



# Flex Direct

## SIF Round 3 Discovery Phase

Show & Tell



# SIAPARTNERS

## Imperial College London Consultants



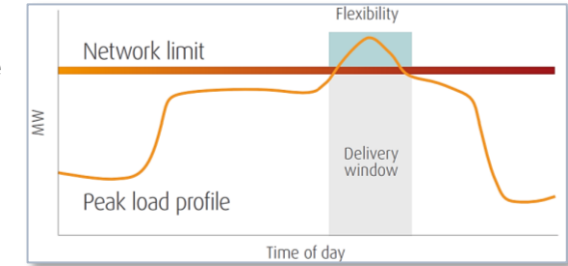
# Problem



## A need for energy flexibility

There is a need to **enhance energy flexibility** usage to meet peak hour energy demands efficiently. **Sustain\***, is 1 of 4 types of flexibility services defined by the ENA where the provider agrees in advance on their availability to deliver a change in export or import at specified time. It is a **firm service providing a fixed revenue in return for the agreed reduction in peak load.**

Sustain flexibility plays a crucial role in peak demand reduction and helps to defer network reinforcement.



*Peak load reduction through 'Sustain'*



## Extensive centralised funding for efficiency upgrades

There is a **vast amount of centralised funding** available to Local Authorities and Social Housing Providers such as the: Home Upgrade Grant, Social Housing Decarbonisation fund and ECO4 Flex, to undertake energy efficiency retrofits across their region.

These energy efficiency retrofits can **provide Sustain flexibility** but there is **limited coordination** between these social landlords (who represent a large portion of vulnerable customers) and the flexibility supply chain.



## Uptake of energy efficiency flexibility

**Low uptake of Energy Efficiency** type Sustain flexibility due to limited awareness and constraints baselining. If these barriers are addressed, it would better align the supply chain and unlock wider system benefits for both the network and end consumers.



## The Flex Direct solution

Flex Direct aims to develop **novel commercial models and coordinated market approaches** to enable direct participation of Local Authorities and Social Housing Providers into flexibility markets, increase the uptake of energy efficiency for flexibility and **facilitate engagement** of 'hard-to-reach' customers at scale.

\*Also known as Peak Demand Reduction

# Engagement with local authorities and social housing providers



BENEFITS	BARRIERS
<ul style="list-style-type: none"> <li>• <b>Reduced energy bills</b> for tenants and fuel poverty alleviation</li> <li>• Greater <b>energy awareness</b> among tenants</li> <li>• Increased <b>tenant appetite for retrofits</b> through providing evidence of reduced consumption</li> <li>• <b>Housing providers</b> working towards Net Zero targets</li> <li>• Evidence for <b>future funding</b> by demonstrating effective retrofit measures</li> <li>• Consolidated <b>relationship</b> with UK Power Networks</li> <li>• <b>Financial reward</b> received can subsidise future retrofit plans</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Data protection</b> concerns of monitoring data on tenants' energy usage</li> <li>• Tenant <b>scepticism towards monitoring</b> technology (e.g. smart meters)</li> <li>• <b>Resources</b> (time and cost) required to measure, and evidence, demand reduction</li> <li>• Retrofit <b>measures that are out of scope</b> for Flex Direct, e.g. electrifying heat and heat networks</li> <li>• Risks associated with not being able to uphold the <b>terms of the contract</b> with UK Power Networks</li> <li>• Sitting <b>across the border</b> of the UK Power Networks licence area and therefore not all properties qualifying</li> </ul>

## What is needed going forward?

Guidance on **terms of the Flex Direct contract**, which should avoid penalising providers for failing to reach targets

Clarity on what would constitute **effective demand reducing measures** that would be suitable for Flex Direct

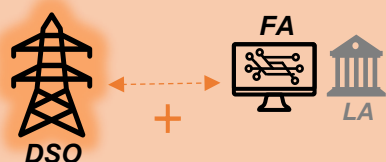
Information on the **level of financial reward** available vs investment required to demonstrate reduced demand

Guidance on **best practice for data sharing** in relation to demonstrating demand reduction

# Commercial arrangement options for Flex Direct

In Discovery, we have shortlisted three commercial arrangement options, each with varying stakeholder roles, responsibility and risk, to be explored for Alpha.

## 1. Enhanced business as usual Scenario

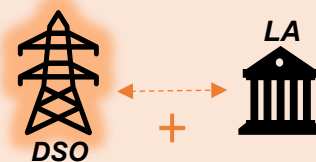


- Minor adjustments to current Sustain flexibility process to encourage further participation from Local Authorities and Social Housing Providers.
- Flexibility Aggregator is key party responsible
- Activities include: increased marketing, longer contracts, alternative baseline approaches and amended competition timelines.

