanced setups do not eliminate barriers and can present their own challenges, including installation disruption, technical complexity and the need for clear post-installation support. With the right guidance and aftercare, these barriers can be reduced.

Participation is typically driven by strong financial motivation, often linked to cost-of-living pressures, alongside a sense of personal satisfaction, control or curiosity.

However, for some participants, particularly those under less acute financial pressure, flexibility also provides a sense of personal satisfaction, control, curiosity and even enjoyment. Some described participation as rewarding in its own right, valuing the opportunity to feel more in control of their energy use, contribute to environmental goals or gain a sense of achievement from successfully securing savings.

Current success relies heavily on individual effort, vigilance and resilience, rather than inclusive product design. Flexibility today often requires people to remember timings or reorganise routines. These are burdens that can fall unevenly on those with health needs, caring responsibilities, limited cognitive bandwidth, low digital confidence or constrained budgets.

Implication: Existing participation demonstrates that CIVCs can successfully engage with and benefit from flexibility. The challenge is not willingness, but ensuring that future schemes and tariffs are designed to be easier and more accessible for a wider range of households.

2. The principle of flexibility is viewed overwhelmingly positively by potential users, particularly where it promises savings. However, interest in engaging can stall when it feels complex, uncertain or incompatible with everyday life. As with the general population, CIVC's awareness was often partial and shaped by outdated assumptions about how electricity tariffs work (e.g. Economy 7), second-hand information and unclear messaging around how specific tariffs and offers actually work. As a result, the idea that cheaper electricity exists was widespread, but potential users did not understand when or how it applied to them.

Even when offers were noticed, participation often stalled before further exploration. Flexibility was a low priority amid competing demands, especially where savings were unclear, windows were perceived to be narrow or irregular, or the effort required felt disproportionate.

"I need it cut and dry… is it worth the effort for 20 quid?" (Potential user, aged 75+, low income)

Implication: Scaling flexibility is not simply about increasing the number of offers available. It also requires clear communications, trusted routes into participation, and propositions that align with how people manage time, risk and attention in everyday life.

Case example: Proactive planning



Liz is a retired participant who actively plans her day around flexibility events, moving household tasks and charging devices into free electricity periods. While the financial rewards are modest, she enjoys the sense of achievement that comes from saving money and reducing waste. Her experience shows how flexibility can appeal not only through financial benefits, but also through environmental values, personal satisfaction and a sense of control.

3. Effort, risk and loss of control are decisive in how CIVCs judge flexibility opportunities. Across current options, participants weighed flexibility against three questions: *Will it genuinely save me money? Will it disrupt my routine? Can I stay in control if something goes wrong?*

Manual shifting is often feasible, particularly among retired participants, but is bounded by non-negotiables such as care needs, cooking times, noise concerns and appliance limitations. Time-of-use tariffs also lose appeal when windows are short or unpredictable. This suggests that, where flexibility relies heavily on household effort and attention, some CIVCs may find it difficult to sustain participation over time.

Automation is welcome in theory because it could reduce effort, but participants prefer technologies and automated appliances that stay under their control, with

simple ways to step in or switch things off, rather than devices that run fully by themselves. This is because for CIVCs, loss of control over automation can raise concerns about essential heating, unattended appliances, technology failure or unexpected costs.

Implication: Offers that blend automation with predictability and opt-out rights are far more likely to be accepted.

Case example: Everyday constraints



Jean participates in a reward scheme but finds it difficult to avoid electricity use during peak periods because of mobility issues and established daily routines. Despite these constraints, she remains interested in flexibility and sees value in the opportunity to save money. Her experience highlights how CIVC households are willing to participate when offers are designed to fit around their circumstances.

4. Clear savings, predictable structures and 'no worse off' protection are the strongest enablers of participation today. What will most clearly enable engagement is clarity. Participants want unambiguous information on when electricity is cheaper and how much they would save, framed in pounds rather than technical units.

"I'd rather get the saving directly on my bill. If electricity is cheaper at certain times, just say that clearly and apply the discount, rather than making me earn points and then redeem them later. It feels much more long-winded than it needs to be."
(Current user, disabled)

Predictable timings, or flexibility that can be adapted to people's own routines, are likely to reduce mental effort and make participation easier to integrate into daily

life. Furthermore, low income participants and PPM users are particularly sensitive to risk. For these groups, explicit "no worse off" safeguards and visible evidence of savings are essential to building confidence and sustaining participation. Without guaranteed savings, acute financial pressure risks pushing CIVCs into harmful self-rationing to hit flexible targets.

Implication: "No worse off" safeguards and transparent savings feedback are not just consumer protections; for CIVCs they are preconditions for engagement.

5. Trustworthy communication and credible messengers have the potential to boost engagement among CIVCs. Participants generally expect flexibility offers to be communicated proactively and prominently. Where information feels buried or overly promotional, it is more likely to be ignored.

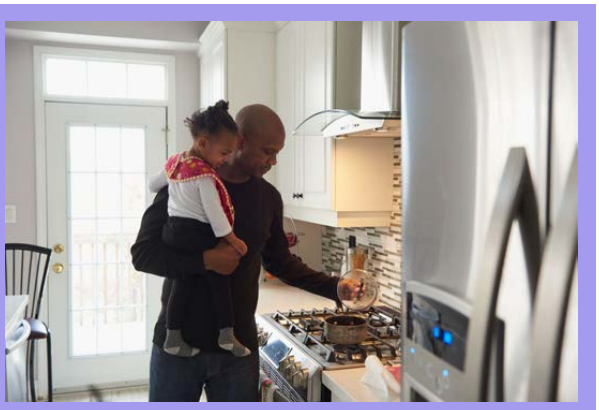
Suppliers are typically seen as the legitimate source of flexibility offers, and Ofgem's wider evidence suggests overall consumer satisfaction with suppliers has been improving (Ofgem, 2025). However, among some participants in this study, particularly those with prior billing issues or financial concerns, independent validation from regulators, consumer bodies or trusted intermediaries will increase confidence in the offer.

"It'd have to be someone independent… that I know is not aligned with one utility provider." (Potential user, low income, disability, without fundamental digital skills)

Across CIVC groups, participants prefer simple, factual and financially framed communication. They want information delivered in formats they can revisit themselves or go through with someone they trust, such as a family member, carer or support worker (for example, letters or emails rather than phone offers). Participants also favour optional reminders rather than constant prompts, helping them stay informed without feeling pressured or overwhelmed. Risk-reduction framing (e.g. explicit "no worse off" safeguards), trial periods and explicit opt-out rights could also lower hesitation.

Implication: Inclusive participation depends as much on who communicates and how, as on the technical design of flexibility propositions.

Case example: Simplicity matters



Paul takes part in flexibility events and regularly uses his supplier's app to manage his energy use. While he values the opportunity to save money, he finds reward structures and event timings difficult to navigate. His experience highlights the importance of simple communications, predictable schedules and transparent rewards in supporting participation.

6. By 2030, inclusive flexibility will depend on simplification, embedded protection and automation with clear user oversight, with this outlook being conditional on likely market developments, such as greater tariff availability and clearer promotional benefits. Looking ahead, participants' perspectives suggest flexibility will only work at scale for CIVC groups, if it reduces mental effort, protects against financial risk and preserves comfort, dignity and autonomy.

More advanced technologies, especially batteries paired with solar, are seen by some participants as a promising route to safer savings, because they reduce the need for constant manual shifting and allow households to use low-cost or self-generated electricity more flexibly. These benefits will depend heavily on affordability, clear setup and ongoing support (e.g. post-installation guidance on system settings and long-term optimisation).

Of course, not all CIVCs are expected to have low carbon technology or advanced tech by 2030 and it is not guaranteed that future tariff designs will be well suited to them, reinforcing the need for diverse, non-asset-based pathways.

Automation can support inclusion too, and needs to feel user-governed rather than system-governed, with clear overrides, the ability to ring-fence essential needs like heating and hot water and visible accountability. Across vulnerability types, the most consistently attractive future model is a "safe savings" approach. In this kind of

model, households would be protected from paying more than they normally would, but could still receive automatic savings when cheaper electricity is available. This appeals to CIVCs because it reduces the need to constantly monitor prices or change routines, while also protecting people from bill increases if they cannot participate consistently.

Support pathways will need to be plural rather than one-size-fits-all: some consumers value independence, others benefit from trusted intermediaries such as housing associations or advice services.

Digital exclusion remains a structural risk. Heavy reliance on apps or smart home ecosystems could unintentionally exclude older consumers and those with lower digital confidence and skills unless parallel non-digital routes are maintained.

Implication: Delivering the inclusive, consumer-focused flexibility envisaged by government and regulator strategies will require flexibility to be simple, trustworthy, protected and realistically compatible with lifestyle needs.

Case example: Low-effort participation

Richard uses a heat pump and a tariff with cheaper overnight electricity, allowing him to heat water and run appliances during lower-cost periods. Rather than actively responding to events, flexibility has become part of his normal household routine. His experience demonstrates how suitable technologies and tariffs can make participation straightforward and low effort.



In conclusion, looking ahead to 2030, there is a clear opportunity to increase CIVC participation in consumer-led flexibility. Participants' responses suggest there is no

inherent reason why CIVCs cannot participate in and benefit from consumer-led flexibility at similar levels to other consumers, provided products, services and support are designed with their circumstances in mind. The benefits can be appealing, and many of the foundations for engagement are already present in principle. To realise this opportunity, government, regulators and industry should focus on making flexibility simpler, safer and easier to engage with. This includes clearer communications, robust financial protections, effective support pathways, preserved autonomy and flexible products that fit realistically around people's lives.

While simplifying tariffs and ensuring user-governed automation are universal enablers that have the potential to benefit all consumers, **this research highlights that several interventions are exclusively required to protect and enable CIVCs. For these groups, "no worse off" financial safeguards, parallel non-digital pathways and dedicated support from trusted intermediaries are not just preferences, but structural preconditions for safe engagement.**

These foundations are translated into six potential solutions to consider in the report's conclusion. While all consumers could benefit from these solutions to some extent, each addresses barriers that can be particularly acute for CIVCs. These include financial vulnerability (Solution 1), inflexible daily routines or needs (Solution 2), health, safety, comfort and dignity considerations (Solution 3), digital confidence, access and financial vulnerability (Solution 4 and 5), and the need for trusted advice and support (Solution 6). Figure 1 below summarises these enablers for ensuring the benefits of a smart energy system can be felt by all.

Figure 1: Foundations for an inclusive future energy system



1. Introduction

1.1 Policy context

Our lives are being increasingly electrified, in particular through the adoption of electric vehicles. In tandem, electricity generation is shifting increasingly to intermittent renewable sources. In this context, managing when electricity is used becomes ever more important to achieve system-wide efficiencies, and to reduce costs to consumers. This transition to a smart, flexible energy system is central to the UK's Clean Power 2030 Mission; reducing household bills; improving energy security; and achieving clean power goals by Net Zero 2050.

System-level optimisation does not require every household to participate in energy flexibility, but it is likely to depend on large numbers of households participating at least to some degree. This means an inclusive approach is essential if flexibility is to scale fairly and effectively across the population (Moss, Briggs & Edwards, 2025). Moreover, the need to deliver a just transition and provide equitable access to consumer benefits means government and regulator strategies increasingly emphasise the need for flexibility markets to be inclusive. The Department for Energy Security and Net Zero's (DESNZ) Clean Flexibility Roadmap (2025) sets out a pathway to scale consumer-led flexibility alongside grid-scale solutions, highlighting the importance of enabling participation across diverse household types (DESNZ, Ofgem and NESO, 2025). The Smart Secure Electricity Systems (SSES) programme will build on the Clean Flexibility Roadmap to deliver a secure, consumer-led flex system by embedding inclusivity, consumer protection and accessibility into market design (DESNZ, 2025).

