Evaluating common themes in Smart Local Energy Systems

Home Truths panel survey
June 2019



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Context

- This document has been prepared by Energy Systems Catapult's Consumer Insight team, on behalf of the ERIS programme
- The purpose is to provide Concept Designs projects within the PFER programme with initial insight on how Smart Local Energy Schemes and service offerings may be perceived by some consumers
- There is potential, in future, for ERIS to extend this type of consumer engagement, or offer support and guidance in this area to projects. The ERIS team welcomes any feedback from project members relating to these findings or future research topics. Please send any suggestions to eris@es.catapult.org.uk

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- Recommendations and next steps
- Appendix

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Scope

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Project scope

Consumer feedback was sought on four service concepts, commonly found across a number of the ERIS Smart Local Energy Service projects.
The findings are detailed in this report **to support the development of local energy innovations** that **consumers like because they meet their needs** and expectations.
4 service concepts were evaluated:

- Peer to Peer trading (P2P)
- Demand Side Response (DSR)
- Vehicle to Grid energy usage (V2G)
- Heat as a Service (HaaS)

Research topics included:

- **Evaluating the appeal** of the service concepts
- Understanding **the positives and negatives** that consumers identify in these service concepts
- Exploring common themes across the Smart Local Energy System projects that were summarised in the 4 service concepts listed above

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The methodology and its limitations

- A 20 minute online survey through the Home Truths panel
- 418 consumers responded, with different backgrounds and levels of understanding regarding energy and the environment
- The service concepts were presented as high level ideas without any grounding regarding cost or how implementation would impact consumers in their homes. Whilst this gives us understanding of how appealing certain elements are, we must remember that views will be impacted when costs and usage elements are added

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Summary

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Key findings

- Consumers who understood the concepts were more likely to like them (and vice versa)
- Many consumers liked the concept of saving money through local, community-owned renewable energy. Some need reassurance that local energy schemes are reliable before they are convinced
- Overall, consumers were either supportive or ambivalent towards the four service concepts, with very little outright opposition
- Consumers liked the idea of saving money and reducing emissions, but were concerned about relinquishing control of their appliances, heating or EVs. They need to be confident that they can still get what they want from their energy (e.g. mobility, comfort)
- Further work is needed to understand how these initial, top-of-mind reactions change when people experience these concepts in real life

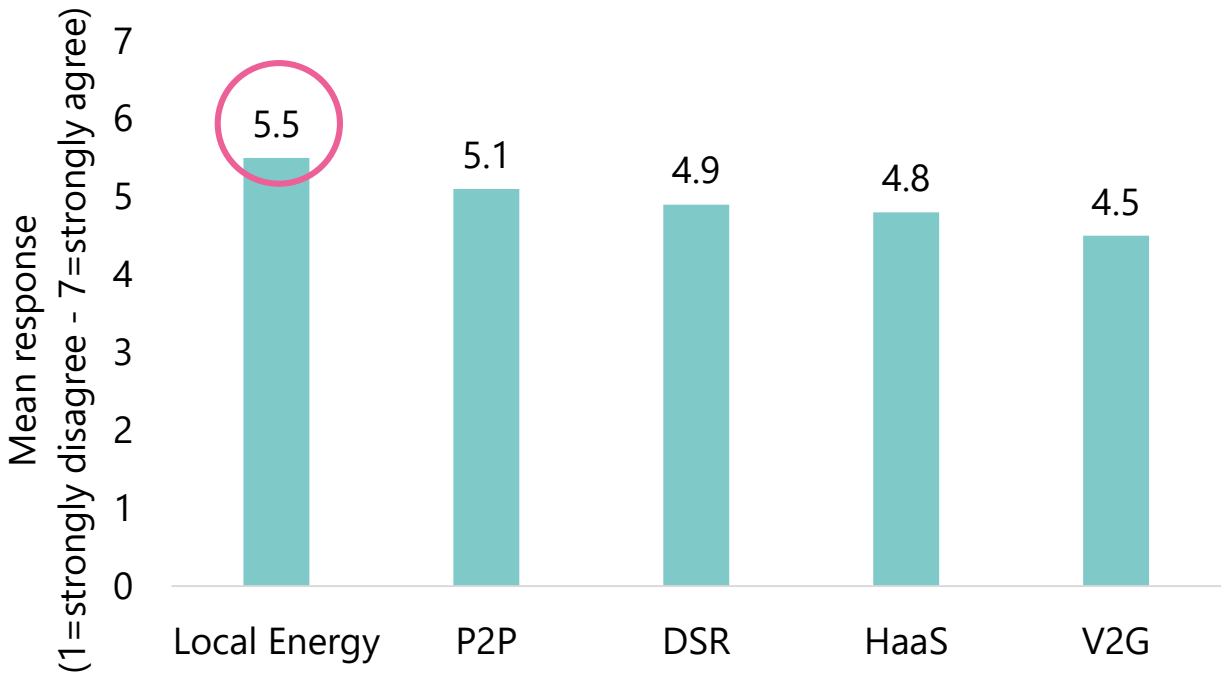
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All service concepts were rated positively

The overarching proposition of Local Energy was rated positively by significantly more respondents than the individual service concepts. Vehicle to Grid received the lowest mean rating for positivity.

Positivity towards the concept – mean scores



Positivity towards the concept – significance

	Local Energy	Peer to Peer trading	DSR	Heat as a Service	Vehicle to Grid
Local Energy					
Peer to Peer trading	p=0.000				
Demand Side Response	p=0.000	p=0.077			
Heat as a Service	p=0.000	p=0.000	p=0.013		
Vehicle to Grid	p=0.000	p=0.000	p=0.000	p=0.002	

A comparison of mean positivity scores between concepts. P values below 0.05 indicate significant differences between two scores (highlighted in **blue**)
e.g. peer to peer and local energy scores are significantly different at p=0.000

