

Energy
Networks
Innovation
Process
Project
Closedown
Report
Document



Date of Submission:

Project Closedown Report Document

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Project Title (<i>This cannot be changed once registered</i>) Future Flex	Project Reference WPD_NIA_047
Funding Licensee(s) Western Power Distribution	Project Start Date November 2019
Project Duration 2 years 1 month	Year 2022
Nominated Project Contact(s) Stuart Fowler	

1. Scope

Given the increasing long term forecasted requirements for flexibility services, this project investigated strategic options to enable and encourage widespread domestic flexibility service provision. The project focused on active power demand reduction services. The benefits will be increased market liquidity and competition and resulting lower costs of flex service provision.

The Project was scoped in three main phases, as outlined below.

1. Participant engagement

This data-gathering phase was the bedrock of the whole project, using workshops to secure meaningful, deliberated participant input, with follow-on semi-structured interviews, social media engagement and peer-review.

At the heart of this phase were two intensive workshops, informed by best practice in workshop design – with upfront participant priming on key topics, and careful curation of agenda, invitee list and seating plan to ensure meaningful feedback. The workshop methodology was substantially more intensive and bespoke than is typically deployed in the energy sector; for instance, drawing upon ‘priming’ theory from social sciences to set the interpretative frame – using an upfront written briefing and individual verbal calls prior to workshop delivery.

2A. Solution definition: Commercial

This phase turned participant feedback into a concrete commercial design for a rebooted customer journey – new testing methodology, bid options, contract definition, etc.

The focus was on step-change innovations – albeit ones that are achievable. Business as Usual tweaks were excluded from this phase, as they could already be implemented as incremental improvements to Flexible Power.

2B. Solution definition: System build

This phase converted the commercial design into a trial platform for the second generation services. Where needed, the commercial design was amended to reflect the reality of technical implementation.

3. Trials

2. Objective(s)

The main objective of the project was;

“to understand current process limitations with regards to domestic flexibility providers with the aim to demonstrate and test solutions to those limitations”

Once the feedback from the market had been undertaken four additional objectives were added, making a total of five.

Objective	Status
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to understand current process limitations with regards to domestic flexibility providers with the aim to demonstrate and test solutions to those limitations	✓
Explore the impact of flexibility services to feed into wider policy/regulatory setting.	✓
Distribution System Operator(DSO)- READY HOMES - Deliver a set of proven, costed interventions to make homes DSO-ready, through adopting a customer-centric approach.	✓
SUSTAIN-H To trial the provision of a DSO service suitable to domestic flex, which: Targets the impact of Low Carbon Technologies (LCTs) and gives options on data provision, rather than being prescriptive.	✓
PRO-LOW CARBON To explore and understand the carbon impact of procuring DSO services from local flexibility technologies.	✓

3. Success Criteria

Our measures of success at the outset of the project were:

Success Criteria	Status
To carry out two intensive workshops, adopting workshop best practice methodology	✓
To Identify participant-led recommendations for domestic DSO services, segmented into new innovations and BaU tweaks, and clearly prioritised via impact/effort chart.	✓
The Implementation of highest priority recommendations, via empirical trial, targeting at least two providers and 100 homes.	✓
To produce finalised designs following the trial.	✓

4. Performance compared to the original project aims, objectives and success criteria

The project met all of its Objectives and Success Criteria as shown below.

Objectives	
Objective	Status
to understand current process limitations with regards to domestic flexibility providers with the aim to demonstrate and test solutions to those limitations.	Met: We achieved our objective by having a much deeper understanding of what the market is looking for in order to provided domestic flexibility services (more information can be found in the full closedown report on our website ¹)and now have a product that can go to market.
Explore the impact of flexibility services to feed into wider policy/regulatory setting.	Met: The broad deliverables of FutureFlex have given us a really detailed understanding of how to proceed and has informed not only the rollout of Sustain, but also our NIC project EQUINOX
DSO- READY HOMES: Deliver a set of proven, costed interventions to make homes DSO-ready, through adopting a customer-centric approach.	Met: Delivered a report ² and facilitated an industry discussion on the impact of Energy Efficiency as well as what needs to be done from a policy perspective.
SUSTAIN-H: To trial the provision of a DSO service suitable to domestic flex, which: Targets the impact of LCTs and gives options on data provision, rather than being prescriptive.	Met: Successfully tested the principles of a service and now intend to roll it out under Flexible Power in 2022.
PRO-LOW CARBON: To explore and understand the carbon impact of procuring DSO services from local flexibility technologies.	Met: Methodology developed and published on our website.
Success Criteria	
Criteria	Status
To carry out two intensive workshops, adopting workshop best practice methodology.	Met: As detailed on our website in the relevant stage reports and in the Closedown Report ³ , we were able to obtain some useful feedback and refined the trial based on that insight.
A clear list of participant-led recommendations for second generation DSO services, segmented into step-change	Met: We have a product roadmap based on feedback from the trial which will now form part of a rollout to procure these