At the same time, energy affordability and vulnerability remain high-profile concerns. The Government's Warm Homes Plan reinforces commitments to reduce fuel poverty, upgrade housing stock, and ensure that the benefits of the transition to low-carbon heating and power are equitably distributed (DESNZ, 2026). Likewise, as flexibility becomes embedded in market design, there is a need to ensure that cost-saving opportunities do not accrue only to households with higher incomes, strong digital skills, or access to expensive technologies such as smart batteries.

Ofgem has similarly strengthened its focus on consumer vulnerability, including expectations on suppliers to identify and support CIVCs (Ofgem, 2025). This includes work on improving data sharing, fairness in market design, and ensuring that innovation does not exacerbate vulnerabilities or disadvantages. Ofgem's broader reform agenda, including Market-wide Half-Hourly Settlement (MHHS) (MHHS Programme, 2026), will make time-of-use pricing and smart tariffs more widespread. This further increases the importance of understanding how different groups experience flexibility, explored in this report.

Industry initiatives also provide important context. Energy UK's Vulnerability Commitment, including its latest Good Practice Guide, outlines how signatory suppliers are embedding vulnerability considerations into service design and delivery (Energy UK, 2025). While not a statutory instrument, the Commitment signals a shared industry direction of travel. Of particular relevance is the guidance on supporting access to low-carbon technologies and smart solutions for vulnerable customers, including clearer communication, proactive identification of support needs, and tailored assistance pathways. These commitments underscore the importance of ensuring that flexible energy products are designed and communicated in ways that are accessible, trustworthy and practical for CIVCs. Delivering this will require action across the wider flexibility ecosystem, including government, regulators, suppliers, technology providers, installers, housing providers, consumer bodies and community organisations, rather than relying on supplier-led engagement alone.

This report also builds directly on the Government-funded Inclusive Smart Solutions project, delivered by Energy Systems Catapult for DESNZ (Energy Systems Catapult, 2023). The ISS project identified important structural and behavioural barriers affecting CIVCs' access to future smart energy products and services, and developed principles for inclusive product design. This research builds on those foundations by exploring the lived experiences of flexibility among CIVCs today, examining how emerging opportunities may work in practice for different groups, and identifying how market, policy and communication design can support meaningful participation by 2030. Recent trial evidence from NESO's CrowdFlex summer trial also highlights the importance of looking beyond average consumer engagement, showing that households with vulnerability characteristics or barriers to

demand shifting can participate in flexibility, but may experience different levels of effort, risk and benefit depending on their circumstances (NESO, 2024).

Additionally, this study complements our previous research on consumer engagement with demand flexibility, which found that consumers more broadly face barriers around awareness, understanding, trust, convenience, control and confidence in the value of participation (The Behavioural Insights Team, 2025). The focus here is narrower and more targeted: to explore how these barriers are experienced by CIVCs, where financial, digital, health, housing or capability constraints may shape both the ability to participate and the safeguards needed to make participation safe and worthwhile.

1.2 Research aims and objectives

Against this backdrop, SEGB commissioned the Behavioural Insights Team (BIT) to conduct this research to contribute timely, qualitative evidence on how flexibility is currently experienced by CIVCs and how they can engage with and benefit from a smart-enabled, flexible energy system, both now and looking ahead to 2030. The project sought to move beyond well-documented barriers to identify realistic use cases, practical opportunities and the support mechanisms required to ensure no consumer is left behind.

To achieve this, the research focused on three key areas:

1. Illustrate current engagement: real-world examples of how CIVCs (e.g. low income, private renters) are currently benefitting from flexible energy use
2. Explore routes to participation now: explore barriers to engagement in 2026, current attitudes, understanding, motivations and potential support
3. Vision the 2030 landscape: explore how future policy, commercial shifts (like MHHS), and emerging technologies might create new opportunities for inclusion, and what more needs to be done.

Cutting across these three areas, the report outlines six potential solutions to consider, that broadly sit in two areas:

1. Viable solutions: cost-effective and reasonable options to overcome limitations, without exacerbating risks like self-rationing.

2. Refined communications: ways marketing and communications can be tailored to increase trust and uptake among vulnerable audiences.

1.3 Research methods

We used a qualitative approach to capture the voices that form the human-centred core of this report. Our first step was to conduct a rapid review of existing literature to map emerging technologies and policy developments. We then conducted in-depth interviews (online, up to an hour) with 22 CIVCs living in households with a low income, PPM, disabilities, those aged 75+ or without fundamental digital skills. We interviewed "current users", already engaging in flexibility, and "potential users" who could benefit from flexibility in the future.

This qualitative approach provides rich, detailed insights into participants' lived experiences. Direct quotations are used throughout the report labelled with basic details about each participant to preserve their anonymity. The findings are illustrative rather than statistically representative of the wider population and intentionally avoid numerical descriptions. Furthermore, as discussing future scenarios can be subject to hypothetical bias, we used concrete examples and behavioural prompts to ground these discussions in participants' current realities. See the Technical Appendix for more detail on the methods.

2. Current pathways to flexibility

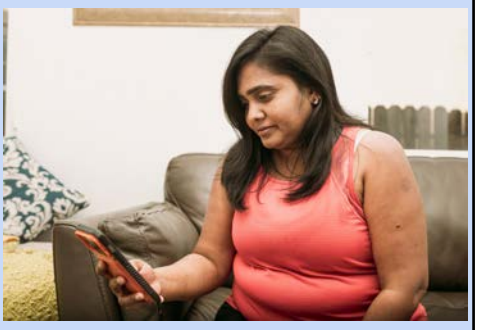
Chapter summary

CIVCs are generally aware that flexibility exists, but they need clearer, more personally relevant information to understand how it works, whether it applies to them, and whether it's worth the effort. The findings highlight several common misconceptions:

- savings or rewards apply automatically, rather than depending on specific schemes, opt-ins or eligibility rules;
- electricity is automatically cheaper at night or outside peak hours, regardless of your current tariff;
- flexibility means using less energy overall, rather than changing when or how electricity is used;
- people often do not know when peak and off-peak periods apply, or assume these periods are intuitive or easy to identify;

Overall, attitudes are interested yet cautious rather than resistant, suggesting CIVCs are more likely to engage when offers are simple to understand, fit easily into daily routines and allow them to retain a sense of control.

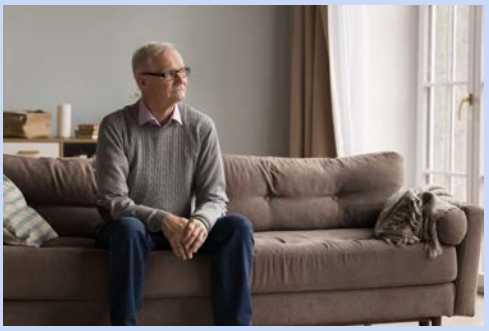
1. Clear explanations are needed to turn awareness into understanding



Vidhyaa is a full-time carer for her disabled husband and carefully manages energy use to keep bills down. She is aware of flexible energy concepts from TV, but her understanding is unclear. She mistakenly believes it is cheaper to use electricity between 4-7pm, when this is in fact a peak period typically associated with higher demand. In addition, because she is on a standard tariff, her unit price does not change by time of day.

"I've heard something about [...] between 4 and 7 in the afternoon... it could have been that Martin Lewis on TV."

2. Offers need to feel personally relevant and worth acting on



David is an older man who lives alone in a maisonette and spends much of his time at the library. His energy use is relatively low, so he pays by quarterly direct debit and takes a hands-off approach. For him, consumer-led flexibility would need to feel clearly relevant and offer benefits that justify any additional effort or attention.

" I'm aware of it… Usually it's on websites and in the newspapers, where electricity and gas suppliers encourage you to use smart meters. [...] If it was more than a one-person house, it would be a different story. But I'm here by myself, so it's probably not that relevant."

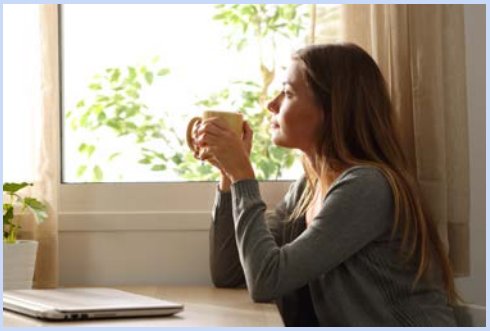
3. Flexibility needs to fit around daily life to feel viable



Rabia lives alone in a flat and works irregular shift patterns in the care industry, frequently working evenings and every other weekend. Because her working hours are non-traditional, fixed weekend reward schemes fail to accommodate her lifestyle, meaning the offers are of limited value to her.

"I know one of my colleagues... on a Sunday she gets like two hours free electricity... that wouldn't work for me because I work one weekend and off the next weekend... it doesn't really apply to me due to the nature of my job."

4. Offers need to preserve control and reassure on safety



Hannah lives alone, suffers from some mental health challenges, and manages her daily energy use with a PPM. While she is interested in the idea of cheaper electricity windows, she prioritises feeling safe and maintaining manual control over her home above all else. She also rejects the idea of automated heating or hot water, fearing that giving up control to a system might leave her uncomfortable or without hot water exactly when she needs it.

"If I wanted to use the hot water at a certain time and it doesn't fit in with it and then I have to wait too long, then that's not ideal... I just prefer it to be more in control of it really [...] and knowing that you have got um, well, nothing goes wrong basically."

2.1 Awareness, understanding and the role of trusted gateways

Awareness is widespread but understanding is limited

Awareness that electricity can be cheaper at certain times of day is widespread but understanding of how current offers work is limited. Potential users (CIVCs interviewed for this research, not yet engaging in consumer-led flexibility), expressed a consistent misperception that simply shifting electricity use to off-peak hours triggers cheaper rates, without having enrolled in a specific offer, and older participants sometimes linked this assumption to earlier systems such as Economy 7 tariffs or storage heaters. This points to a need for increased consumer education about how time-based offers actually operate.

Uncertainty also exists about specific offer details. Examples include what the "free" period covers, whether users need to opt in each time and how savings appear on bills. CIVCs are unclear whether flexibility will meaningfully benefit them. These uncertainties are particularly salient for lower-income participants who cannot absorb the costs of getting it wrong.

Awareness often develops through fragmented prompts, but suppliers are the main gateway into participation

Awareness of flexibility develops gradually through various channels, not a single clear explanation. Participants typically built their understanding over time from a combination of supplier communications, word-of-mouth recommendations, media and experiences of rising energy costs. This suggests awareness is often partial initially and becomes more concrete when a specific opportunity is presented directly.

Energy suppliers are the main gateway to participation for current users (CIVCs interviewed for this research who were engaging in consumer-led flexibility). Participants described first encountering flexibility offers through supplier apps, emails, texts, or other direct communications, often following smart meter installation. These channels make flexibility feel more immediate and actionable by turning a general idea into a specific invitation or offer. In this sense, suppliers not only provide the product itself but also shape the point of entry into flexibility. This relationship reinforces Ofgem's 2025 Consumer Vulnerability Strategy, which suggests suppliers proactively identify needs and treat consumers fairly, to overcome the ingrained mistrust vulnerable households often feel towards new energy options (Energy Systems Catapult, 2023).