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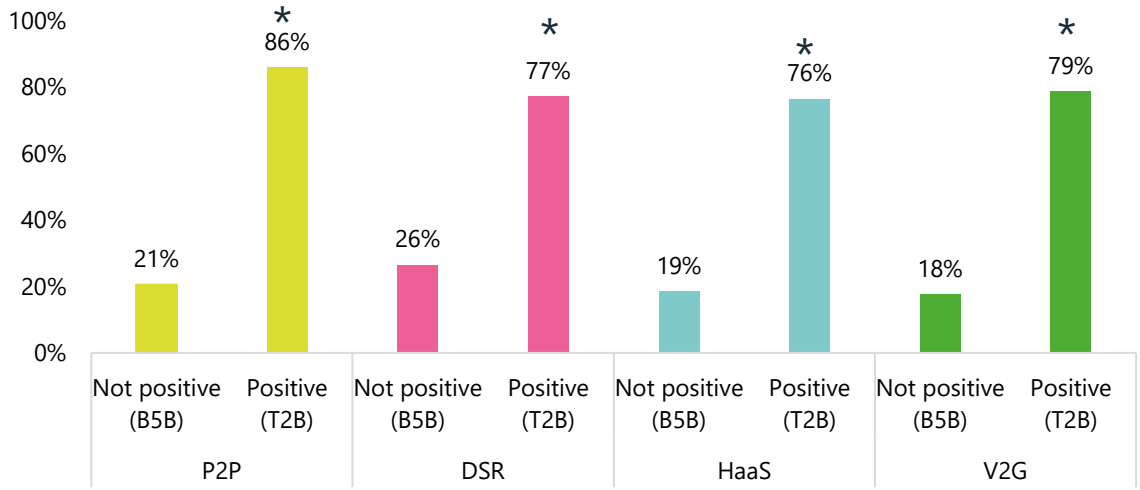
Q9; Q13; Q17; Q18; Q26 To what extent do you agree with the following statements: Overall I feel positive about this idea. Sample Home Truths panellists n=418. Statistically significant difference on a paired t-test: p<0.05 = significant; use as indicative of direction.

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Those who rated the concepts positively understand them better and are more engaged

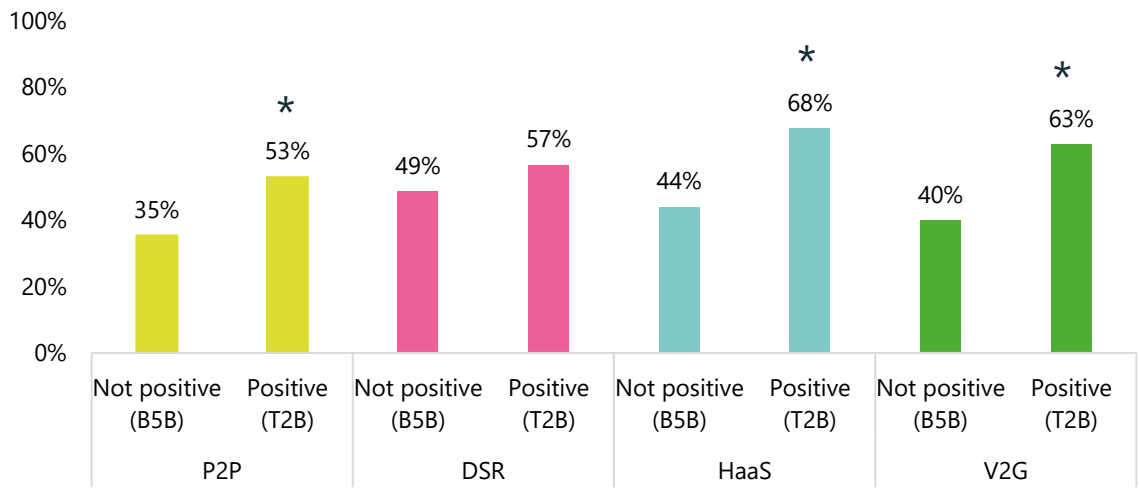
Consumers who rated each concept positively (top 2 box on a 7 point scale) were more likely to rate the concept easier to understand. They would also like to ask more questions, which demonstrates their engagement

Top 2 box agreement with the statement "It is easy to understand"



*indicates a significant difference vs those not positive to the same concept

Top 2 box agreement with the statement "I would need to ask more questions"



*indicates a significant difference vs those not positive to the same concept

Q13; Q17; Q18; Q26 To what extent do you agree with the following statements: It is an easy idea to understand; I would like to ask some more questions. Sample Home Truths panellists (total: n=418; Those rating Top 2 Box (T2B) vs those rating Bottom 5 Boxes (B5B) on a 7-point scale filtered on response to 'Overall I feel positive about this idea.' Q9; Q13; Q17; Q18; Q26) bases shown in brackets under each column. Top 2 Box includes strongly agree and somewhat agree. Bottom 5 box includes slightly agree, neither agree or disagree, slightly disagree, somewhat disagree and strongly disagree.

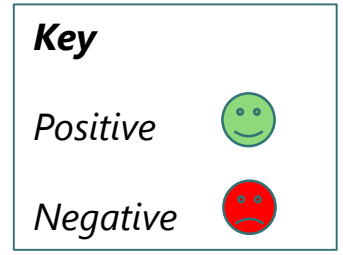
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Only the most positively received concept, Peer to Peer Trading, was linked with local energy and energy saving

Key themes associated with each model

	Energy Models Tested			
	P2P	DSR	V2G	HaaS
Renewable energy/ reducing CO2 emissions				
Control of energy supply / generation				
Saving money / cost control				
Local energy generation and supply				
Energy provider control / loss of personal control over energy				



Only Peer to Peer is associated with local energy

Less positively received due to the negative implications of **external energy control**

Q14; Q19; Q22; Q27 Below is a description of a new idea for an energy service. Please read the description and highlight the bits you like in green and don't like in red. Q15; Q20; Q23; Q29 Please let us know your MAIN like about this idea. Q16; Q21; Q24; Q29 Please let us know your MAIN dislike, about this idea. Sample Home Truths panellists n=418.

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Local energy

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Local energy

Respondents reviewed the below description of Local energy before considering the different service concepts.

This simple description introduces a novel model of supplying energy to the respondents.

> Currently, we have a large, nationally centralised energy system and 6 well known energy suppliers.
>
> Local energy is where electricity would be generated and sold to you by people and businesses within your local area instead of it coming from large central power stations that are a long way away.
>
> Local energy could be generated using lots of different technologies, including renewable sources.

