

**NEXT GENERATION
NETWORKS**

Project Entire

**PARTICIPANT RECRUITMENT
REPORT**



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Prepared by:	Gareth Dauley	22.04.2019
Reviewed by:	Jenny Woodruff	03.05.2019
Approved by:	Matt Watson	17.05.2019

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Glossary

Abbreviation	Term
API	Application Programming Interface
CMZ	Constraint Management Zone
CRM	Customer Relationship Management
DNO	Distribution Network Operator
DSR	Demand Side Response
Eoi	Expression of Interest
Eoi	Expression of Interest
ESO	Electricity System Operator
FALCON	Flexible Approaches for Low Carbon Optimised Networks
FP	Flexible Power
MPAN	Meter Point Administration Number
STOR	Short Term Operating Reserve
SYNC	Solar Yield Network Constraints
UAT	User Acceptance Testing
WPD	Western Power Distribution

Executive Summary

The Entire project aimed to demonstrate the commercial viability of flexibility services for both the Distribution Network Operator (DNO) and the service provider. Building on learning from the FALCON and SYNC projects, the project looked to develop DNO services that could sit alongside existing Electricity System Operator (ESO) services and allow participants to stack revenues, easing access to the service.

A key focus of the trial was the recruitment of participants to the trial.

Whilst participation was open to all potential industrial and commercial providers, the commercial proposition required participation in other services. As such the potential target market consisted of large self-aggregating customer, or aggregators. To engage with these new stakeholders to Western Power Distribution (WPD), a customer facing brand was created: Flexible Power. This fronted all participant communications.

With the trial focussed on simplicity and ease of access a simple customer journey was created. This started with an expression of interest and progressed through the preparation, Finalise & Test and Operate stages. In total 121MW of capacity responded across 69 sites. Of this 62MW were non-compliant due to technology type or incorrect geographic location.

However the gap between interest and tangible ability to provide services proved large. The Expression of Interest (EoI) stage showed a large volume of MWs interested but not in the correct target areas, or even from providers who could not provide the technical service required.

Progression through the procurement phase was also very challenging with a significant drop off between interest and commitment. In total six contracts were signed with three sites and 2.299 MW active to date. The drop off between contracts signed and sites active highlights the challenge involved with bringing volume live. Participant feedback highlighted a variety of reasons:

- **Busy marketplace.** There are currently a number of significant changes happening within the UK market for flexibility services. These included changes to schemes such as the reduction of embedded benefits, wider access to the Balancing Mechanism or the mergers and acquisitions of several firms. This limited the available resource that could be devoted to DNO services.
- **Trial fatigue.** There have been a number of Demand Side Response (DSR) trials by DNOs within the UK, with limited roll out to business as usual. Such experience has created a reticence for participation, as participants saw limited scope for the return of the time investment necessary to operate within the innovation trials.
- **Limited Value.** A minority of potential participants highlighted that at the current scale, participation did not present enough value to warrant interest.

1 Project Background

Previous trials have shown the technical potential for DSR services to provide value to DNOs. However the roll out of such services has been limited by the commercial complexities of doing so. These are primarily focussed on the challenges customers face when attempting to stack multiple revenue streams. As such project Entire focussed on the development of a simple commercial framework that makes services easily stackable in order to widen the potential market and make the utilisation of DSR as part of BaU more viable.

In order to deliver such a framework, the project delivered a wide range of supporting measures such as:

- Network use case development
- Investigations into underlying networks
- Operational system and process development
- Product development
- Stakeholder engagement
- Participant recruitment
- Operational trials

The project focussed on the recruitment of larger Industrial and Commercial customers to flexibility services as this was deemed a more mature market than that for domestic flexibility.

This report focusses on the recruitment of participants for the services developed. This has proved a significant barrier to previous projects and as such was a core element of the project design with a focus on providing as simple a process as possible with the aim to facilitating market understanding of the services and reducing any costs of participation.