Recommendations from friends, family or neighbours are also important in prompting CIVCs to look into or adopt flexibility schemes. For example a participant signed up to a flexible tariff after hearing about it through a neighbour,

"I told her [neighbour] like we're really struggling with this energy bills and everything and she told me that we had this energy supplier and they had like tariffs rates and things like that" (Current user, PPM)

As noted, in broader research, vulnerable consumers often exhibit low trust in energy suppliers (Energy Systems Catapult, 2023); therefore, leveraging community connectivity and recommendations may help overcome scepticism and build the confidence needed to participate.

However, supplier communications are only one part of the engagement pathway. Participants also relied on consumer advice sources, media, friends, family and community networks to interpret whether offers were credible and relevant to them.

Awareness is mediated through trusted intermediaries. Participants described hearing about flexibility through consumer media and financial advice sources such as Martin Lewis, MoneySavingExpert and price comparison websites, as well as through family members, friends and colleagues. Others come across it through community courses, online news, televised adverts, and social media channels such as Facebook and X. While these routes are effective in raising awareness and encouraging people to explore flexibility further, they are often only the first step in the customer journey and may not provide enough information for people to understand how flexibility works in practice or whether it is right for them.

"I heard it on a Martin Lewis programme… I took that on board, but I never proved whether it's right or wrong." (Potential user, low income, PPM)

These trusted routes play different roles in supporting engagement with flexibility. Consumer experts and advice platforms can act as trusted messengers by making flexibility visible and credible. Charities and community organisations can help consumers interpret whether offers are suitable for their circumstances, particularly where health, disability, age, caring responsibilities or financial hardship shape energy needs. Other third parties, such as price comparison sites, housing providers, installers or local energy advice services, may play a more practical role in helping consumers compare tariffs, set up technologies or troubleshoot issues. Distinguishing between these roles is important because awareness, reassurance and practical support may need to come from different parts of the wider flexibility ecosystem.

Comparison and advice websites add value when used for advice, researching tariff options and sense-checking quotes. However participants' feedback suggests these services are not always easy to use. Even when comparing static tariffs, participants struggle to input their current energy usage, meaning the comparisons aren't personalised.

"How much electric do you use in an hour? I don't know. So, I can't even go on a comparison site if I wanted to change it." (Potential user, low income, PPM)

Implications: The introduction of MHHS should lead to more time-of-use tariffs over time. As this happens, the gap between basic knowledge (knowing cheaper times exist) and knowledge that can be meaningfully utilised (understanding how to access and benefit from time-of-use tariffs) may grow. There is a risk that price signals are interpreted through older ways of thinking about electricity tariffs, such as Economy 7, which may not map clearly onto newer tariff structures. Policymakers, regulators, suppliers, advice bodies and consumer-facing intermediaries should therefore anticipate the risk of growing confusion within a more complex tariff landscape.

Awareness alone is generally insufficient to prompt action

What appears to move people from awareness into action is not awareness alone, but the combination of a clear prompt and a low-risk proposition. Some potential flex users who describe noticing adverts, hearing about schemes, or briefly checking apps stopped short of signing up. Even when energy costs are a major concern, flexibility is still perceived as an abstract and effortful way to save money

"I'm aware of it. I haven't investigated it because I can't quite see why I would. It's just something else to worry about and fuss over." (Potential user, aged 75+, low income, without fundamental digital skills)

This hesitation sits at odds with current users' keen financial motivations (see Section 2.2). The key difference is that while financially-motivated current users understand exactly how to flex and find the effort worthwhile, potential users remain uncertain. The challenge is therefore closing the gap between financial motivation and practical understanding, so consumers can easily recognise when participation is safe and worthwhile.

What moves people across this gap is the combination of a clear prompt and a low-risk proposition. Marcoms also provide people with compelling benefits in order to overcome this hesitation. In some cases, installing appliances with high electricity demands, such as heat pumps, acts as a catalyst by making energy costs and tariff structures newly relevant. Alternatively, participation is triggered not by a long

process of deliberate learning, but by a moment in which a flex offer is made visible, timely, and safe enough to test.

This need for low-risk testing explains why some participants favour ad hoc flexible reward schemes which can be more appealing to try initially than enrolling in structural flexible tariffs. These schemes provide a clearer trigger for action because they are directly promoted by suppliers, framed as opt-in opportunities and feel relatively low-risk.

However, this creates an important tension. While flexible schemes are easier to trial, participants often find their short or fixed windows impractical, leaving them unsure whether the rewards are worth the effort. Predictable, ongoing flexible tariffs may feel more practical in the longer term, but only if they are simple, clearly communicated and visibly beneficial.

Implications: A key challenge for the Clean Flexibility Roadmap's goal of scaling consumer-led flexibility by 2030 is making offers compelling enough to overcome consumer inertia, while also remaining viable and investable for suppliers and other market actors. Beyond expanding technical availability, this requires reducing hassle and uncertainty, increasing flexibility's salience, credibility and personal relevance, and ensuring offers work commercially for those delivering them.

Flexibility is not yet universally compelling

While valued by some, flexibility is not currently a universally compelling benefit for CIVCs participating in this research. The opportunity appeals most strongly to a subset of organised consumers, or those under acute financial pressure. For low income households, even small savings are highly salient because they make a meaningful difference to tight budgets. However, this makes flexibility a higher-stakes proposition: it is highly valuable, but carries greater risk if savings are unclear, difficult to realise or come with the possibility of bill increases.

For other consumers, flexibility lacks the clarity, ease or value needed. Where flexibility depends on tracking events, interpreting data, or repeatedly adjusting routines, it feels too demanding. For these consumers, flexibility is only likely to

become compelling when savings are easy to understand, clearly evidenced, and delivered with minimal active effort from households.

2.2 Attitudes and motivations towards flexibility offers

Financial motivations drive engagement among current users

For low income participants already engaging in consumer-led flexibility, the primary motivation is shielding the household budget. Flexibility is not viewed as a choice for optimisation, but a necessary strategy to cope with high energy costs in order to afford essentials. One participant, who was struggling financially, explicitly linked their flexibility efforts to the need to save money for groceries and other items for their children. For a participant who could not work due to a disability, the motivation was similarly acute and compounded by rising energy bills. As this participant noted,

"Well, for a start off, the electrics and the energy bills are just going up and up and up. And I just thought, well, if I can save some, you know, more in my pocket than theirs." (Current user, disability, low income)

Among those living more comfortably, financial motivations are still prominent, reflecting frugality rather than necessity. However, other motivations are equally or secondarily influential. For participants with higher digital capability consumer-led flexibility offers a **sense of enjoyment and control**. For example, an older participant described the schemes as fun, and is driven by curiosity and a desire to be frugal rather than acute financial distress. These users describe flexibility almost as a hobby or a game (implying some potential for gamification in service offerings). The ability to beat the system and win free money provides a sense of achievement that reinforces the behaviour.

"It is free money. It's like finding a couple of coins in the push along trolleys outside Sainsbury's, you know." (Current user, disability, low income)

For a former PPM user, the act of manually shifting energy provided a sense of agency and control over their bills, even if they suspected their overall costs had

risen. Successfully hitting a target or getting rewarded for free reinforced trust in the supplier and validated their efforts.

Some current users were motivated by doing their bit for the planet and engaged in flexibility because of its environmental benefits.

"I'm very aware of [the] environment and savings and energy and this planet. [...] "I think we should all have a duty to do what we can to help this planet." (Current user, disability, low income)

Several non-negotiables constrain CIVC's ability to participate

While the concept of consumer-led flexibility is welcomed in theory, in practice barriers to participating include health requirements, safety fears and the physical realities of CIVCs' homes.

Health and care needs restrict flexibility. Households relying on continuous medical equipment or higher heating temperatures find their electricity use is largely inflexible. Caring responsibilities also limit participation; for example, one full-time carer noted that unpredictable comfort needs or sudden requirements to wash bedding mean she cannot delay heating or laundry for financial incentives. Similarly, rigid dietary routines and specific meal times tied to health conditions mean cooking cannot simply be shifted to suit cheaper periods. As one participant explained, ensuring essential care is always prioritised over tariff schedules:

"Her condition is far more important than how much it costs." (Potential user, aged 75+, low income)

To open up options for these consumers, the conclusion section offers a range of potential solutions, including embedding structural financial protections, and the need for flexible tariffs that safely accommodate rigid daily routines.

Fear of unattended appliances creates a safety barrier. When considering automation, deep-seated safety fears prevent users from running appliances unattended. Participants consistently reject the idea of running washing machines and tumble dryers overnight or while out of the house due to the risk of fire, flooding or malfunction. This safety concern acts as a barrier to fully automated flexible

schemes and tariffs that include white goods, as participants strongly prefer to maintain manual oversight of their appliances to ensure peace of mind.

Structural risks also exist linked to housing. Housing tenure and property type create structural barriers to energy flexibility. Renters often cannot make fabric upgrades or install enabling technologies, like batteries or EV chargers. Furthermore, poorly insulated homes, might not retain heat long enough to meaningfully flex electric heating. Property type also imposes physical limits. For example, some participants living in flats or maisonettes described difficulties installing home EV chargers due to shared parking arrangements, limited access to suitable charging locations or restrictions associated with multi-occupancy housing. Finally, noise considerations act as a strong constraint in shared buildings or flats, with participants avoiding late-night manual shifting to prevent disturbing neighbours.

Implications: The Government's Smart Systems and Flexibility Plan's fairness principle says that consumers who cannot or do not participate should not be unduly penalised. However this becomes harder to deliver if tariffs are too complex to understand. The findings demonstrate that those least able to absorb errors or bill volatility may opt out of potentially beneficial offers, while others risk engaging without fully understanding the rules. This implies a value in safeguards, simpler tariff structures, and clear, accessible communication that makes participation and risk easy to understand, rather than relying on households to interpret increasingly dynamic pricing correctly.

2.3 Reactions to flex opportunities available now

Reactions to available opportunities vary by the type of offer

Participants' choices regarding specific forms of flexibility, such as adopting a flexible tariff, participating in flexible schemes, or relying on automation, are underpinned by preferences related to trust in energy suppliers, control and how well different parts of more advanced household energy systems interact. Across the three opportunity types discussed in interviews - cheaper-time electricity deals, manual shifting and automation (explained in more detail below), participants tended to weigh up three practical questions:

- *Will this genuinely save me money?*
- *Will it disrupt my routine or increase stress?*
- *Can I stay in control if something goes wrong?*

Where these questions are answered positively, engaging in flexibility is often viewed positively. Where they are not, engagement stalls quickly, even among participants who like the idea in principle.

Flexible schemes and tariffs are appealing when simple and credible, but short or rigid windows reduce perceived value

Flex offers, such as flexible tariffs or schemes, are widely understood as a straightforward way to save money. They are often the most intuitively appealing option, particularly for those whose routines can flex with little effort. When comparing approaches, participants prefer the positive, opt-in framing of "power up" options over restrictive "power down" flexible schemes. One participant described this as being given an opportunity rather than a behavioural mandate. For some participants, the concept of flex offers aligns with established habits from earlier life, such as Economy 7-style thinking, making it feel immediately workable:

"I mean, I think it's more difficult to be working[...] but say when you're retired, it's no great shakes at all really to do that." (Potential user, disability)

However, enthusiasm falls when offers are perceived as too narrow, too rigid or to offer savings that are too small to justify the hassle. Short promotional windows, e.g. of two hours, can be viewed as disruptive and restrictive, requiring people to reorganise their day for limited benefit. For lower-income participants in particular, small or uncertain savings create a poor risk-reward balance. Clear, guaranteed reductions are essential; without certainty that electricity will be cheaper at the stated time, offers do not feel worth acting on.