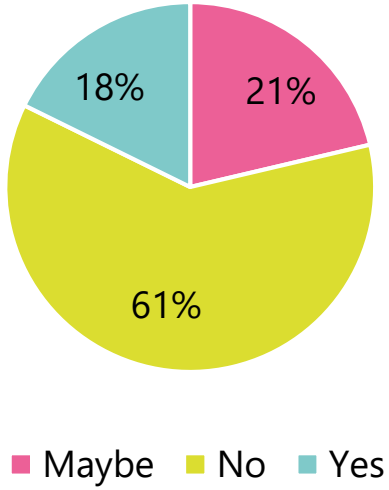
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The idea of ‘Local energy’ is well received despite being unfamiliar to most

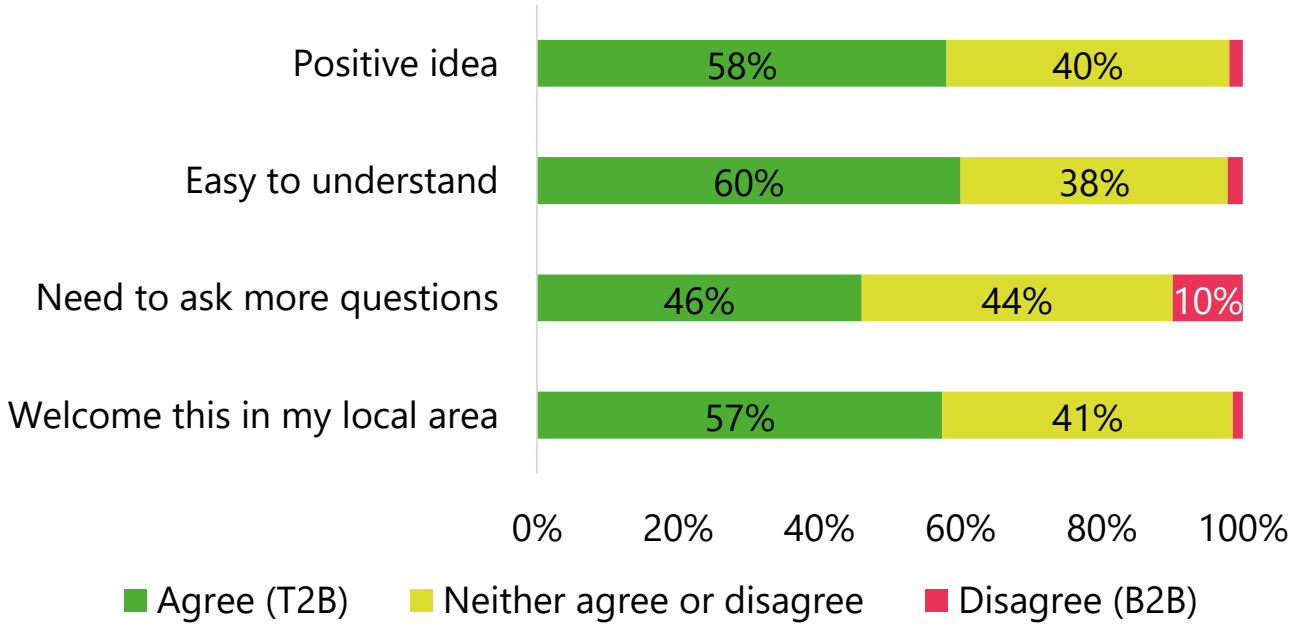
Despite the term ‘Local energy’ being relatively unheard of amongst our sample, the concept was well understood and positively received. However 40% were less engaged in the idea.

Have you heard the term Local energy?



Q8 Have you ever heard of the term "**Local energy**"?
Sample Home Truths panellists n=418

Local energy acceptance rating

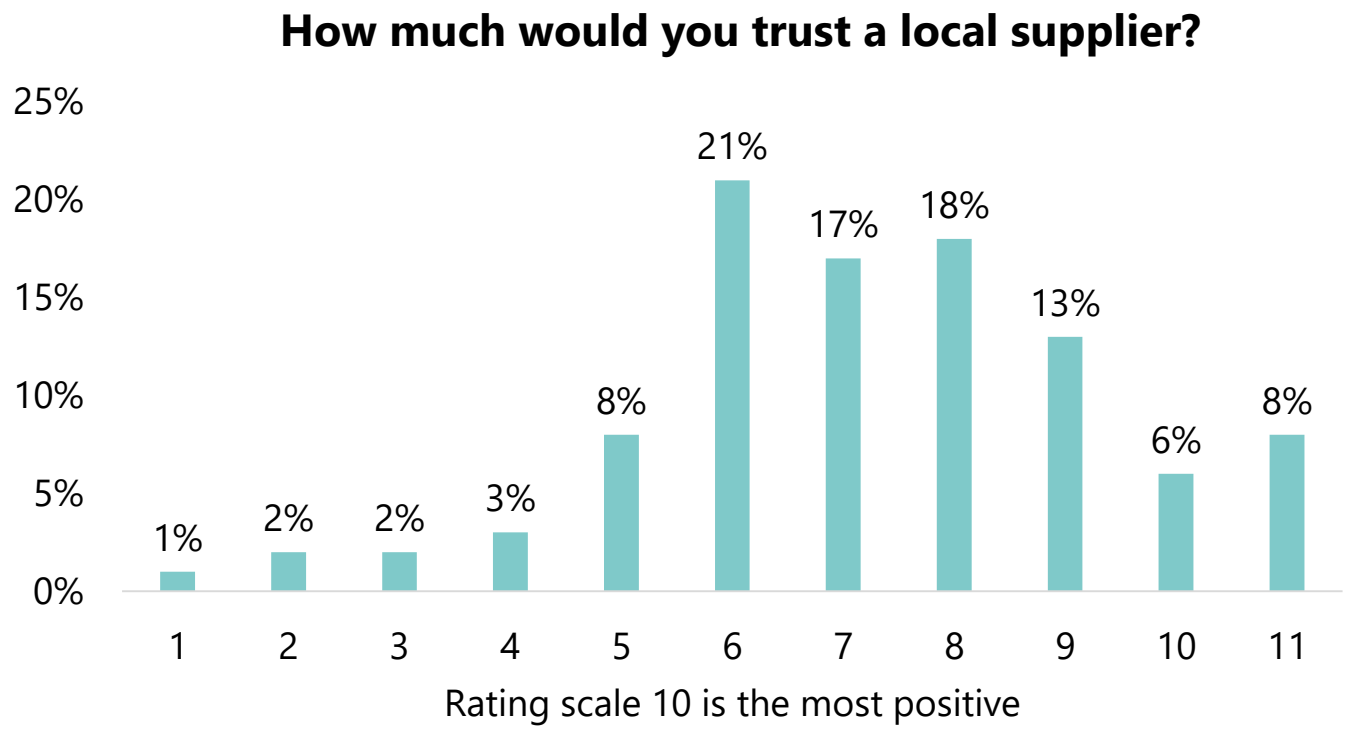


Q9 to what extent do you agree with the following statements; It is an easy idea to understand; Overall I feel positive about this idea; I would welcome this in my local area; I would like to ask some more questions.
Sample Home Truths panellists n=418.