¹ HYPERLINK

² <https://www.westernpower.co.uk/downloads-view-reciteme/382282>

³ HYPERLINK

innovations and BaU tweaks, and clearly prioritised via an impact/effort chart	services in the future. The roadmap can be found on our website. ⁴
Implementation of the highest priority recommendations, via an empirical trial, targeting at least two providers and 100 homes.	Met: We met this success criteria with a trial including 7 providers of flexibility services and well over 100 homes.
Finalised designs following the trial.	Met: We have a set of designs that now form part of the overall roll out of the produce into Business as Usual. The roadmap is available on our website. Once these are finalised and roll out is planned we will share any further outputs.

5. Required modifications to the planned approach during the course of the project

The original plan involved gathering participant feedback on where the barriers lie, and what it would be useful to trial. In response to the learnings from the extensive industry engagement in the first phase of the project the scope of the project was altered to allow us to take forward the most promising ideas coming from the workshops.

As such we took forward three ideas as the following sub trials.

- A. **DSO READY HOMES** - Use interventions in the customer journey to futureproof homes for DSO services. A DSO ready home is a home that is able to support the DSO in constraint management and data provision;
 - a. Define what a DSO-ready home looks like: in building fabric, assets, people and proposition
 - b. Identify intervention points in customer journey of home decision makers
 - c. Test how the intervention points can be leveraged to make homes DSO-ready E.g. an intervention point for a housing developer is applying for a grid connection – how might an alternative connection process incentivize DSO-ready homes?
- B. **SUSTAIN-H** - Implement a trial with different data options with energy supplier(s), using the Sustain service as a test case
 - a. Identify energy supplier(s) with a portfolios suitable for Sustain (Scheduled Constraint Management) service and co-creating an approach.
 - b. Scrutinise existing datasets (e.g. Electric Nation) to quantify benefits of utilising a portfolio approach
 - c. Work with suppliers & the Flexible Power team to procure services, including trialling multiple different data options with associated different remuneration levels
 - d. 4. Capture the lessons learned
- C. **PRO-LOW CARBON** - Conduct analysis of the carbon intensity of DSO flexibility services
 - a. Secure data from the Flexible Power team
 - b. Investigate potential carbon assessment methodologies
 - c. Explore the use cases of the various DSO flexibility technologies
 - d. Based on the above, quantify the carbon impact of DSO services and share findings with Ofgem, BEIS and the industry.

An internal change request was raised to account for the refined scope and budget requirements, this had no impact though on the timescales.

6. Lessons learnt for future projects

There was extensive feedback and learning created as part of the Future Flex project and this is detailed in the Closedown Report which can be found on our website. We have summarised a few of the key learning points below:

Work Package	Learning Point
DSO Ready Homes	Changes in domestic energy consumption can reduce the prevalence and severity of network constraints in two distinct yet complementary ways. Flexibility allows home energy usage to respond to appropriate signals, shifting energy consumption outside of peak times. Flexibility is ideal for ensuring that non-time-specific consumption does not unduly