"Two hours is a bit narrow, you know. Who decides these two hours? What's so special about two hours? … If they've got surplus energy, be a bit more generous in your hours and give a compelling rate and then you'll change behavior." *(Potential user, aged 75+, retired*)

Further limiting factors are infrastructure and eligibility. Some participants express willingness to engage with flexibility offers but do not have access to the basic tools needed to do so, such as a smart meter, smart meter display or suitable tariff. In some cases, participants were unable to switch to a better tariff because they were in debt to their supplier, were using a standard prepayment arrangement, or found tariff comparison and switching processes too difficult to navigate. For others, remaining myths led them to distrust smart meters, including fears about overcharging or loss of control, meaning they avoided the technology needed to access some flexibility offers.

For participants with solar and battery systems, flexibility is appealing because it maximises the value of self-generated electricity by storing and using it later rather than exporting it at low returns. This creates a stronger sense of control and makes flexibility feel more worthwhile, driven by practical and financial benefits such as reducing waste, improving system value, and lowering reliance on expensive grid electricity. In this context, flexibility is often less about responding to tariff windows and more about using energy already generated or stored, with activities timed around full batteries or strong solar output rather than supplier prompts. This makes flexibility feel more intuitive and less burdensome than reacting to short-lived price events. However, it does not necessarily increase participation in conventional time-based schemes: one participant with a battery and a cheaper time-of-use tariff still makes little use of manual shifting, as the system's background benefits already feel sufficient and daily routines take priority.

For these more advanced setups, flexibility is less about deciding whether to join a tariff or manually shift appliance use, and more about understanding how the wider home energy system works. Participants had to make decisions about when to use stored electricity, when to export it, whether to heat water manually, whether a battery would improve the economics of solar generation and how heat pump operation fits with tariff timing and comfort needs. In this sense, advanced technologies can reduce the need for day-to-day manual shifting, but they can also introduce a new kind of complexity that households need support to manage.

Implications: As MHHS and the Clean Flexibility Roadmap expand dynamic pricing and short-duration opportunities, these findings suggest that increasing the number

of price windows will not automatically make flexibility usable or attractive for CIVC groups. Narrow, unpredictable or low-value offers may create extra mental effort and risk, especially for low income households. Policies will be more successful if flexible products reduce decision-making effort and make benefits clear, rather than simply offering more options.

Flexibility was widely interpreted through a manual lens, with participants imagining needing to constantly monitor prices, wait for specific slots or repeatedly adjust routines. As a result, highly dynamic pricing structures were often perceived as effortful and difficult to engage with. While simpler forms of manual shifting were often considered achievable, participants were less confident about responding to frequently changing prices or complex tariff structures. Policymakers should therefore recognise that more dynamic forms of flexibility are likely to become easier to scale when supported by automation, reducing the need for households to make continual decisions.

Manual shifting feels more achievable than it first appears, but is bounded by household norms and practical constraints

Manually shifting the use of appliances to cheaper times through a flexible scheme is perceived conceptually as the simplest option. This is because it relies on existing appliances and familiar behaviours, such as choosing when to run the dishwasher, rather than new systems or devices. Participants who are retired, at home during the day or already use basic timers consider manual shifting especially workable, and often describe clear target appliances such as tumble dryers and dishwashers.

That said, a consistent view is that in practice, manual shifting is limited by what can realistically be moved within daily routines. Beyond the baseline health and housing constraints discussed previously, core household behaviours are often entrenched, such as cooking at family meal times.

"She's not going to cook that food at a time when it suits the electrical supplier."
(Potential user, aged 75+, low income)

Others describe domestic division of labour constraints, where particular appliances or routines are effectively "owned" by another household member, making change socially difficult. For example, some participants note that they would not interfere with a partner's established laundry or cooking schedule, even if a cheaper window is available. In these cases, flexibility is not purely an individual decision, but is embedded within negotiated household norms.

Practical barriers also reduce agency even when motivation exists. Some participants lack appliance features such as timers, or lack confidence in programming appliances. In some cases, manual shifting is simply not feasible due to household circumstances, such as a broken washing machine.

Implications: The Government's Smart Systems and Flexibility Plan and the Clean Flexibility Roadmap both assume that voluntary load shifting will play an important role in delivering system value. However, participants' experiences show clear limits to how much some households can manually shift their energy use, particularly where care needs, shared living arrangements, or fixed routines are involved. This makes the commitment that consumers should not be unduly penalised for not participating especially important. As time-varying pricing becomes more widespread, tariff design and consumer protections will need to ensure that households with less flexible demand are not unintentionally disadvantaged, not because they are unwilling to engage, but because their circumstances make consistent shifting difficult.

Flexible tariffs can feel more practical and trustworthy than flexible schemes

Participants often view ongoing flexible tariffs as more practical and usable than ad hoc flexible schemes. Tariffs offer consistent savings windows that are easier to build into everyday routines, whereas short-term schemes can feel narrow, unpredictable and effortful, particularly if they require repeated opt-ins or short-notice changes.

Participants also respond more positively to direct bill savings than to points-based or gamified structures. Straightforward savings feel easier to understand and trust, while

some flexible schemes feel overly complex or gimmicky when rewards are small or hard to interpret.

There is, however, an important exception: ad hoc flexible schemes become much more attractive when they offer genuinely free electricity rather than minor discounts. This suggests that flex offers are most appealing when they combine the predictability of a fixed tariff with savings that feel immediate, clear and worthwhile.

Automation is valued for reducing effort, but is contingent on user control

In theory, automation, where appliances run themselves during cheaper periods, is perceived as the most convenient option. It removes the need to remember time windows or be physically present, making a "set and forget" approach especially appealing to participants with variable schedules where manual shifting is difficult.

"If the devices… are smart enough to be able to maximise the opportunity… I'd be very happy with that." (Potential user, aged 75+)

However, CIVC participants strongly prefer user-governed flexibility over fully autonomous systems. As established, fears around unattended appliances and the loss of essential heating mean enthusiasm for automation is highly conditional. While technologically confident users may adopt a hybrid approach by automating selectively (e.g. heat pump scheduling), CIVCs require clear boundaries to feel comfortable. They are open to automation only if it includes easy override options, restricts night-time operation, and preserves their ultimate control over essential services. This barrier is addressed in Solution 3 in the conclusion section of this report, which outlines that automation will only be widely adopted if it is user-governed and preserves explicit boundaries and overrides.

Cost and accessibility also shape reactions. Some potential users view long-term independence through owning assets such as solar panels and home batteries as much simpler than navigating frequent changes to flexible tariffs. For example, one participant with an engineering background views home batteries as the ideal way to bypass the inconvenience of manual shifting and shield his household from high utility prices:

"The real path is to put solar panels and batteries in and do my own stuff. [...] Then you've gained control. [...] I'll wash the dishes when I want to wash the dishes because it's coming from my battery storage unit in the garage." (Potential user, aged 75+, low income)

However, at present, upfront costs and property constraints can limit access to this kind of independence. Over time, policy support through the Warm Homes Plan and falling costs for technologies such as batteries and plug-in solar may reduce these barriers, but they remain significant constraints for many CIVCs today.

Even when the motivation exists, structural assumptions can rule out adoption entirely. For instance, another participant recognised the benefits of home batteries from her past experience living on a boat, but incorrectly assumed they rely solely on solar energy and therefore ruled the option out because her home has a north-facing roof.

For some participants, lower digital confidence created concerns about whether they would understand or trust automated systems, particularly where these relied on apps, timers or smart meter data. However, automation does not necessarily require active programming or ongoing monitoring. The key issue is whether people understand what the system is doing, feel confident that it will work reliably, and have clear instructions and simple ways to override it if needed. This highlights the importance of communications throughout the journey to automation.

Implications: Policy frameworks like the Clean Flexibility Roadmap and smart appliance regulations assume automation will scale flexibility with minimal effort. Participants' responses highlight a trade-off: while automation can reduce effort, it also demands trust, oversight, and perceived safety. Without visible user control, such as overrides, boundaries, or accountability, it risks being seen as a loss of agency rather than convenience, especially for households where heating and appliance use are tied to health, comfort, or safeguarding. This has potential implications for any standards or consumer protections associated with automation.

Across all flexibility opportunities, engagement depends on effort-to-reward balance, perceived risk and ability to opt out

Across all flexibility opportunities, engagement depends on whether the offer feels worth the effort, low risk and compatible with daily life. Participants did not reject flexibility as a concept; they favoured versions with clear savings, predictable rules, simple prompts and the ability to retain control if something went wrong.

Implications: As government and regulator strategies seek to scale consumer-led flexibility capacity by 2030, participation will depend not only on technical market reform but on the perceived fairness and reversibility of propositions. Offers that minimise risk, preserve opt-out rights and visibly evidence savings are more aligned with the inclusive innovation objectives set out in Ofgem's Consumer Vulnerability Strategy than models that rely on active optimisation by households.

Lived experiences of flexibility

Chapter summary

CIVCs already engaging in flexibility are doing so primarily in manual ways. While the main benefits are financial savings and the resulting psychological boost, current users can face challenges such as disruption to essential routines and health needs, risks of self-rationing and structural housing barriers.

1. Renters can benefit, but are mindful of neighbours



Aisha is a young renter living in a flat. She values being on a time-of-use tariff because it gives her a practical way to save money, and she actively shifts her washing machine use into cheaper evening periods where possible. However, her experience also shows that even where renters benefit from flexibility, housing conditions can shape how easy it feels to participate. Because her flat is poorly soundproofed, she is mindful of disturbing neighbours when running noisy appliances later in the evening.

"I try to use the washing machine when electricity is cheaper [...] between about 7 and maybe 11. [...] so I think, oh, if I'm doing it late, is it going to keep people awake? [...]

2. Financial savings are a key benefit



Danielle is currently out of work, rents a poorly insulated semi-detached house and is struggling with £800 of energy debt. She concentrates electricity-intensive tasks like using the dishwasher, washing machine and dryer during off-peak times in line with her flexible tariff. Because of her finances, seeing even a marginal return provides a psychological boost and motivates her to keep trying.

"I know it's still a very tiny drop in the ocean, but it would encourage me to think, okay, I've saved £10. Can I maybe save £15 next month?"

3. Advanced technology increases rewards , but can add complexity



Gloria lives alone in an electric-only bungalow and uses a smart meter to monitor her energy use. She also has a heat pump, solar panels and home batteries, which were installed through a government grant scheme. The system provides financial savings and a sense of control. Although she is confident using basic digital tools, she struggled with the technical information and would have benefited from more support.

"I've learned it all as I go along through trial and error and a few headaches. They needed to do a little simple booklet and say: thermostat, blah blah blah; heat pump, blah blah blah; solar, blah blah... simple that you could just look at and think, 'Oh yeah.' Once they go away you're on your own and you forget."