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Over 40% indicate that they would trust a 'local energy company', while 24% would not trust a local energy company

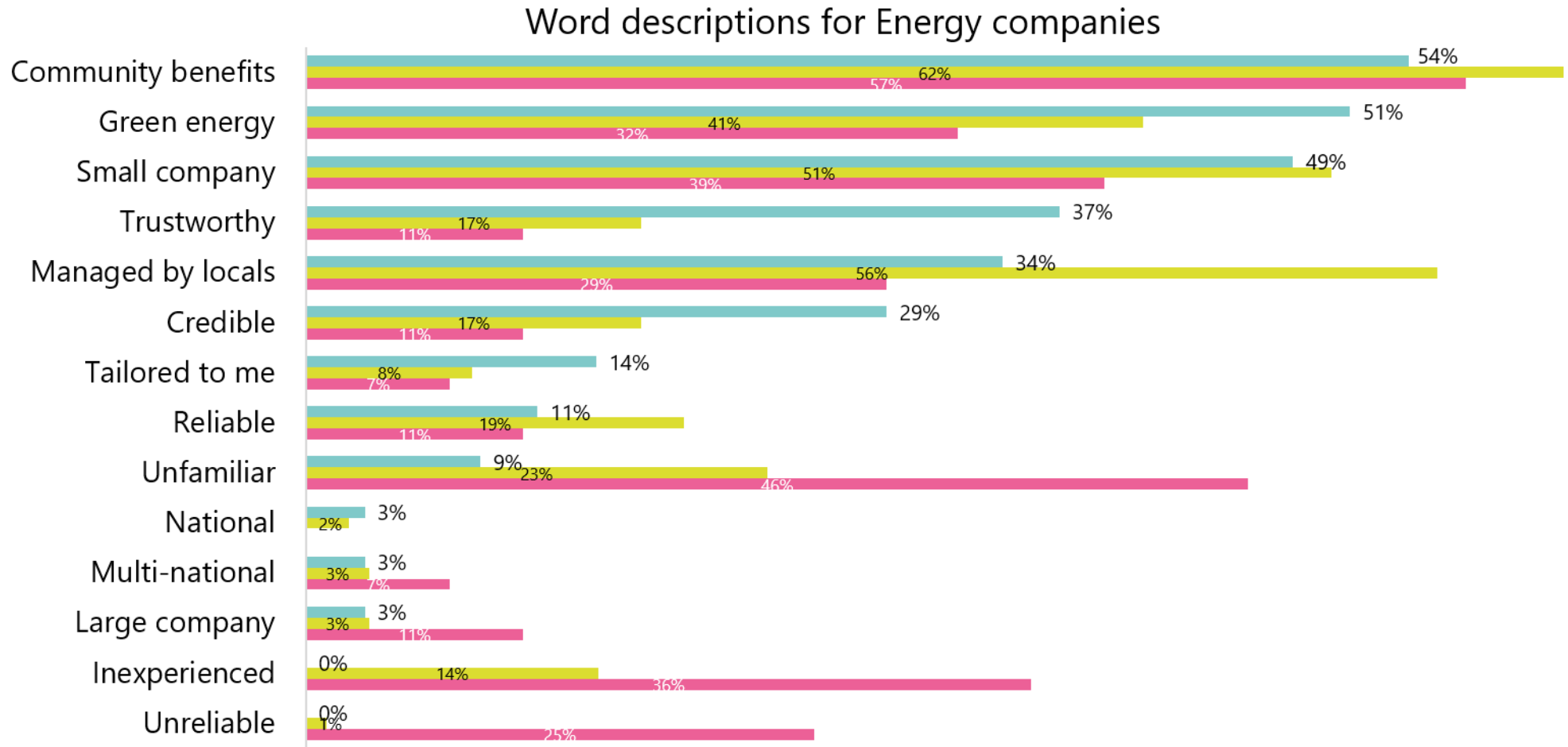


Q11 On the following scale how much "Trust " would you place in a local energy company? Sample Home Truths panellists n=418

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Positivity towards local energy is driven by community benefits, being small and managed locally, regardless of their trust in local energy companies. But their lack of experts and credibility, combined with being unfamiliar, puts some consumers off



Key

- High Trust >7/10
- Medium Trust 4/10 – 6/10
- Low Trust < 4/10

These scores indicated how much they would trust a local energy supplier on a 10 point rating scale, where 0 is lowest and 10 is the highest.

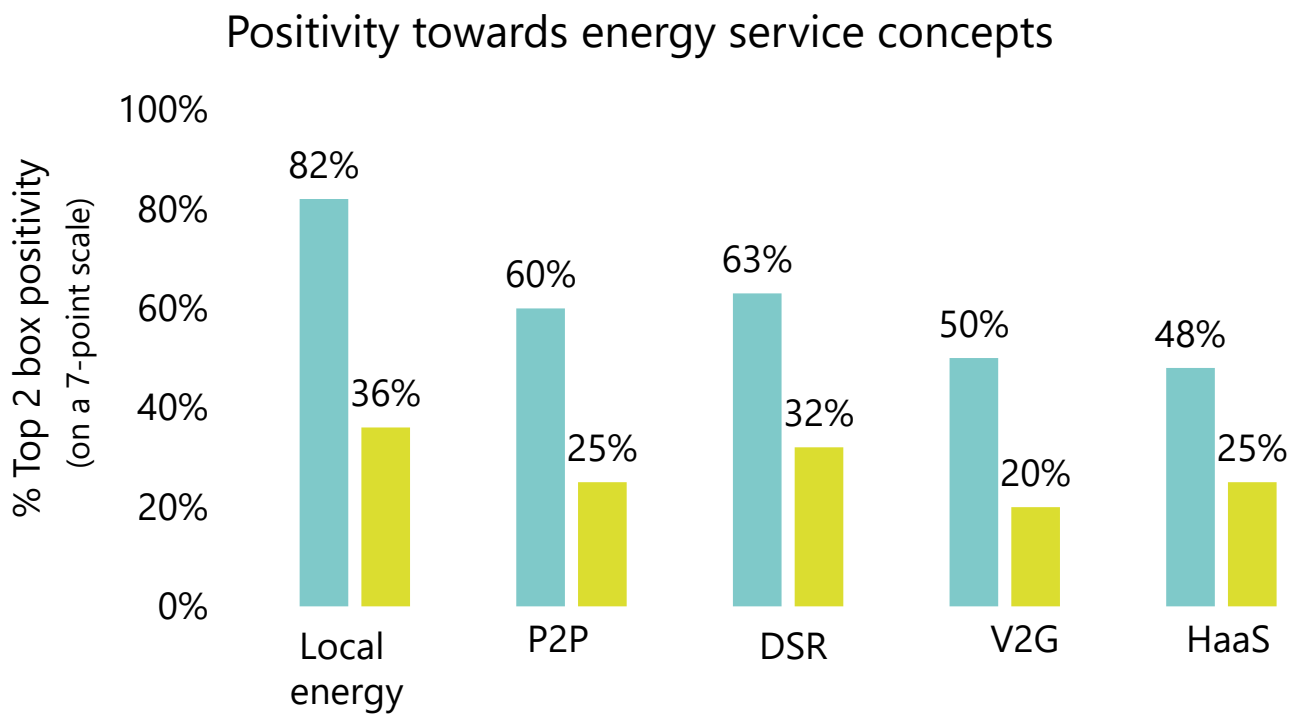
Q11 On the following scale how much "Trust " would you place in a local energy company? Sample Home Truths panellists n=418

Q10 If the term "local energy was written in the newspaper, which words would you associate with it? Sample Home Truths panellists n=225.