### Score

Alignment to DSO / RIIO- ED2 requirements:	High
Impact (benefit and scalability):	Medium
Complexity to Deliver (time and cost):	Medium
Risk (to delivery and competition):	Low

## 2. Direct contracting with local authorities

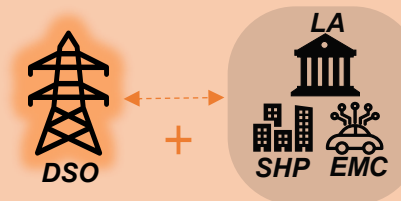


- Direct procurement from Local Authorities, adapting processes to engage more participants driven by service improvement
- Local Authority is key party responsible
- Activities include: (addition to Option 1 activities) in-depth support and engagement with LAs to upskill and determine incentive levels, contractual clauses amendments regarding under-utilisation.

### Score

Alignment to DSO / RIIO- ED2 requirements:	High
Impact (benefit and scalability):	High
Complexity to Deliver (time and cost):	Medium
Risk (to delivery and competition):	Medium

## 3. Direct contracting with local authorities, and wider supply chain



- Direct procurement with private stakeholder support, emphasizing commercial viability and scalability through increased costs and expertise.
- Activities include: (addition to Option 1 activities) some upskilling support, reviewing of service fees, contractual clauses amendments regarding under-utilisation, sub-contracting and governance

### Score

Alignment to DSO / RIIO- ED2 requirements:	High
Impact (benefit and scalability):	High
Complexity to Deliver (time and cost):	Medium
Risk (to delivery and competition):	Medium

# Partnership ecosystem approach

Key stakeholders across the energy efficiency and flexibility supply chain were mapped to determine whose business needs and likely level of influence could lead to favourable outcomes for Flex Direct

## Key questions to consider

Which stakeholders' business needs align most strongly with provision of flexibility from Energy Efficiency to increase the likelihood of **favourable outcomes for the network and end-consumers?**

Which stakeholders are **key decision makers** within the energy efficiency and flexibility supply chain who could readily mobilise solutions that will **target the increased provision of energy efficiency flexibility?**

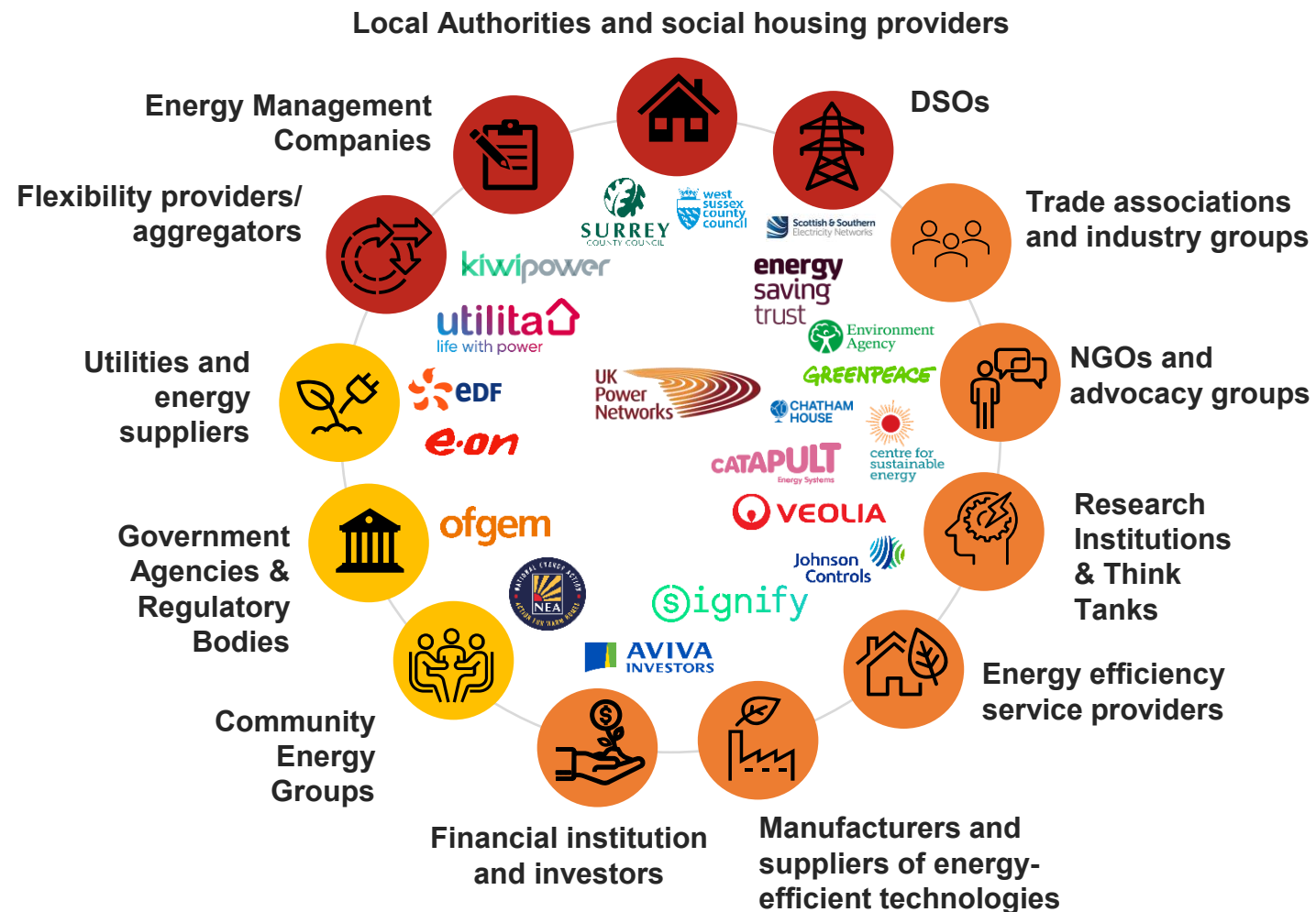
Which **stakeholders** are likely to bring a **greater level of impact, and lower level of risk** to this initiative?