3.1 Ways of flexing among CIVC participants

Manual load-shifting is the dominant approach

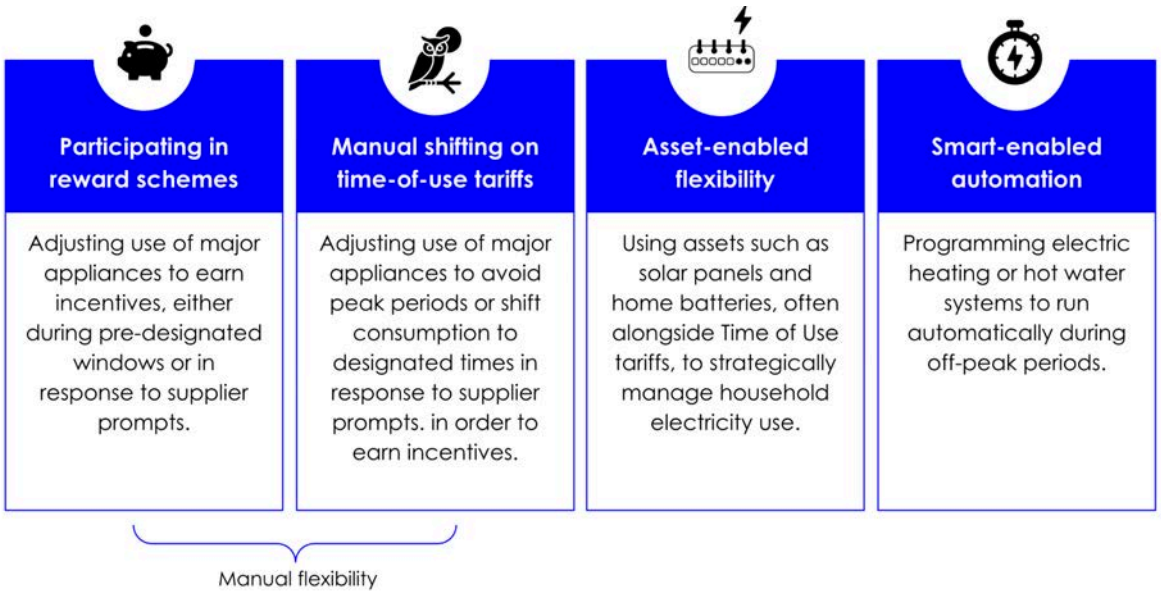
As illustrated in Figure 2, CIVCs interviewed for this research engage with consumer-led flexibility in four main ways.

Among the current users interviewed, manual flexibility is the main mode of engagement. These forms of flexibility often rely on vigilance, memory and manual effort to monitor apps, physically use appliances (e.g. iron, phone chargers) and alter daily routines to match tariff windows.

This pattern is consistent with NESO's CrowdFlex summer trial, where most respondents reported manually switching things on and off during events (NESO, 2024). The same research found that households with vulnerability characteristics or known barriers to flexibility were less likely to automate their demand shifting, while

households with low-carbon technologies were more likely to use programmed or managed approaches.

Figure 2: types of consumer-led flexibility among CIVCs participating of this research



Automation is used selectively or not at all due to a preference for manual control among CIVC groups. Where automation is used among participants of this research, it ranges from full automation to using remote-start apps for appliances, such as washing machines. This current reliance on manual control reflects wider evidence that CIVCs are often particularly sensitive to down-side risks, and therefore prefer maintaining direct agency over their energy use, finding automation off-putting unless it can guarantee cost savings (Energy Systems Catapult, 2023).

While manual load shifting is the dominant form of flexibility among current users, a more **asset-enabled pattern of participation is also in use and shows real potential for the future**. This is a hybrid participation model, combining assets like solar panels, home batteries and heat pumps with time-of-use tariffs for strategic electricity management. This approach focuses on timing household demand around self-generated power and battery levels, reducing reliance on manual shifting to discrete tariff events, making flexibility feel more continuous and less effortful, although user judgment is still required.

"If I wanted to do washing, cooking, or anything like that, I would probably do them now while I've got plenty of storage in my battery… if I've got plenty in the system,

then I use it… it's really good." (Current user, low income, without fundamental digital skills)

Since purely manual flexibility is likely to have a limited system-level impact, automation will play an important role in scaling flexibility in the future. This highlights the importance of the acceptance and adoption of automated technologies. However, while future acceptance of unfamiliar technology is difficult to predict, and automated services might be adopted more rapidly than the current participants' insights imply, the findings suggest that uptake among CIVCs is possible and will depend on whether it feels safe, understandable and compatible with users' need for oversight and control.

Case example: Low-effort flexibility through technology



Richard has an air-source heat pump that was installed around 18 months ago. He is interested in reducing both household costs and environmental impact, and currently uses a tariff with cheaper overnight electricity.

His participation in flexibility relies less on actively responding to events and more on integrating lower-cost electricity into everyday household routines. He heats water overnight and runs appliances such as the washing machine and dishwasher during cheaper periods where possible. This allows him to benefit from flexibility without having to constantly monitor apps, alerts or changing time windows.

While Richard is interested in future technologies such as home batteries and electric vehicles, he already views flexibility as a relatively straightforward and low-effort way of managing household energy use. His experience

demonstrates how low-carbon technologies and suitable tariffs can make participation feel simpler and more manageable for some households.

"The bit that piqued my interest was when you [they] said you don't have to do anything… That is a win-win situation… It's just part of the normal pattern… You'd be stupid not to take [the savings]. Everyone likes something for nothing."

3.2 Benefits of engaging with consumer-led flexibility

Financial savings are the most widespread benefit

Financial savings are the main motivator for engaging in and sustaining flexibility, but the magnitude of the benefit varies significantly, as does its perceived value based on a household's income and required effort. For instance, a user with a heat pump and battery storage estimated savings of ~30% at off-peak times. Conversely, participants engaging in manual shifting for reward schemes reported returns measured in pence rather than pounds.

Nonetheless, even small savings (e.g. 92p) are highly valued by some, perceived as gratifying "free money" as highlighted in the case example below. Crucially, for those experiencing financial hardship, seeing even a marginal financial return provides a psychological boost and motivates them to continue participating.

For participants who use an asset-enabled approach, such as solar panels and home batteries, flexibility offers the added benefit of reduced effort. This approach makes flexing feel more continuous and less burdensome by reducing the reliance on manual shifting to discrete tariff events and instead focusing on timing household demand around self-generated power and battery storage.

Finally, for those participating for environmental reasons, a secondary, non-financial benefit is the ability to engage in flexibility to do their bit for the planet.

Case example: Participating despite complexity



Paul is a man in his late 40s who takes part in his supplier's flexible energy reward scheme. While he occasionally describes himself as a "technical dinosaur", he regularly uses his supplier's app and actively engages with opportunities to reduce his energy bills.

He participates in flexibility events by reducing his electricity use during requested periods and values the opportunity to earn rewards for doing so. However, he finds some aspects of the scheme difficult to follow. In particular, he feels that the reward structure is not always intuitive and that events can be difficult to plan for when they are announced at short notice.

Despite these frustrations, Paul continues to participate because he believes the savings are worthwhile. He would like greater advance notice of events, a clearer schedule and simpler explanations of how rewards are calculated. His experience highlights that many consumers are willing to engage with flexibility, but that participation is easier when offers are predictable, transparent and easy to understand.

"They need to make it easy for people to navigate... A bit of notice and a bit of consistency I think is important. When you've got a life and you've got a bit of a structure, suddenly saying 'tomorrow, so-and-so time' is a bit late."

Case example: Proactive planning



Liz is a retiree in her early 70s who lives alone in her own property. While she is on a low income she describes herself as financially comfortable. She nonetheless maintains a strict "*waste not, want not*" philosophy. She is digitally capable and navigates app alerts and online tracking with ease.

She participates in a reward scheme. She uses an online diary to organise her day around peak availability. Upon receiving an alert, she moves high-energy tasks into the free window. This includes: laundry and dishwashing, and charging essential mobility and communication aids, such as her mobility scooter, tablet and phone.

Her retired status means she does not have a rigid 9-to-5 schedule, allowing her to pivot her chores to meet the grid's needs. For Liz, the benefits of energy flexibility are as much psychological as they are financial. While her savings are modest but "gratifying" (e.g. saving 92p per session), she enjoys using energy when it is cheapest. Her blend of environmental consciousness and the psychological "win" of saving money means she views savings not just as a financial gain, but as a point of personal pride.

"I'm a bit frugal, which helps... I'm quite good at saving and I don't like wasting anything.[...] I change my routine every day because that's how I live... I do save money and I feel better about myself [when flexing]."

3.3 Challenges engaging with consumer-led flexibility

The lived reality of flexibility mirrors the barriers to entry

The non-negotiable constraints that cause some potential users to rule out flex offers (as discussed in Section 2.3) are challenges experienced day-to-day by current CIVC flexers. For these active users, manual energy flexibility can disrupt routines or conflict with health-related needs, showing that the temporal flexibility assumed by many offers is not universally available. However, participants often continue to engage because they value what flexibility provides, especially financial savings, a sense of control or the reassurance of reducing bills. This suggests the issue is not a lack of willingness, but that current offers can require too much effort from households whose routines are already constrained. CrowdFlex provides similar evidence from a live flexibility trial. While many participants found trial logistics relatively easy, the act of shifting demand was more challenging, particularly where it required remembering events, changing routines or identifying enough flexible load (NESO, 2024). NESO also found that people with health conditions were more likely to report difficulties remembering to participate, changing routines and accessing or using technology.

Case example: Flexibility shaped by everyday routines



Jean lives alone in social housing and has mobility issues which mean she spends much of her time at home. She actively participates in her supplier's Sunday Saver scheme, which rewards households for reducing electricity use during peak periods in return for free electricity at a later date.

She monitors her energy use through her supplier's app and is motivated by the opportunity to save money on rising energy bills. However, her participation is shaped by the realities of her daily routine. She prefers to cook and eat at

particular times of the day and finds it difficult to avoid using electricity during the scheme's peak periods, especially in winter when she wants a hot meal.

Despite these challenges, Jean remains interested in flexibility and sees value in the concept. She felt participation would be easier if schemes offered more personalised timing options or automatically rewarded households when their energy use naturally aligned with lower-cost periods. Her experience highlights how willingness to participate can exist even where flexibility is constrained by health needs and established routines.

Additional challenges centre on new burdens from advanced technologies and the risk of self-rationing

Advanced technologies can deliver meaningful benefits, including lower energy costs, warmer homes and less reliance on constant manual load-shifting. For current users with solar panels, home batteries and heat pumps, these systems create a greater sense of control over household energy use. However, participants would benefit from clearer support after installation to understand how to optimise the flexibility element of the system, including how technologies, tariffs and settings work together in practice.

Once installed, users frequently navigate poorly configured systems, confusing digital interfaces and uncertainty about how different components actually work together. The burden of troubleshooting and optimising the system falls on the household. Users reported that they typically receive only brief or overly technical guidance from installers, they are left to learn the system through trial and error. The ongoing practical challenge is learning to use the setup confidently and efficiently, particularly when new technologies require unfamiliar habits, such as maintaining a steady heat pump temperature. This post-installation reality is illustrated in the case example below.

Case example: Asset-enabled flexibility with support gaps

Gloria lives in an electric-only bungalow and has a heat pump, solar panels, home batteries and a smart meter, installed through a grant scheme. She is confident using basic digital tools and regularly checks her IHD and phone app to see how much solar energy she is generating, storing and exporting.



Her participation in flexibility is shaped by managing energy across an interconnected home system. On sunny days, she checks whether her batteries are full before deciding when to do washing, raise the thermostat or switch on her immersion heater. If she has plenty of stored solar energy, she is more willing to heat the home or run appliances, knowing she is drawing on "free" electricity rather than buying from the grid.