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Those who have high 'trust' in local energy Companies respond better to the service concepts tested



Key

High Trust >7/10

Medium Trust <6/10

These scores indicated how much they would trust a local energy supplier on a 10 point rating scale, where 0 is the lowest and 10 is the highest.

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Q11 On the following scale how much "Trust " would you place in a local energy company . Q13 To what extent do you agree with the following statements: Overall I feel positive about this idea; Sample Home Truths panellists n=418.

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Service concepts in depth

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Peer to Peer trading: consumers liked the idea of trading energy to save money and use more renewable energy

Following an introduction to the service concept, participants were asked to highlight their likes and dislikes. The most common **likes** and **dislikes** are highlighted here (those with >50 responses are noted).

Currently many households buy their electricity or gas from one supplier, with **limited ability to reduce costs** besides shopping around for better deals.

Some households and businesses do generate their own energy from solar power, wind power etc. But they will often make more than they use **and cannot control** what happens to the surplus energy e.g. on a sunny day you may generate lots of solar energy but not be at home to use it.

In the future, any **surplus energy** made by those houses and businesses could be **sold to others in the local area**. They could control what happens to their surplus energy and save on their bills.

The people buying the energy would **save money** too and have access to **renewable, local energy**. A **website or app** would allow you to make these transactions **simply and easily**, giving you **contro**l of your energy needs.

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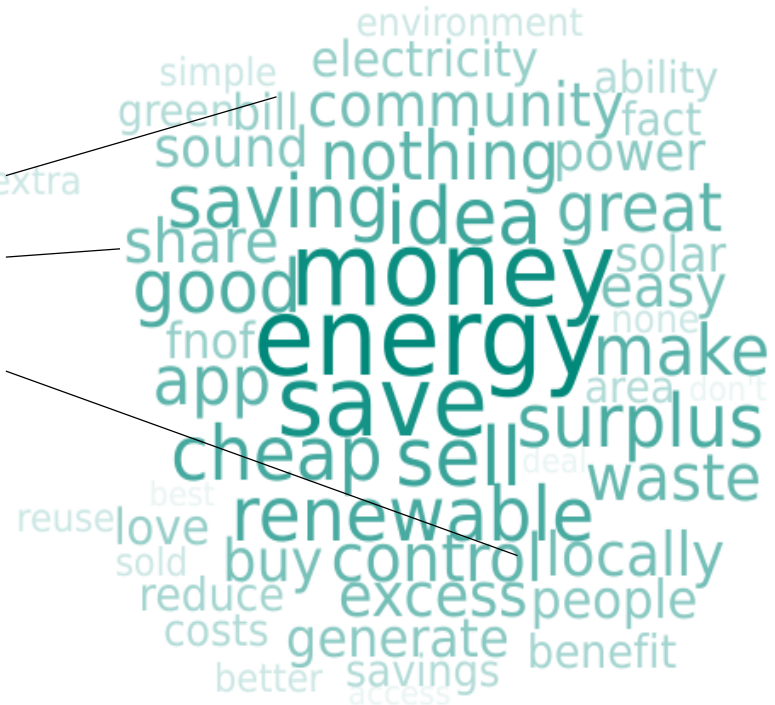
Q22 Below is a description of a new idea for an energy service. Please read the description and highlight the bits you like in green and don't like in red. Sample Home Truths panellists n=418.

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Respondents noted energy and money saving, as well as community aspects, as benefits of peer to peer trading. Complexity puts some people off

I like.....

'local', 'community' and 'sharing' all resonate more strongly than in other concepts



I dislike.....



Many indicated their dislikes as 'nothing' or 'none', showing their positivity to the proposition

'complicated', 'unsure' and 'difficult' highlight that this is a difficult concept for some to grasp

Q23; Please let us know your MAIN like about this idea. Q24 Please let us know your MAIN dislike, about this idea. Sample Home Truths panellists n=418.
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Demand Side Response: consumers liked the idea of using more renewables but worried about losing control of their appliances

Following an introduction to the service concept, participants were asked to highlight their likes and dislikes. The most common **likes** and **dislikes** are highlighted here (those with >50 responses are noted).

Peaks in electricity demand occur when lots of people are using appliances in the home. This means suppliers have to keep the power stations switched ON, which costs a lot of money and produces CO2. At other times, energy use is low and there is lots available. For example if it's a sunny or windy day there is lots of **renewable** energy available.

Ideally it would be better if electricity was evened out throughout the day and this would **reduce CO2 emissions**.

A household can sign up to a special contract with their energy supplier and **save money** by letting the supplier know where they are going to use energy within their home.

The energy supplier could use **automatic controls** to **switch your home appliances on and off** for very short periods of time. You don't need to worry this might affect the performance of your appliances, as the controls are planning around how you use energy in your home. You can **override** the control at any time.

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Q14 Below is a description of a new idea for an energy service. Please read the description and highlight the bits you like in green and don't like in red. Sample Home Truths panellists n=418.

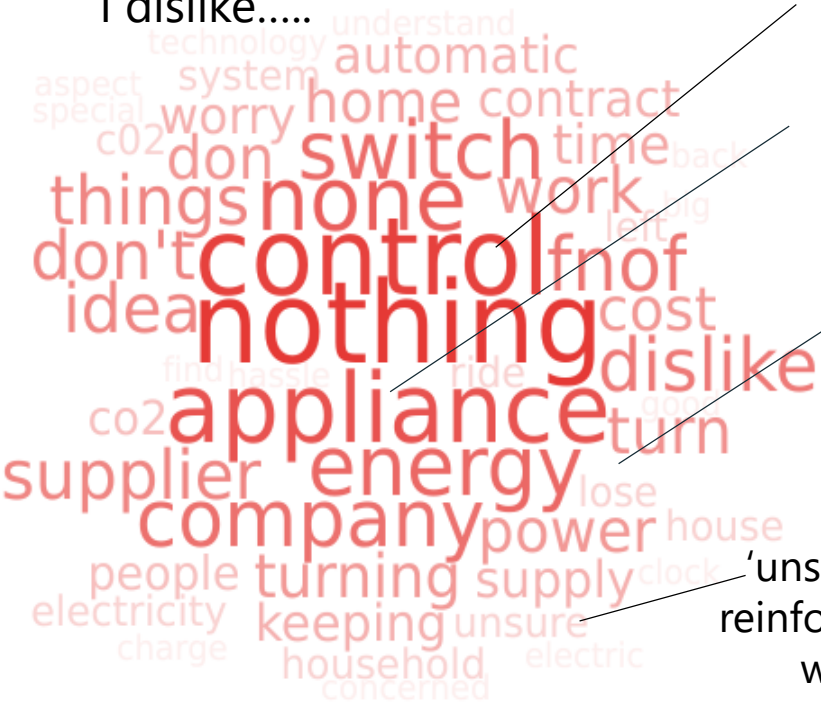
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DSR is strongly associated with environmental benefits and money saving, but some indicate unease at relinquishing control

I like.....