### KEY

Tier 1:

Tier 2:

Tier 3:



# Key takeaways

## Unlikely organic growth

Energy efficiency flexibility in its **current form is unlikely to lead to organic uptake**, by the market, due to limited awareness, insufficient incentive levels and a lack of co-ordination between key stakeholders across the supply chain.

## The importance of Local Authorities

In the Flex Direct Partnership Ecosystem, **Local Authorities** (with or without Flexibility Aggregators) will play a **crucial role** in delivering energy efficiency flexibility, by leveraging **substantial government subsidies** for retrofits. Findings from Work Package 1 and 2 indicate Local Authorities' clear interest in participation but highlight the need to **reassess current commercial arrangements** to address concerns and enhance commercial viability.

## Presently unfeasible arrangements

Considering present Sustain service fees and contract durations, the **resourcing costs** required for a Local Authority, a relatively inexperienced new market entrant, **presently outweigh the revenue** earned by meeting the contract terms and providing agreed volumes of peak demand reduction to the DSO directly.

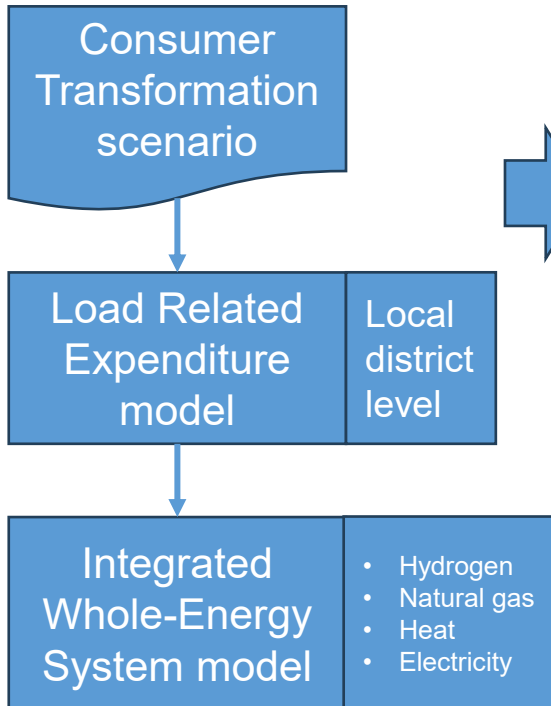
## DSO to take the lead

If current commercial arrangements for energy efficiency sustain flexibility remain unchanged, the **DSO would need to take the lead**, providing knowledge sharing and upskilling support to supply chain stakeholders to enable direct participation in flexibility markets.