Although she is on a time-of-use tariff, she does not actively shift most household tasks into those hours. Living alone, she tends to do things when it suits her, relying instead on solar generation, battery storage and lower overnight rates when needed. One exception is hot water: after realising her immersion heater had been set to run daily at fixed times she did not need, she now switches it on manually when solar generation and battery levels are high.

While the system gives her savings and a sense of control, her experience also shows how demanding these setups can be without good support. The installation process was disruptive, technical information was hard to follow, and she felt left to learn through trial and error once installers had gone.

Financial hardship and the high cost of energy drive extreme energy rationing among some users, leading them to compromise physical comfort and wellbeing to

save money. While this is not solely a response to flexible schemes and tariffs, users are highly motivated by cheaper energy periods, suggesting that sharp incentives combined with a propensity for self-rationing could pose a heightened risk of people taking actions (like delaying essential tasks or disrupting sleep) to maximise savings. The case example below demonstrates this.

This risk is also reflected in the NESO CrowdFlex findings: financially insecure participants were more likely than others to report risky behaviours, including using less electricity than needed or switching off essential appliances (NESO, 2024). This supports the need for flexibility offers to include clear safeguards and explicit advice on unsafe behaviours, rather than relying on consumers to judge risk themselves.

Case example: Manual flexing driven by financial reward



Sarah is a mother of three living with her husband in a two-bedroom terrace home. The family is experiencing financial strain, a situation that worsened after recent energy bill increases.

She is on a flexible tariff and engages in manual load-shifting to take advantage of off-peak night-time windows (1-3am and 4-6am).

Sarah uses these overnight windows to run the washing machine, iron clothes and charge household devices.

The opportunity to reduce her energy costs and free up money for other uses provides a strong incentive to shift the family's energy use away from peak periods.

This experience highlights the need for tailored advice and support pathways from trusted intermediaries to assist households in managing such demands and in choosing suitable tariffs (see Solution 6).

3. Pathways to participation by 2030

Chapter summary

This chapter shows that inclusive flexibility by 2030 will depend on making offers simpler, safer and easier to act on. Participants want clear savings, protection from downside risk, support they can trust, and systems that fit around everyday life rather than demanding constant effort.

1. Straightforward schemes and clear savings matter



Alex participates in a flexibility scheme but finds his supplier's reward system confusing and overly complicated. He struggles to understand the actual financial value and finds the app difficult to navigate. He feels that the scheme would be significantly more effective and motivating if it was simplified and offered clear, direct cost savings on his bill.

"I prefer the direct cost savings to be fair. [...] Just say, you know, if you use it at these certain times, then your bill will obviously be a bit cheaper during these periods. Keep it as simple as that."

2. Protection from bill shock is essential



John lives alone in a maisonette and strictly manages his moderate energy use through quarterly manual meter readings and direct debits. He is highly risk-averse when it comes to his finances and strongly dislikes the idea of monthly estimates that might accidentally overcharge him and cause administrative hassle. Because he prioritises absolute certainty over his costs, the flexible scheme that most strongly appeals to him is a

"safe savings" deal that offers an iron-clad guarantee that his bills are capped and will never exceed his current rate.

"If it [hypothetical flex scheme that appeals to Dennis] definitely says, you know, your bill has an upper limit and would never exceed that figure actually, then it's not a bad idea."

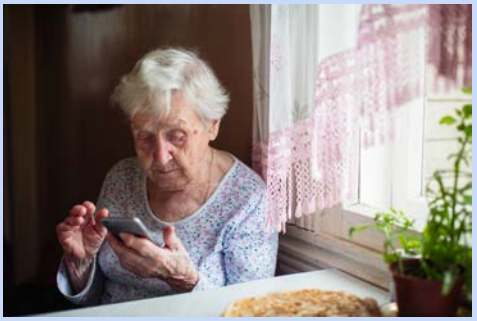
3. Flexibility must fit around routines and remain user-controlled



Maya works irregular split shifts in the care sector, including evenings and every second weekend, making fixed flexibility windows difficult to fit around her routine. She also rejects automated appliances because her fire safety training makes her concerned about washing machines running while she is out. She prefers to stay in control and switch appliances on herself.

"I think for people's lifestyles these days, that rigid two hours, 12 to 2 on a Sunday, is too fixed... I don't like the idea of appliances being on when I'm not home... I would rather just go and switch it on myself."

4. Trusted, accessible support is needed



Eve is an 81-year-old who finds modern smart technology difficult. Although interested in the financial benefits of automating appliances to run when rates are lower, the necessary digital setup is a barrier. For her, participation in flexible schemes is only viable if she has access to a trusted, local community organisation that can physically provide setup assistance and troubleshooting support.

"I find all this modern technology incredibly difficult... setting it up would be very helpful... be nice to have somebody you could call on if you're getting in a muddle... maybe a community organisation because the chances are they could actually come around."

4.1 Enablers for inclusive flexibility

Come 2030, we would expect smart meters, flexible tariffs and related smart technologies to be more widespread, though not necessarily universal. This outlook is conditional on anticipated market developments, such as greater tariff availability and clearer promotional benefits. It must be acknowledged that not all CIVCs will have low-carbon technologies by 2030, and it is not guaranteed that future tariff designs will be well suited to them. Vulnerability is also often transient: people and families may move into or out of vulnerable circumstances over time due to changes in income, health, caring responsibilities, housing or digital access. This makes inclusive design essential for a 2030 system, rather than a niche consideration for a fixed group of consumers. When discussing what would make flexibility easier and more viable for a 2030 energy system, the enablers required today are very similar to those expected in 2030. This section outlines what is required to support inclusive participation both now and in the future.

Clear, explicit and relatable information about savings and benefits

Across both potential and current flex users, clarity is a strong enabler. Participants welcome flexibility as a concept, but describe uncertainty about exactly when electricity is cheaper and how much they would realistically save. They consistently describe wanting simple, direct figures rather than technical detail.

To encourage engagement, communications should use relatable, everyday framing that highlights tangible, practical advantages. The SEGB "Einstein" campaign, for example, recalled by participants in this research, demonstrates how smart PPMs can be rebranded from a complex technical upgrade into a trusted budgeting tool by focusing on hassle-reducing benefits.

The preference among participants for the positive, opt-in framing of "power up" options over the restrictive nature of "power down" schemes discussed in Section 2.3 has clear implications for programme design and framing. Flexibility offers should be primarily framed as an opportunity to consume energy cheaply or freely, rather than as a mandate to restrict energy use. Designing propositions around rewarding increased use during periods of surplus, or offering cheap slots, may therefore lead

to higher acceptability and engagement among CIVCs compared to schemes that focus on turn-down requests.

This does not mean environmental benefits should be absent from communications. Some participants valued flexibility's contribution to wider environmental goals. However, wider evidence suggests that environmental messaging is unlikely to drive engagement on its own, particularly where offers require effort or behaviour change. For most consumers, including CIVCs, environmental benefits are more persuasive when paired with clear financial rewards and practical household benefits (Energy Systems Catapult, 2023).

Implications: As MHHS expands time-of-use pricing and dynamic tariffs become more commonplace, the clarity of price signals will become increasingly important. Participants' responses suggest that without highly legible, financially framed communication, greater tariff granularity may increase perceived complexity rather than engagement, particularly among older consumers and those managing tight budgets. In addition, positive framing of power up options may align with the desire for autonomy and of feeling constrained. This is particularly important for households where energy use is tied to non-negotiable health or care needs.

Financial protection

Financial motivation is present across the sample, but low income participants and PPM users are especially attentive to whether savings are real and sustained. By 2030, as tariff structures become more dynamic, explicit downside protection is likely to be a core condition of inclusive flexibility. The most consistently acceptable proposition across all vulnerability characteristics is a "no worse off" or protected savings model. As discussed, this protection must be visible and verifiable. Confidence depends on being able to see savings clearly expressed in pounds, ideally through simple, cumulative totals within bills.

"The breakdown in your bill where it shows you your rewards and how much you're saving… that would bring clarity." (Potential user, low income, without fundamental digital skills)

The CrowdFlex findings also show that financial insecurity can increase both motivation and risk. Financially insecure participants were more likely to be motivated by savings, but also more likely to report difficulties receiving rewards and to take potentially unsafe actions to reduce electricity use. This reinforces the importance of designing financial protection into flexibility offers from the outset (NESO, 2024).

Implications: Ofgem's Consumer Vulnerability Strategy commits to protecting consumers in vulnerable situations from adverse outcomes as innovation expands. As price cap reform and half-hourly settlement reshape tariff structures, embedding explicit "no worse off" mechanisms may be essential as a behavioural enabler of uptake. The findings indicate that protection should be structurally built into product design, rather than communicated as an afterthought.

Predictable structures and compatibility with routines

For both current and potential users, flexibility needs to fit around existing routines. Predictable weekly slots are described as habit-forming and easier to plan around, particularly for older participants and those managing health conditions. However, CIVCs with fluctuating work schedules or caring responsibilities prefer having agency over timing rather than being locked into rigid slots.

This is supported by CrowdFlex evidence suggesting that fixed or more predictable event windows may be easier for some households to remember and adapt routines around than dynamic, changing event times (NESO, 2024). NESO also highlights the importance of matching households to the most appropriate form of flexibility, rather than assuming dynamic flexibility will suit everyone equally.

Automation with user control and autonomy

National strategies increasingly assume that automation reduces the behavioural effort of flexibility and thus will become the dominant mode of engagement with consumer-led flex. This trend will take time, and many people, including CIVCs, will not necessarily have adopted automated technologies by 2030. This means the system still needs to function well for those engaging manually for some time yet to come.

Nonetheless, as automation does become more commonplace among consumers, our findings suggest that broad uptake among CIVCs is only likely if it is experienced as user-governed rather than system-imposed. This is, of course, a 2026 perspective on 2030, and it should be kept in mind that attitudes towards technology can shift rapidly once a technology becomes normalised and familiar. This reiterates the importance of communicating throughout the journey to automation.

Implications: Automation must be designed around visible user control and safety reassurance if it is to support national ambitions for inclusive participation. Ensuring consumers are not disadvantaged if they cannot flex is not only a fairness commitment but also a practical requirement for maintaining trust as flexibility becomes embedded in everyday energy use.

Trusted support pathways

Support needs vary significantly across vulnerability characteristics, meaning inclusive flexibility cannot be delivered through a single support model. Some participants prefer independence and direct supplier engagement, while others, particularly those with lower digital confidence, memory concerns or experiences of bill shock, value personalised support and independent validation. Different actors may be trusted for different purposes: suppliers may be expected to explain the mechanics of specific tariffs or schemes; trusted messengers can legitimise the wider concept of flexibility; charities and community organisations can provide tailored reassurance; and third parties such as housing providers, installers or advice services can support practical onboarding and troubleshooting.

"It would be helpful to make an informed decision… someone who can explain which plan suits me." (Current user, low income, disability)

Implications: Ofgem's Consumer Vulnerability Strategy and Energy UK's Vulnerability Commitment both emphasise proactive identification of support needs and collaboration with trusted intermediaries. Participants' varied responses suggest that inclusive delivery will require a wider support ecosystem, combining supplier-led information with independent advice, local/community support,

housing provider engagement and practical assistance from installers or technology providers where relevant.

Mitigating digital exclusion

Finally, as flexibility relies more heavily on smart-enabled tariffs and app-based interfaces by 2030, digital exclusion remains a major structural risk. Simplification must encompass onboarding, device setup and ongoing interaction. Even participants who are able to use apps and IHDs often describe doing so in limited ways, for example keeping devices on one familiar screen rather than navigating more advanced functions. This suggests that digital access alone is insufficient; confidence, interface simplicity and parallel non-digital materials remain important.