Further reports detailing the systems built, the service designed, the results of the operational trials, as well as the project closedown are also available.

1.1 Project Review

The initial project focussed on delivering the simplest customer offering alongside the largest value. As such, alongside the WPD constraint management zone offering (aimed at existing market participants), the intention was to offer a fully managed service, aimed at bringing new entrants into the DSR market. This service would install control equipment in customer premises as well as provide additional value through Triad management and providing Short Term Operating Reserve (STOR) services to National Grid, demonstrating the ability to stack the services. By utilising the customer trust in the WPD brand, and the accountability associated with a regulated business, the aim was also to widen the pool of potential participants, boosting the volume available to WPD for the management of network constraints.

However following discussions with Ofgem this element of the trial was de-scoped as Ofgem did not consider the model in which DNO acts as a commercial operator as being in the long term interest of customers. As such the project was redesigned to focus on the delivery of

the core WPD network management service. This impacted the services offered, the systems built as well as the customer engagement process. In addition the project was shortened to a single operational season to ensure that any learning was delivered as quickly as possible and at the lowest cost.

2 Services

Flexible Power tested three DSR services to address different operational requirements on the distribution network. These were based on a weekly declaration process with participants declaring capacity by Wednesday at midnight with the DNO accepting or rejecting capacity by 12.00 on the Thursday (as shown in Figure 1). This advanced warning would give participants certainty over revenue and allow them to participate in multiple markets.

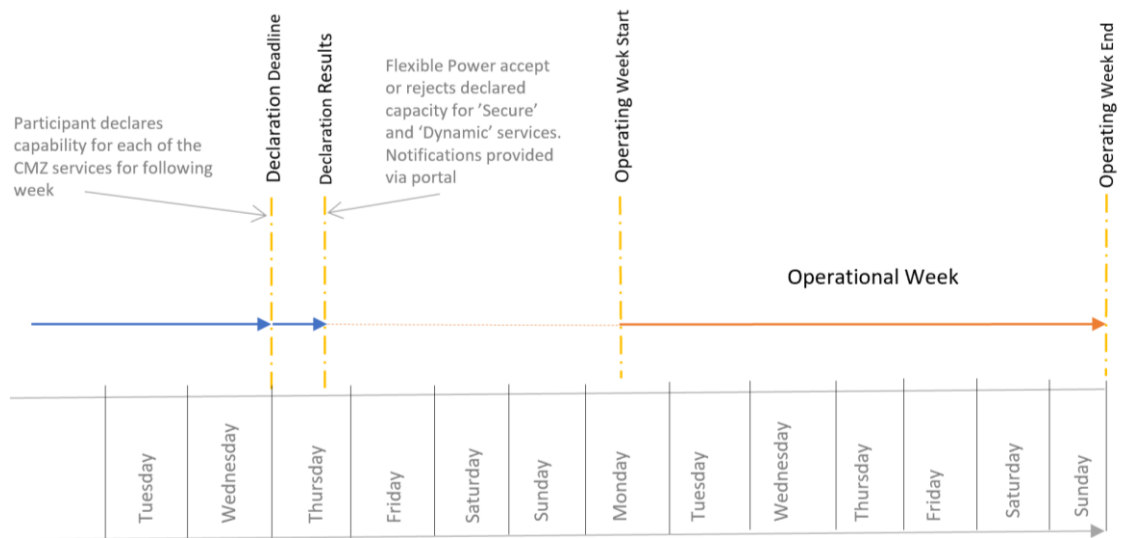


Figure 1: Declarations and Operational Timescale

Within the weekly process, three services were designed: Secure, Dynamic and Restore. These were tested in Constraint Management Zones (CMZ) in the East Midlands between April 2018 and March 2019 in the zones are highlighted in Figure 2.