I dislike.....



A strong association with 'saving energy', 'reducing CO_2 emissions' and being 'good' for the environment

'control,' 'appliance' and 'energy company / supplier' show a big concern about relinquishing control of their energy

'unsure' and 'concerned' reinforce consumer unease with Demand Side Response

Q15 Please let us know your MAIN like about this idea. Q16 Please let us know your MAIN dislike, about this idea.
Sample Home Truths panellists n=418.
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Vehicle to Grid: consumers like the idea of saving money by storing and selling energy. But guarantees are required and some dislike specifying when their car is needed

Following an introduction to the service concept participants were asked to highlight their likes and dislikes. The most common **likes** and **dislikes** are highlighted here (those with >50 responses are noted).

Vehicle to Grid (V2G) is a way you could **save money** by using the battery in an **electric vehicle** to store and then use electricity. Often, an electric car can be parked at home for much longer than the time it takes to charge it ready for the next time it's going to be used.

V2G will enable you to **store energy** in your car's battery at times when electricity is **cheap** because the nationwide demand for electricity is low and easily met by the electricity system (the "grid"). Then you can **sell it back** to the grid **at a higher price** when the nationwide demand is high and the grid needs extra electricity supply.

You don't need to worry this might leave you with an **empty battery** when you need your car. You **specify when you're going to need you car** and how much charge you need and the system **guarantees** you'll always have the right amount of charge at that time. If you need your car sooner, you can override V2G at any time.

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Q22; Below is a description of a new idea for an energy service. Please read the description and highlight the bits you like in green and don't like in red. Sample Home Truths panellists n=418.

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V2G is strongly associated with saving money and energy, but less popular perhaps because some participants dislike electric vehicles

A strong money and energy saving theme but little link to environmental benefits

I like.....



I dislike.....



'battery' and 'electric' refer to electric vehicles in general.
A group of consumers dislike electric vehicles, affecting their response to the concept

'nothing' on both likes and dislikes emphasises the difference in opinion between consumers

Q20 Please let us know your MAIN like about this idea. Q21 Please let us know your MAIN dislike, about this idea. Sample Home Truths panellists n=418.
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Consumers like the premise of 'warmth when you want for a fixed price' but dislike their energy provider choosing their heating system

Following an introduction to the service concept participants were asked to highlight their likes and dislikes. The most common **likes** and **dislikes** are highlighted here (those with >50 responses are noted).

It is known that **gas boilers emit large amounts of carbon**, which damages the environment. People are often put off switching their gas boiler for low carbon heating systems because they don't know if it will be as warm and they don't know what it will cost to run.

A new idea, called Heat as a Service, makes sure you get the **warmth you want for a fixed price**, from any type of heating system.

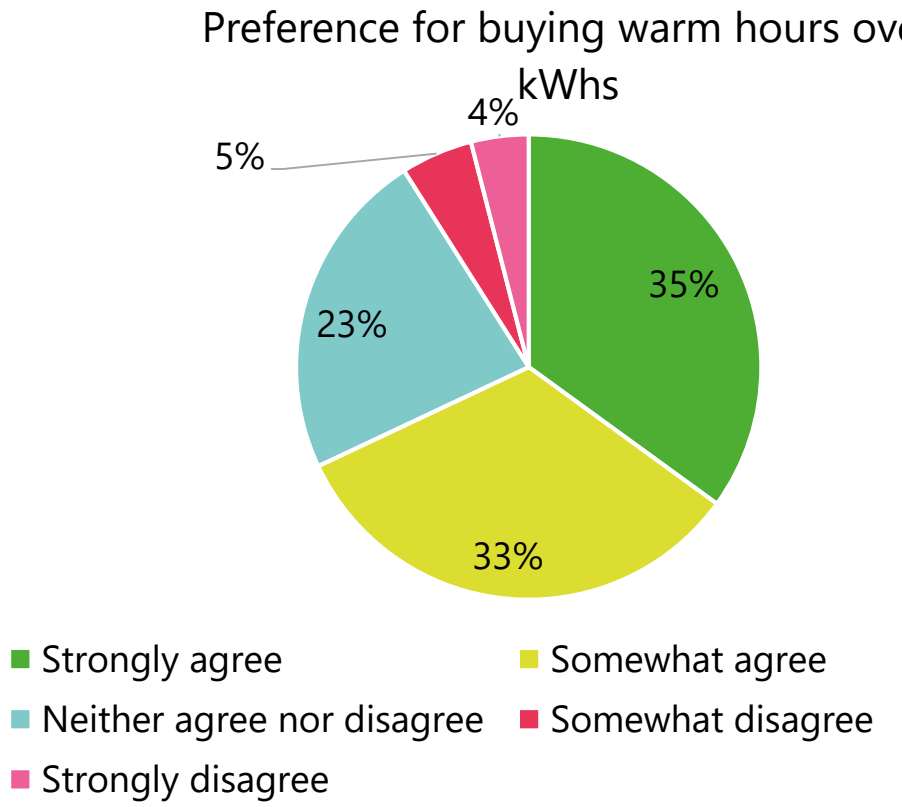
If you decided to replace your heating system, your **Energy Service provider would be responsible for deciding** which is the best low carbon system to meet your needs, who would install it and how to maintain, repair and operate. The costs of the system would be built into your regular heating bill.

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Q27 Below is a description of a new idea for an energy service. Please read the description and highlight the bits you like in green and don't like in red. Sample Home Truths panellists n=418.