"Using an iPad is about the limit of my technical abilities." (Potential user, aged 75+)

Implications: With Ofgem identifying digital exclusion as a key vulnerability risk, and smart-enabled flexibility increasingly reliant on app-based interfaces and connected devices, digital access becomes a structural determinant of participation. Without parallel non-digital pathways, the expansion of automated flexibility could unintentionally replicate the very exclusion risks national policy seeks to mitigate.

Post-installation guidance and system optimisation

An additional enabler emerging from interviews with asset-enabled current users is practical post-installation support. For CIVCs with solar panels, batteries and heat pumps, inclusion depends not only on access to technology but on being shown how systems work together, how to adjust settings and how to make use of tariff opportunities over time. Without this, households risk under-using the system, running it inefficiently or depending on repeated calls to installers and suppliers.

4.2 Strategic communications

Effective communication across the wider flexibility ecosystem is critical to overcoming inertia and perceived risk. While suppliers are often the direct route into specific tariffs or schemes, participants' responses suggest that trust, understanding

and confidence may also depend on providing clear, consistent and independent support. Across both current and potential users, and looking ahead to a 2030 energy system, engagement depends on communications that are simple, risk-free, delivered by trusted messengers and structurally embedded within familiar platforms such as energy bills.

Proactive, accessible and multi-channel outreach is needed

Awareness of consumer-led flexibility among CIVCs is often passive; if an offer is buried in the small print or hidden in terms and conditions, it is unlikely to prompt engagement. Participants expect meaningful offers to be proactively highlighted by their supplier.

Crucially, channel choice must remain flexible to accommodate varying digital capabilities. While younger, digitally confident participants welcome app notifications or text messages for short-notice alerts, older participants and those managing health conditions strongly prefer written formats, such as letters or emails. They report that written communications allow time to reflect, re-read and verify information without pressure, which helps mitigate anxieties around phone scams.

Alongside supplier communications, participants also value trusted, independent sources of information. Trusted media, consumer experts, advice organisations and real-life case studies can help make flexibility feel more credible and easier to understand, particularly where people are unsure whether an offer is genuinely beneficial or relevant to them. This points to a potential role for independent, trusted communicators in providing clear explanations, practical examples and reassurance that help consumers interpret offers from suppliers and understand what participation could look like in everyday life.

"If somebody explains it to me step by step on a letter I'll understand it." (Potential user, low income)

Looking ahead to 2030, strategic communications must also be careful not to alienate groups through an over-reliance on digital framing. Market-wide narratives that assume widespread or near-universal smart meter access may risk unintentionally excluding some older consumers and those with limited digital skills.

Implications: As time-of-use tariffs expand under MHHS, supplier communication will play an increasing role in shaping engagement. Participants expected meaningful offers to be proactively surfaced rather than discovered, suggesting that passive disclosure may be insufficient to support inclusive participation. Furthermore, while system reform assumes near-universal smart meter rollout and increasing digitalisation, Ofgem's Vulnerability Strategy recognises that digital exclusion remains significant. Strategic communications for 2030 will therefore need to bridge this gap to avoid entrenching participation divides.

CIVCs want simple financial framing and visible bill evidence

Technical terminology, such as kilowatt-hour pricing, is widely viewed as confusing and abstract. Instead, CIVCs require communications to be framed in tangible financial terms, such as clear percentage reductions, monthly totals, or step-by-step explanations of how much they will save.

By 2030, this expectation for clarity must become structurally embedded within billing systems. Confidence in flexibility depends on participants seeing tangible proof of their efforts. Savings must be clearly itemised on the bill itself, akin to a supermarket receipt showing loyalty scheme discounts, rather than being presented as abstract claims on an app dashboard.

Implications: The Clean Flexibility Roadmap frames the transition as "consumer-focused", and participants' responses suggest that an important part of this will depend heavily on billing transparency. As half-hourly settlement and flexible tariffs become embedded, standardised approaches to displaying flex savings may become necessary to ensure consistency, comparability and trust, particularly for consumers in vulnerable situations whom Ofgem has committed to protect from adverse outcomes.

Mitigating risk and "no worse off" guarantees will lower hesitation

For households on low incomes or those using PPMs, the fear of inadvertently increasing their bills is a major barrier. Communications are more likely to be effective if they explicitly address downside risk, offering clear statements that

participation will not leave them worse off. However, this reassurance will only be credible if it is true in practice: the product or scheme itself must be designed with genuine safeguards, clear opt-out routes and transparent evidence of savings, rather than relying on communications alone to reduce perceived risk.

Furthermore, the opportunity to take short-term trials, such as a one-month test, is suggested as a way of lowering the psychological barrier to entry, allowing consumers to see a bill before committing. However, participants indicate that communications promising trials are only credible if the operational structure exists to back them up: automated onboarding, easy opt-out mechanisms without penalties, and transparent feedback showing the financial impact. Without this operational reality, trial messaging risks undermining consumer trust. Providing these safe testing environments aligns with Solution 1 in the conclusions section of this report, which advocates for "no worse off" guarantees and trial periods that allow consumers to test participation without long-term risk.

NESO's CrowdFlex report also highlights the need for communications that are specific about safe and effective participation (NESO, 2024). In particular, it recommends clearer messaging on what "turn down" means, which appliances or systems are relevant, and which behaviours should be avoided, including switching off essential appliances or reducing energy use below what is needed.

Implications: As price cap reform and flexible tariffs evolve, explicitly communicating safeguards and offering trial periods for safe experimentation can reassure participants and encourage engagement. Ofgem's emphasis on consumer protection and fair treatment during market reform aligns with participants' preference for reversible engagement. Trial-based onboarding, paired with explicit opt-out rights, may offer a practical route to widening participation without exposing vulnerable households to perceived financial risk.

Trusted messengers and independent validation shape legitimacy

While tariff information is expected to come directly from energy suppliers, institutional trust is often fragile, particularly among those who have experienced

previous billing issues or debt. For these groups, independent validation is essential to reassure them that flexibility advice is fair and not purely profit-driven.

Communications should leverage trusted intermediaries, such as consumer bodies, housing association energy officers or local charities. Indeed, the SEGB in Communities programme and SEGB's previous partnerships with national charities such as Carers UK, English Football League and Age Cymru offer useful blueprints for reaching CIVCs through trusted community voices, places and spaces, and for communicating complex energy transitions in ways that feel more credible and accessible. System design should enable multiple communication routes, allowing consumers to seek onboarding support through a familiar relationship or face-to-face explanation rather than relying solely on supplier-led marketing.

This points to a shared communications role: suppliers may be best placed to explain the mechanics of specific offers, while independent bodies and community intermediaries may be better placed to validate claims, support decision-making and reassure consumers that participation is safe and appropriate for their circumstances.

Implications: Ofgem's Consumer Vulnerability Strategy places emphasis on accountability, transparency and collaborative working to build trust with vulnerable consumers. Participants' preferences for independent validation suggest that trust in flexibility offers may depend not only on design, but on credible endorsement or oversight structures that reassure households the proposition is fair.

CIVCs want joined-up explanations of technologies, costs, interoperability and practical benefits

The complexity of low-carbon technologies, such as solar, batteries and smart home systems, poses a risk if communications rely on technical jargon or fragmented advice. To promote engagement, strategies must prioritise clear, accessible and financially framed messaging. Communications should move beyond abstract environmental benefits to provide joined-up explanations of product functionality,

interoperability, costs and trade-offs, ensuring practical benefits are framed in tangible financial terms, such as clear monthly savings, rather than technical units.

This clarity will reduce the perceived burden of adoption and help prevent CIVCs from dismissing beneficial technologies. Furthermore, providing this comprehensive information through a single independent or public-facing source is preferred over requiring households to piece together advice from multiple suppliers and installers.

4. Conclusion and solutions

This research shows that consumers in vulnerable circumstances (CIVCs) are not inherently disengaged from energy flexibility, and many are already benefitting. It provides real-life examples of CIVCs already participating by manually shifting demand, engaging with flexibility schemes, or exploring time-of-use tariffs – often motivated by financial pressures. It also shows that CIVCs have the potential to be just as engaged in consumer-led flex as any other consumer group - albeit contingent on a number of barriers being addressed, principally through the provision of suitable support services, appropriate tariff designs, and effective communication.

These findings build on our previous Empowering Flexibility report, which found that consumers more broadly face barriers around low understanding, trust, convenience, control and expected savings (Behavioural Insights Team, 2025). Many of those themes are echoed here. However, this research shows how those barriers can be more consequential for CIVCs: unclear tariffs can heighten financial risk, loss of control can affect health, care or comfort needs, and manual flexibility can impose disproportionate effort on households already managing constrained budgets, routines or capabilities. As a result, the foundations identified in the previous report — clarity, trust, simplicity, control and support — remain highly relevant, but need to be strengthened with explicit protections, non-digital pathways, trusted intermediaries and practical aftercare if CIVCs are to benefit safely and equitably from consumer-led flexibility.

Positively, among those who are not yet participating, there is very little resistance to the idea in principle. However, there is more scepticism about the practicality of engaging and low confidence in being able to realise the benefits without risk. Where current models of flexibility rely heavily on individual effort, confidence, and risk tolerance, this can create structural exclusion for CIVCs, particularly those who:

- Cannot tolerate bill volatility or downside risk
- Have rigid or health-related energy needs
- Have limited digital literacy or confidence with technology

- Have experienced billing problems or distrust in suppliers

Our sample of CIVCs seem to judge the viability of flexibility through three core questions: *Will I genuinely save money? Will this disrupt my routine or wellbeing?* And *will I remain in control if something goes wrong?* Where answers are unclear or risky, engagement stalls, even if flexibility is attractive in principle.

The findings also suggest that inclusion in future flexibility markets will depend not only on tariff and service design, but on whether households can access, understand and confidently operate enabling technologies such as batteries, solar systems and heat pumps.

Therefore, looking ahead to 2030, greater tariff availability, more sophisticated automation and wider policy initiatives such as the Warm Homes Plan may all support progress, but are likely to have limited behavioural impact on their own.

Scaling inclusive flexibility participation among CIVCs will also require simplification, robust financial protection, clear communications and consumer engagement, effective support pathways and preserved autonomy. If this is done, in time, there is no reason to view CIVCs with any less ambition for consumer flexibility as any other group of consumers.

Inclusive flexibility also has value across the wider energy system. For consumers, it can support affordability, autonomy and access to future benefits. For government and regulators, it can support fairness, trust and the delivery of flexibility at scale. For suppliers, it also has clear commercial value:

- **Affordability and debt prevention:** Inclusive offers may help financially stretched households reduce bills in ways that prevent debt from building up in the first place, support payment ability, and reduce arrears pressure, collections activity, and wider debt-related servicing costs.
- **Lower servicing costs for PPM customers:** For PPM customers, inclusive smart-enabled design may help accelerate the shift away from older legacy infrastructure, while smart prepay can enable remote top-up and reduce supplier servicing costs relative to traditional prepayment systems.

- **Customer recruitment and retention:** Products that are simpler, safer and suited to consumers' real circumstances, may help to attract and retain customers.
- **Customer service, compliance and reputational risk:** Designing inclusive products can help suppliers deliver better service outcomes for vulnerable and prepayment customers, by reducing confusion, complaints, redress, regulatory scrutiny and reputational risk.
- **Commercial opportunity in a smarter, more efficient system:** As MHHS increases the importance of when electricity is used, more inclusive smart and flexible offers may create commercial opportunities if they help a wider range of households participate in ways that are safe and manageable.