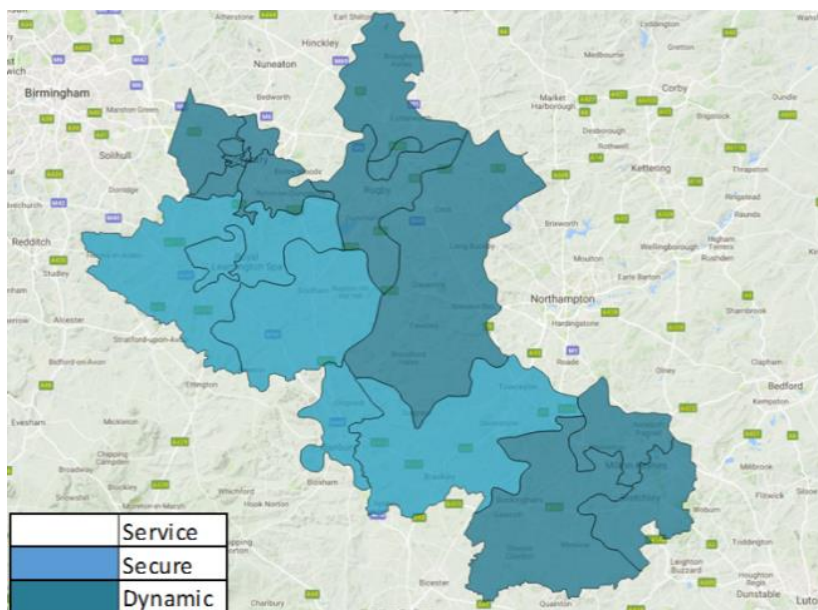


Figure 2: Entire Zones

Secure and Dynamic were designed as main response services to reduce predictable stresses on the distribution network. Each zone operated either a Secure or a Dynamic service. Both services were used to manage known conditions of increased risk on the network. Advance notice was intended to assist participants in assessing their ability to declare capacity whilst minimising conflicts with any other DSR programmes. The Restore service was an additional service and would only be activated in the event of rare faults occurring on the network. The service could help manage an incident and expedite the process of reinstating normal operations. Restore was available across all the zones and was optional. The CMZ services were available to half hourly metered customers in the target area who could increase generation output or reduce demand within 15 minutes of being called and could hold the response for at least 2 hours.

Secure service: The Secure service was used to manage peak demand loading on the network. This service was expected to be required on weekday evenings and occur throughout the year due to the seasonal ratings of assets. As the requirements were predictable, Secure requirements were declared each Thursday for the following week (commencing Monday). Payments consisted of an Arming fee which was credited when the service is scheduled and a further utilisation payment awarded on delivery. The week-ahead declarations were scheduled to allow customers to participate in alternative services when not required for the Secure service.

Dynamic service: The Dynamic service has been developed to support the network during maintenance work. This would generally occur during British Summer Time. As the service would be required following a network fault, it consisted of an Availability and Utilisation fee. By accepting an Availability fee, participants were expected to be ready to respond to Utilisation calls within 15 minutes. Dynamic availability windows are declared each Thursday for the following week (commencing Monday). The week-ahead declarations are scheduled to allow customers to participate in alternative services when not required for the Dynamic service.

Restore service: The Restore service was intended to support the network or help restoration in the occurrence of rare faults. Such events are rare and offer no warning as they depend on failure of equipment. Under such circumstances, response can be used to reduce the stress on the network. As the requirement is inherently unpredictable, Restore was based on a premium 'utilisation only' service. This would reward response that aids network restoration, but would pay no arming or availability fees. Participants declared available for the Restore service would be expected to respond to any utilisation calls within 15 minutes and receive an associated utilisation fee.

These services are summarised in Table 1.