⁴ <https://www.westernpower.co.uk/downloads-view-reciteme/466258>

	<p>contribute to network constraints – for example, charging electric vehicles at times of ample network capacity.</p> <p>Energy efficiency delivers permanent changes to consumption patterns, reducing rather than shifting demand. Energy efficiency has the greatest network value when applied to consumption for which significant shifts in time are difficult, or where efficiency can act as an enabler for flexibility. An example is the growing demand for electrical heat in homes during winter evenings, which energy efficiency can permanently reduce and can also enable to be shifted, helping homes to act as thermal stores</p> <p>Flexibility and energy efficiency are complementary, and their combined effect may be required where network constraints are most severe.</p>
Sustain-H	There is high interest in DSO services in provision of domestic flex. FutureFlex originally targeted inclusion of two participants for the operational trial but ended up with 7. However, a key challenge in securing signup was the low value of Sustain-H.
Sustain-H	For domestic flex, there is a close relationship between network time-of-use (ToU) tariffs and DSO services. As network charging rules are governed at national level, in this project we focused on amending DSO services which lie within a DNO's direct control. However, we believe that there are many benefits to a time-of-use approach baked into network charging arrangements which merit consideration – less administration, avoiding tricky baselining questions, avoiding asset qualification requirements. We strongly recommend that this is considered further, as in the mid to long term it is likely more sustainable and appropriate than a scheduled DSO service.
Sustain-H	There is also a diversity of views on the treatment of data We received a diversity of comments from participants' legal teams regarding treatment of personal data. For instance, some parties suggested amendments to the contract to reflect two-factor authentication, auto-delete of emails, and were concerned to clarify who was classified as data controller. Others did not have these requirements.
Pro Low Carbon	Assessing the carbon impact of DSO flexibility services requires a specialised approach. Measuring carbon impact is not the same task as measuring carbon emissions. An understanding of total greenhouse gas emissions is useful when dealing with energy generation, but the role of flexibility services is not simply to supply electricity to the grid. Flexibility services interact with the electricity network and influence the makeup of grid generation. The impact of this interaction needs to be measured, which is why measuring carbon emissions from just the flexibility asset itself is not sufficient. Understanding the impacts arising from both the flexibility technologies themselves and their interactions with the grid requires a unique approach as the complexity of the problem can be .
General	An agile approach to innovation delivers better results, more efficiently – and there is potential to update processes to better facilitate this
General	Availability of business-as-usual teams is crucial to success – product management best practice methods may be a solution. These are crucial if products and services tested in innovation are to make their way into the business and deliver value to customers. Having access to what business thinking is therefore vital to success.

7. The outcomes of the project

The following table details all of the relevant outputs and outcomes that were generated throughout the project lifecycle.

Phase	Public-facing documents describing journey and detail, available online here :	Additional supporting material
1. Participant feedback	FutureFlex Workshop Primer FutureFlex Workshop Participant Feedback Ideas for Trial May 2020	
2A. DSO-Ready Homes	DSO-Ready Homes definitions DSO-Ready Homes: realizing the value of domestic energy efficiency in GB electricity distribution – July 2021 DSO-Ready Homes: Roundtable output – slides and discussion note	DSO-Ready Homes: Interventions document Report with detailed analysis of value of energy efficiency (the supporting paper to 'realising the value of domestic energy efficiency in GB electricity distribution).
2B. Sustain-H (including Aggregated Datasets)	Sustain-H Opportunity Sustain-H Design Guidance Value Calculator Sustain-H Product roadmap Aggregated Datasets Methodology Aggregated Datasets Third party datasets analysis Aggregated Datasets: Third party and Sustain-H datasets analysis	Detailed design report (May 2020). Gap Analysis paper (Document 1B), Aug 2021.

2C. Pro Low Carbon	Carbon Assessment Methodologies Carbon Impact of DSO flexibility services	Excel tool supporting carbon analysis
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More detailed information can be found on our website.

8. Data Access & Quality Details

Anonymised data will be available to share in accordance with WPD's data sharing policy

www.westernpower.co.uk/Innovation/Contact-us-and-more/Project-Data.aspx.

9. Foreground IPR

No Background Intellectual Property was used for the project other than existing publicly available reports and information to set up the trial

No specific new IP was created as the service was created using very manual processes. The learning has of course created a design for the Sustain- H product which will inform the product roadmap for Flexible Power which is a solution used by the DNO's and the costs of which are borne by the DNO's.

10. Planned implementation, recommendations or next steps

The key elements of the project are broken down below in respect of our plans to implement into the business where there is a reason to do so:

Sustain H

It is intended that Sustain-H will be implemented into the business under our Flexible Power offering. The project has undertaken a recent product road mapping exercise to determine the optimal route to achieving such. The roadmap includes proposals to refine the product and changes to Flexible Power in order that it can be rolled out and it is now available. The Product Roadmap will be available on the Innovation Website for reference.

DSO Ready Homes

We have undertaken a workshop with interested stakeholders, including Ofgem, the NEA and other parties to explore how DSO Ready Homes could feature moving forward. However, actions are limited as WPD has no role in the rollout of energy efficiency measures, however our project DEFENDER is looking at energy efficiency impacts.

Aggregated Datasets

The work undertaken was captured in a final report and this is available on the WPD website. WPD will be implementing any recommendations as appropriate.

Pro Low Carbon

The final report for this work is available on the Future Flex part of the innovation website⁵, a number of the conclusions require policy changes or other changes outside of a DNO's remit. However, we are committed to reflect the conclusions of this work when responding to industry change to ensure that customer benefit or network benefit are not overlooked. We are encouraging innovators to consider these issues when developing methodologies or modelling profiles.

11. Other comments

N/A

⁵ Hyperlink

12. Standards Documents

N/A