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Those preferring warm hours over kWhs are more positive to heat as a service, whilst those neutral to warm hours are also neutral towards the service concept



Preference for buying warm hours over kWhs

HaaS concept positivity

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Strongly agree	18%	7%	3%	0%	0%
Somewhat agree	24%	21%	12%	0%	0%
Slightly agree	24%	32%	21%	25%	0%
Neither agree nor disagree	21%	25%	38%	50%	25%
Slightly disagree	5%	7%	15%	13%	25%
Somewhat disagree	8%	9%	6%	13%	50%
Strongly disagree	0%	0%	6%	0%	0%

Q25 It is believed that people don't want to buy kW units of gas and electricity, which are hard to understand. They want to buy guaranteed levels of heat, comfort etc. As a consequence, we need to move away from kWhs to new units of measurement and services that help people understand what they are getting Q26 to what extent do you agree with the following statements: It is an easy idea to understand; Overall I feel positive about this idea; I would welcome this in my local area; I would like to ask some more questions.
Sample Home Truths panellists n=418.

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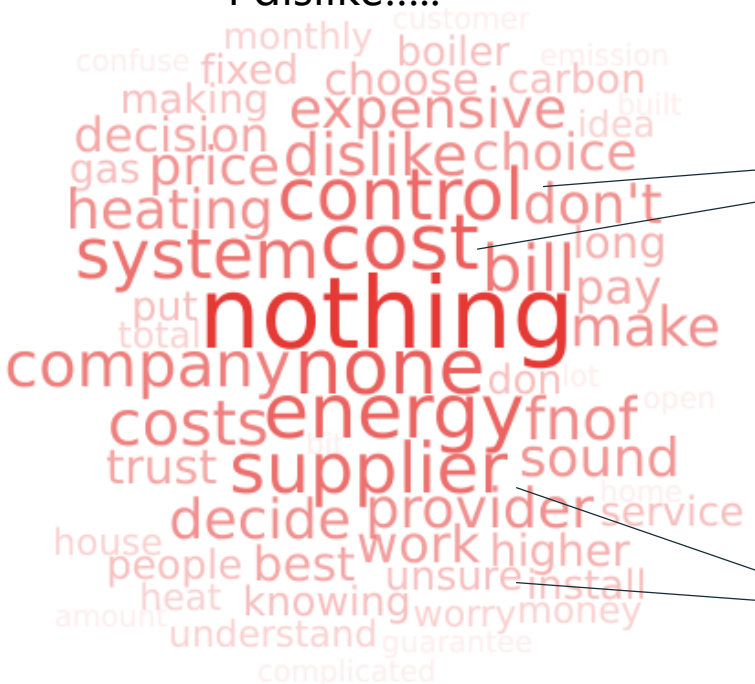
Consumers liked the fixed price message in HaaS. Some consumers already think they are paying a fixed price for their gas and electricity which could explain the ambivalence to the concept

Positives around a 'fixed price' and 'environment,' but the message is less consistent than DSR or P2P

I like.....



I dislike.....



'control' and 'cost' concerns are highlighted by many

'expensive', 'supplier' and 'unsure' show the need for more information

Q29 Please let us know your MAIN like about this idea. Q29 Please let us know your MAIN dislike, about this idea. Sample Home Truths panellists n=418.
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Recommendations and next steps

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Recommendations

Consumers need to understand the service concepts before they will try them.

- Very few consumers responded negatively to any of the service concepts tested, however many were more neutral
- Those who responded neutrally found the service concepts harder to understand, suggesting that improved understanding, through clear and concise explanations, supports positivity to the concepts

Local energy can drive positivity towards service concepts.

- Local Energy is positively received by consumers overall and has a halo effect on the acceptance of the service concepts
- Where possible, Local Energy and community benefits should be highlighted in the service concepts to raise their appeal to the consumer

Guarantees and override options can reassure consumers wary of giving control to service providers.

- Giving control to a service provider is identified as a concern in DSR (control of appliances), V2G (control of EV battery charging), and HaaS (control of the heating system type)
- Work is needed to ensure 'designs' give consumers the level of control that they need

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Appendix

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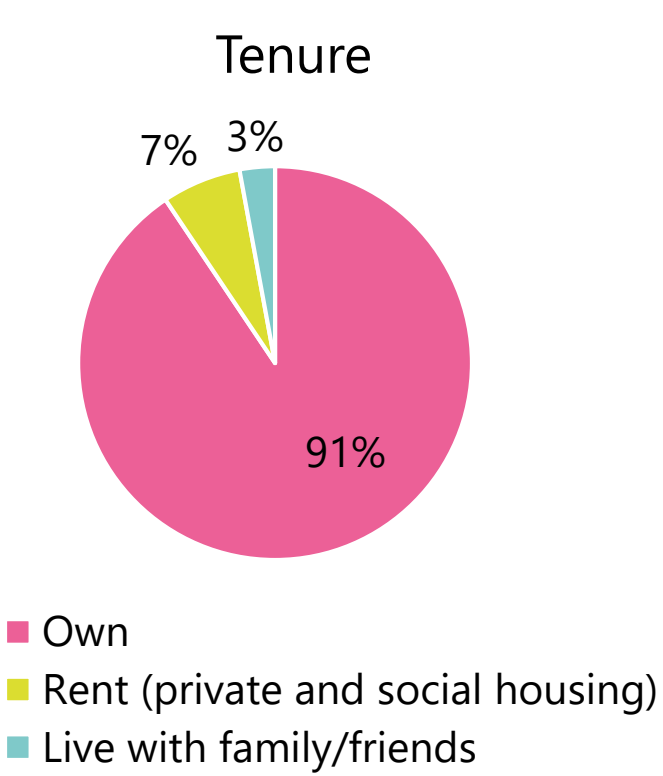
Methodology

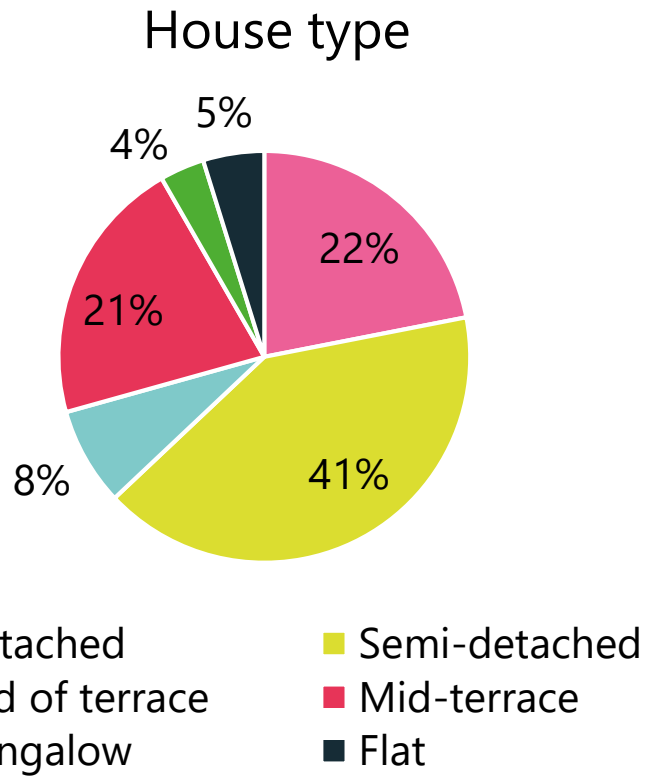
- A 20 minute online survey of the Home Truths panel to evaluate the appeal of service concepts common across a number of the ERIS Smart Local Energy Service projects
- The survey began with an explanation of the concept of Local Energy and explored respondents' reactions to this concept
- Four service concepts were then presented to respondents, who were asked a number of rating questions to explore how much they liked and understood each one. The service concepts were randomised
- To understand how different elements of each concept were received, respondents were asked to highlight their most liked and disliked parts on a text description of each concept
- The respondents also had the opportunity to write their main like and dislike of each concept in an open ended question