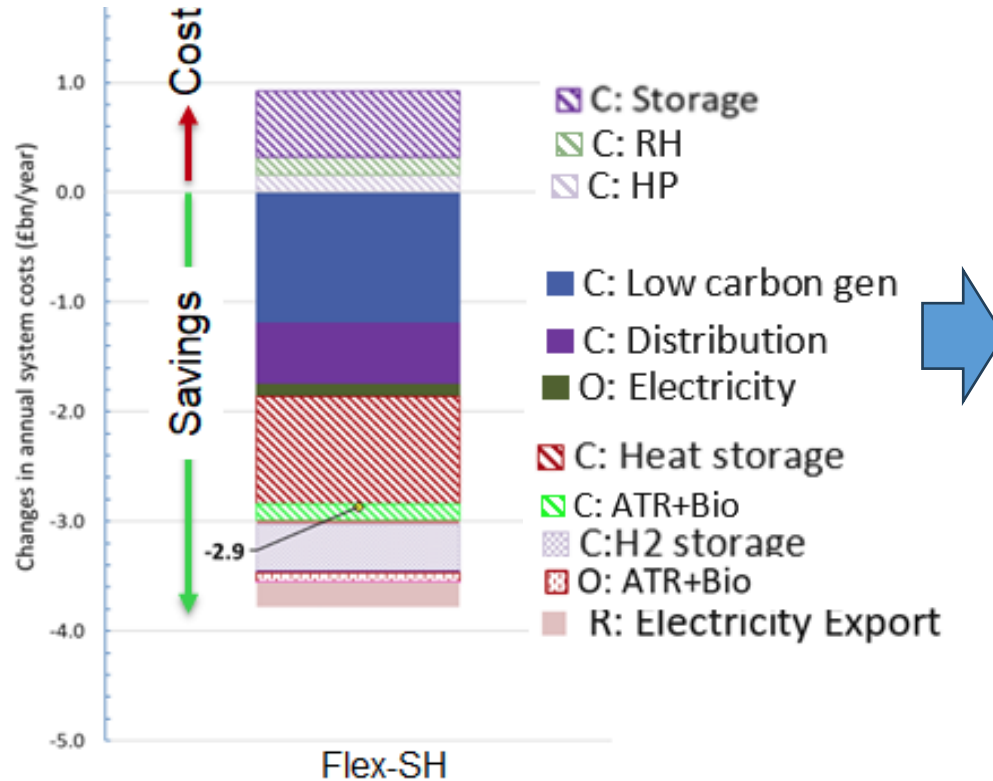
# Benefits assessment of scaling up

Potential savings of social houses' energy efficiency improvement and participation in flexibility services that can be harnessed through Flex Direct

## Approach



Assumptions and other input data are described in the next slide.



Savings in low-carbon generation investment, deferral of distribution network reinforcement, electricity OPEX, heat storage, and other flexibility technologies.

Impact of deferral of distribution network reinforcement and related environmental benefits of rolling-out the Flex Direct approach