Solutions from this research are summarised below, noting that they are not intended for industry alone. They point to a shared agenda for government, regulators, suppliers, technology providers, installers, housing providers and trusted intermediaries, each of whom will shape whether CIVCs can access and benefit from flexibility.

Solutions

The following provisions provide the basis for high levels of engagement among CIVCs. While all consumers could benefit from these solutions to some extent, each addresses barriers that can be particularly acute for CIVCs. These include financial vulnerability (Solution 1), inflexible daily routines or needs (Solution 2), health, safety, comfort and dignity considerations (Solution 3), digital confidence, access and financial vulnerability (Solutions 4 and 5), and the need for trusted advice and support (Solution 6). Figure 1 below summarises these enablers for ensuring the benefits of a smart energy system can be felt by all.

Figure 3: Foundations for an inclusive future energy system.



1. Embed structural financial protections

Explicit "no worse off" guarantees and opt-out rights could be built directly into tariff design to allow safe participation and prevent dangerous self-rationing among vulnerable groups. One option could be to offer vulnerable customers the choice to be auto-enrolled into protected tariffs, where appropriate, designed carefully to preserve consumer choice, consent and control. Any such approach should ensure that consumers can easily opt out, pause participation, or remain on their existing tariff, and that those experiencing challenges with consistent participation are never penalised. Other financial protections could include:

- Trial periods that allow consumers to test participation without long-term commitment
- Visible and verifiable savings shown clearly on bills in pounds and pence
- Safeguards to ensure essential energy use for health, care or comfort is never penalised

Looking further to the future, truly widespread engagement is likely to be facilitated by a system designed to be safe for all, with safeguards built into not just tariffs but wider automation services and technologies, backed up by appropriate

regulator powers.

2. Predictable savings windows and tariffs which align with lifestyle needs

Some CIVCs have particular energy needs relating to health or caring responsibilities, making them less dynamically flexible. Others, in contrast, may be more flexible than the average consumer - for example retirees without rigid working schedules. Creating tariff options which work for a variety of circumstances will be important. Moreover, predictability, ease of planning, and the ability to habitualise new energy-use patterns without risk of financial loss are important for those with less cognitive bandwidth to be continuously engaged with a dynamic or irregular pricing schedule. This could include:

- Predictable recurring savings windows that are easier to plan around and build into routines
- Different tariff or scheme types for households with different levels of flexibility
- Options that reward both "power up" and "power down" participation, depending on household circumstances
- Structures that do not rely on constant monitoring of short or irregular events
- Flexibility offers that allow households to benefit without disrupting essential care, meal, comfort or sleep routines

Widespread participation in 2030 and beyond will require more than a range of tariffs capturing common needs, shifting instead to consumer segmentation and diversity of engagement capabilities as a core system feature.

3. Design automation around user control, and low technical barriers to entry

Automation is necessary to scale dynamic pricing without exhausting consumers, but it must remain user-governed. Visible controls, clear boundaries, easy overrides and accountability are essential so automation isn't rejected due to lost agency. Moreover, automation can bring its own complexity - particularly the need to be familiar, confident and trusting in new technologies, smart appliances and app use. This technological barrier (and the costs associated with buying these products) must be very low for the benefits to outweigh the added risk, effort,

uncertainty or cost. This could include:

- Easy override functions and clear stop, pause or reset options
- User-set boundaries, such as restricting operation at night or when the home is empty
- Simple setup processes, with minimal programming or app navigation required
- Low-cost or subsidised access to enabling devices where appropriate

Future scaling of a smart energy system is likely to depend heavily on automation, meaning it likely becomes a strong default mode of operation. This means that protections and easy set-and-forget settings with simple overrides will be important to ensure fair and widespread uptake among those with lower digital skills or other barriers to entry.

4. Simplify tariffs and billing

To increase engagement, flexible products must reduce decision-making effort rather than simply adding complex pricing granularity in the name of marginal optimisation gains. Communications need clear, financially framed information, with easy to understand methods for displaying savings directly on energy bills to ensure comparability and trust. This could include:

- A smaller number of simple, easy-to-compare tariff types
- Plain-English descriptions of when cheaper electricity applies and what action is required
- Bill layouts showing flexibility savings clearly and consistently
- Savings information expressed in pounds, not only technical units or percentages
- Prompts and explanations that reduce the need for consumers to interpret complex tariff rules themselves

5. Proactively communicate and maintain non-digital pathways

Meaningful flexibility offers should be communicated clearly and through channels that reflect consumers' needs, including non-digital routes where necessary to

ensure reach. As flexibility becomes more app-based, the market should maintain parallel routes so that consumers with lower digital confidence, limited internet access or a preference for written information are not excluded. This could include:

- Targeted outreach through appropriate channels, including letters, emails, texts or phone calls where needed
- Communications framed around clear financial benefits, practical fit and risk protection
- Non-digital routes for sign-up, support and ongoing participation
- Written information that consumers can revisit in their own time or discuss with someone they trust
- Reminders and prompts that support engagement without becoming intrusive or overwhelming
- Provide simple non-technical printed guides for households receiving new technologies, alongside digital tools and app-based support

As engagement scales and consumer flex becomes less of a novelty and more of a routine habit, communications will need to become continuous, ambient, familiar and trusted - including for automated decisions and defaults.

6. Clarify and leverage the distinct roles of trusted messengers, charities and third-party support

To scale flexibility, consumers must not only be aware that opportunities exist, but also understand them, trust them, see their personal relevance and be able to sustain participation over time. This requires a combination of awareness-raising, persuasion, practical support and ongoing engagement. Participants in this research often encountered flexibility indirectly through media, suppliers or word-of-mouth, but awareness alone was rarely enough to drive action. Many wanted help understanding whether an offer was right for them, reassurance that it was safe and worthwhile, and support when navigating more complex technologies or tariffs.

Trust in flexibility can rely on independent validation, but different actors are likely to be trusted for different purposes. Trusted messengers can build awareness and

credibility and encourage consumers to seek further information; charities and community organisations can provide reassurance and tailored support for specific groups; and third parties such as housing providers, installers, local authorities and advice services can help with onboarding, setup and troubleshooting. Delivery therefore requires a flexible support ecosystem that allows consumers to access the type of support they need, while preserving independence for those who prefer to self-manage. This can include:

- Using trusted intermediaries to explain offers in simple, financial terms and help consumers assess whether a tariff suits their circumstances
- Promoting tariff or scheme features most likely to appeal to CIVCs, such as predictable savings windows, no worse off protections, easy opt-out, and clear bill-based feedback
- Offering support through trusted places and spaces, such as community organisations, housing associations or advice services, rather than relying solely on supplier-led digital channels
- Providing optional help with onboarding, setup and troubleshooting for consumers with lower digital confidence or more complex support needs
- Ensuring consumers can choose between supported participation and independent self-management, depending on their preferences
- Provide independent or jointly branded advice and aftercare for households adopting enabling technologies, including simple setup guides, troubleshooting support, and practical explanations of how solar, batteries, heat pumps and tariffs work together.
- Clarify the roles of suppliers, regulators, consumer bodies, housing providers, installers and community organisations in supporting safe and informed participation.

These intermediaries and support routes should not be 'bolt-ons' but will need to become integral parts of the system architecture to support widespread but inclusive scaling of consumer flexibility.

Future quantitative research will build on these qualitative findings by exploring the same themes with a much larger sample of CIVCs. This will help assess how common

these experiences, barriers and preferences are across different vulnerability groups, and which messages, safeguards and support routes are most likely to increase confidence and participation. Together, the qualitative and quantitative phases will provide a stronger evidence base for designing flexibility offers that are both scalable and inclusive.

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Technical appendix

Sampling

We employed a purposive sampling strategy to ensure representation across specific vulnerability criteria defined by Smart Energy GB. Recruitment was conducted by a specialist agency, Criteria Fieldwork, using a mix of database and free-find methods.

The sample (N=22) was split into two distinct cohorts to allow for comparison between lived reality and hypothetical opportunity:

1. **Current flex users (n=7):** Participants actively engaging in flexibility via time-of-use tariffs, supplier reward events or smart automation
2. **Potential beneficiaries (n=15):** Participants who had not yet engaged in flexibility but met the vulnerability criteria and had the potential to benefit from future market developments.

All participants were required to meet at least one of the following primary CIVC criteria:

- **Low income:** Household pre-tax income under £20,000
- **Prepayment meter:** Electricity topped up via key, card, or app
- **Digital exclusion:** Without fundamental digital skills (unable to complete tasks like connecting to Wi-Fi or managing passwords without support)
- **Age:** Aged 75 or older
- **Disability:** Physical or mental health conditions lasting 12+ months that reduce ability to carry out day-to-day activities.

To ensure diversity, the sample was monitored for a spread across:

- **Tenure:** Social and private renters
- **Geography:** Split across England, Scotland and Wales
- **Household composition:** Inclusion of shift workers and those with medical energy needs.

Table A1 Sample breakdown[1]

Sampling criteria	Current users	Potential users
Low income households	2	7
PPM users	1	3
Without fundamental digital skills	1	5
Aged 75+	2	7
Disabilities	4	4

Data collection

Data collection took place between December 2025 and March 2026. Interviews lasted up to 60-minutes and were conducted by video call or telephone depending on the participant's digital confidence.

Two distinct discussion guides were developed to tailor the conversation to the participant's experience level:

- **Current users guide:** Focused on the "customer journey", triggers for adoption, the practical reality of flexibility, and the emotional outcomes
- **Potential flex guide:** Focused on concept testing. Participants were introduced to three tiers of flexibility:
    - Behaviour A: Cheaper-time electricity deals (time-of-use tariff).
    - Behaviour B: Manual shifting of appliances.
    - Behaviour C: Automation technology.

Both cohorts were presented with three hypothetical "2030 scenarios" to assess reactions to future market propositions:

- **Scenario A (Set-and-Forget):** Automated appliances running at cheaper times with override capabilities.

[1] Although 22 people were interviewed, the totals in Table A1 exceed 22 because some participants had more than one CIVC characteristic.

- **Scenario B ("Safe Savings"):** A guaranteed "bill protection" model where prices remain steady, but automatic savings accrue behind the scenes.
- **Scenario C (Support Pathways):** The role of trusted intermediaries (charities, housing associations) in managing setup and advice.

Analysis

Data was managed and analysed using the Framework Approach (Ritchie et al, 2013), a matrix-based method ideal for policy-relevant qualitative research. The research team reviewed transcripts to immerse themselves in the data. Two separate thematic frameworks were created; one for current users and the other for potential users. Data from transcripts was summarised into the framework matrices by theme (columns) and participant (rows) using NotebookLM, ensuring a rigorous audit trail back to the raw data. Manual quality checks were performed on each summary to ensure accuracy.

The team analysed the managed data to identify key themes and explanations, cross-cutting patterns and specific divergences.

Limitations include:

- **Hypothetical Bias:** Discussions about 2030 scenarios relied on participants imagining future technologies or market offers they may not currently use, such as automated flexibility services. To mitigate this, interviews first explored participants' current routines, energy use and constraints before introducing future scenarios, and used concrete examples to make propositions easier to assess. Even so, actual behaviour in a live market environment may differ from stated preferences..
- **Recall bias:** Current flex users were asked to retrospectively describe their initial decision-making process, which may be subject to post-rationalisation.



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