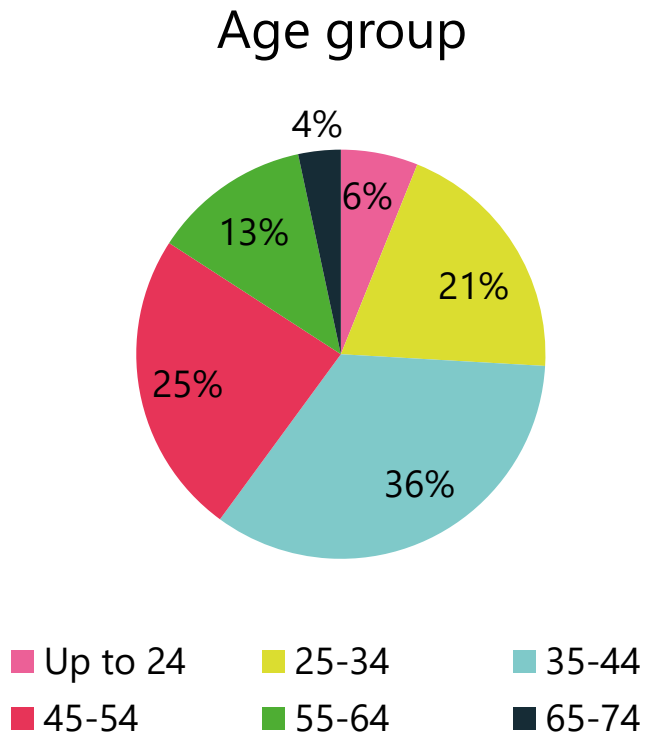
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Respondent demographics



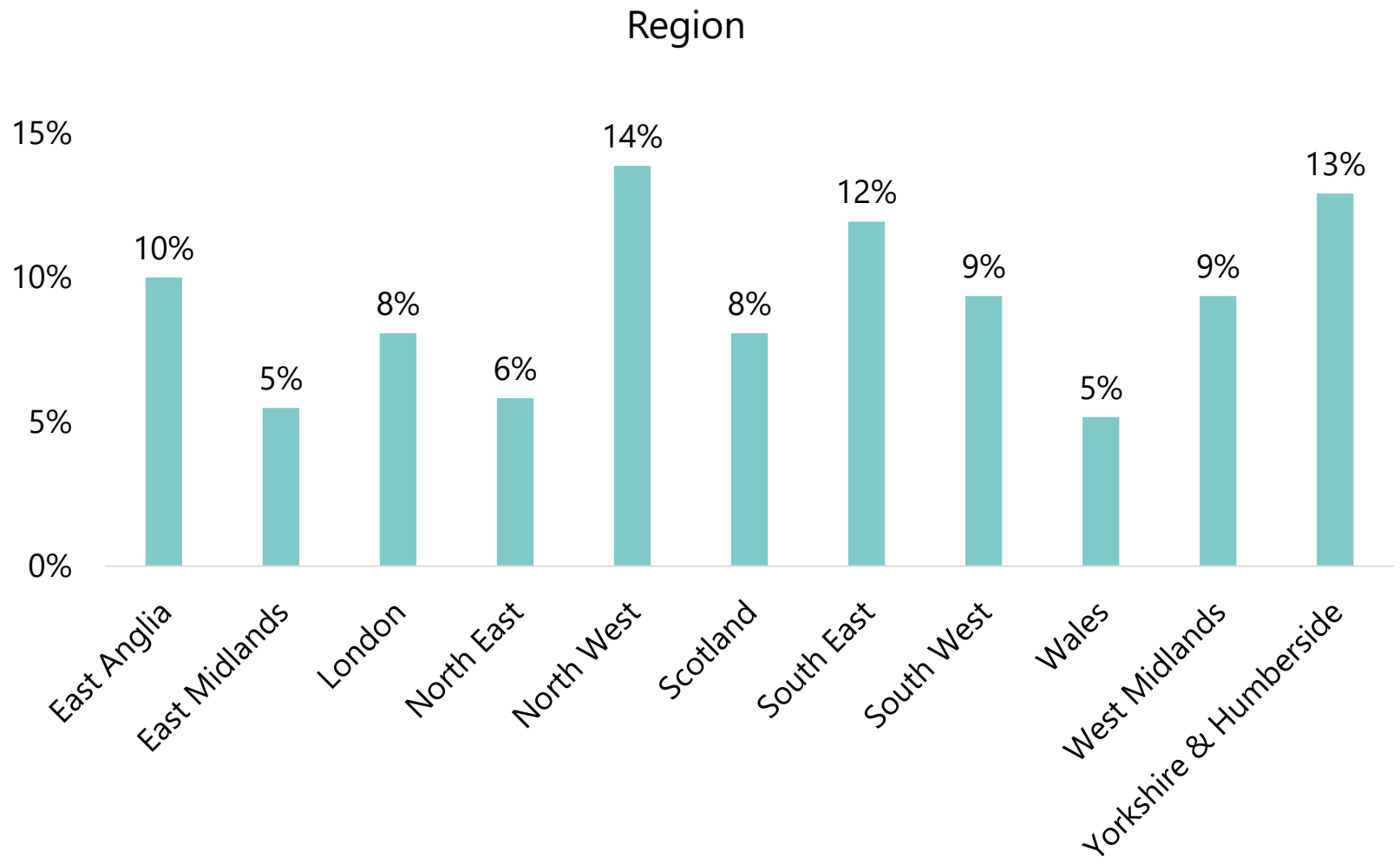




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Respondent demographics



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