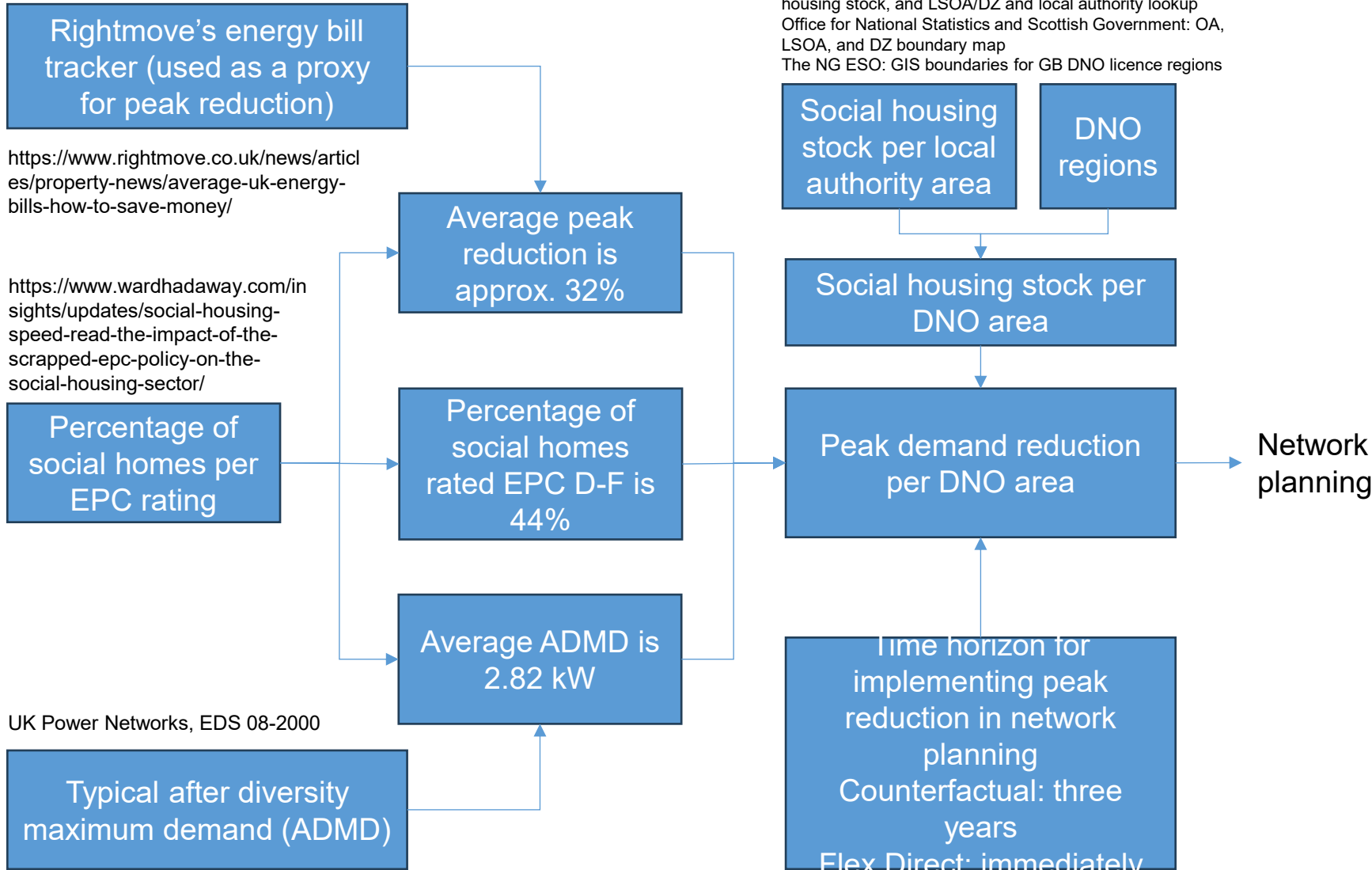
Region	10-year NPV (£m)	Whole Life NPV (£m)
UK Power Networks	<b>110</b>	<b>72</b>
GB DNOs	<b>315</b>	<b>207</b>

## Per social house

Region	10-year NPV (£)	Whole Life NPV (£)
UK Power Networks	<b>78</b>	<b>51</b>
GB DNOs	<b>64</b>	<b>42</b>

# Peak Demand Reduction (LRE input)

Sources: England, Welsh and Scottish governments: social housing stock, and LSOA/DZ and local authority lookup  
Office for National Statistics and Scottish Government: OA, LSOA, and DZ boundary map  
The NG ESO: GIS boundaries for GB DNO licence regions



## Assumptions

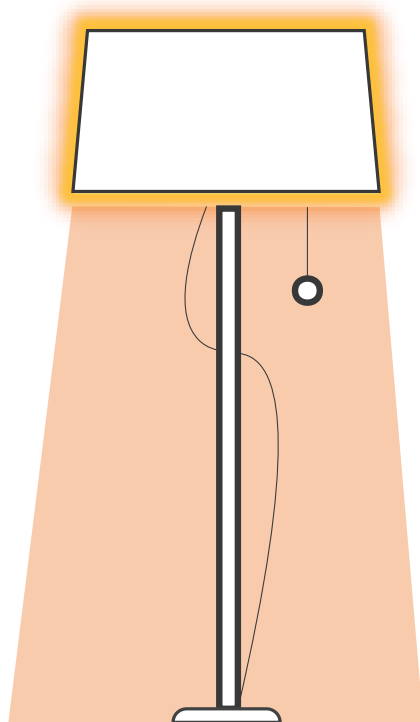
- Resistive heating replaced with heat pumps
- Three year network planning horizon
- All social housing providers participate in Flex Direct
- Constant efficiency implementation over years
- All social houses are EPC-C by 2028

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## Next steps

We aim to continue developing the identified novel commercial models and coordinated market approaches to enable direct participation of Local Authorities and Social Housing Providers into flexibility markets, increase the uptake of energy efficiency for flexibility and facilitate engagement of 'hard-to-reach' customers at scale.

If a large-scale energy efficiency trial is successful for both DSO and the housing provider, this can help to stimulate market-awareness as well as provide clarity on appropriate contractual duration and payment reward regimes.



1

Further engagement with stakeholders identified in the Partnership Ecosystem to refine requirements for participation, and identify enablers for Local Authority uptake

2

Further analysis of current commercial options proposed at Discovery, refine and then testing with stakeholders

3

Explore potential approaches to baselining peak consumption to improve market confidence in energy efficiency flexibility

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# Questions