	Secure	Dynamic	Restore
Advance Payment	Arming	Availability	None
Utilisation	Medium	High	Premium
Customer declaration	Week Ahead	Week Ahead	Week Ahead
FP Accept / Reject	Week Ahead	Week Ahead	Automatic Accept
Dispatch Notice	Week Ahead	15 minutes	15 Minutes
Seasonal Requirement	All	Summer	All
Site Type	Half Hourly Metered	Half Hourly Metered	Half Hourly Metered
Generation	✓	✓	✓
Load Reduction	✓	✓	✓

Table 1: Service Summary

3 Market Engagement

3.1 Target Market

As detailed in the service design report, the trial focussed on the provision of services for the alleviation of demand constraints. This required participants to decrease demand or increase on site generation. The service was deliberately technology agnostic, to ensure that all potential provider were considered. However the range of likely participating assets included:

- On-site back up generation
- Controllable generation for export
- Electrical Storage
- Processes with inherent non-electrical storage (such as chillers)
- Processes with demand that could be delayed.

Minimum participation requirements were set as low as possible to widen the pool of participants as well as understand what assets could participate. These were set as:

- Of sufficient scale to require half hourly metering (this focussed the project on larger customers)
- Able to respond to a signal within 15 minutes
- Able to hold the response for at least 2 hours
- Able to send minute by minute metering data
- Located in the target area

Part of the project learning was to assess which types of assets were most readily available to participate. This would factor in the general availability of such resource in the target area as well as the commercial requirements needed to make them available to participate in not just the DNO trial but the other commercial service programmes that were to feature within the project scope. It was expected that this availability would reflect the wider trends in the UK flexibility market given the limited value of DNO service.

The project was also agnostic as to the route to procurement, whether the series came directly from the participant or via a third party such as an aggregator or energy supplier.

The project was focussed in the Midlands, along the M1-M40 corridor. This was chosen as an area of significant load growth with the potential to need such flexibility services in the near future. This area was split into 14 CMZs reflecting the way the network was designed and built

The original scope of the project was to try and recruit as many participants to the scheme as possible. This would potentially create a large and liquid pool of volume for WPD to contract with for the alleviation of network constraints. This was to be done following 2 approaches:

- Targeting existing market participants through the design of a DNO service that was complementary to other value schemes.
- Targeting new customers through the provision of a managed service. This would leverage the trust in WPD to bring new participants to the market.

However following the project review, the provision of the DNO only service became the focus of the trial. As the value of such a service was limited, to create reasonable business cases for assets, it required the participation in other value streams. As such, by default the project focussed on existing market participants who could extend service to the DNO. These fell broadly into 2 categories:

- Aggregators
- Large self-aggregating customers

3.2 Customer Facing Brand: Flexible Power

With the development of a service proposition, aimed at a new set of participants, it was decided that a complementary brand should be created to cover participant interactions.

The branding aimed to build on the existing good standing of WPD within the energy sector, whilst allowing for clear distinction between flexibility service procurement and interactions with the wider DNO business such as loss of supply or connections enquiries. The latter was of particular importance to try and emphasize the requirement for customers to provide services within the parameters of their existing connection agreement.

A separate brand would also allow for easier cross DNO collaboration following the project should it be successful

Within the trial a brief was developed to create a brand that used a similar core colour palette to WPD, whilst being clearly distinct from the main brand. A number of suitable names and logos were drafted (Figure 3) before settling on the final version of “Flexible Power” which stood out for its simplicity and clarity (Figure 4).



Figure 3: Flexible Power Branding Options



Figure 4: Final Flexible Power Logo

This brand has been appropriately protected to ensure its value can be maintained for DNO customers. It does however also offer the potential for adoption by other DNOs.

3.3 Project Communications

A key element to customer recruitment was to engage with as many relevant customers as possible. As such a number of communication mediums were identified.

3.3.1 Website

A key point of communication with any potential customer was the Flexible Power website (www.flexiblepower.co.uk). This was central to the development of an online presence and the simple transmission of information to and from potential participants.

The key focus of the design was on simplicity and availability of information. This would allow customers to access the information they needed easily as well as reducing the burden on the trial commercial team.

The website was developed by Solsoft following an initial briefing and amended through the project. Over the course of the project the layout and content of the website changed significantly as the key information to communicate to participants changed, as well as the change in project scope.

The key information to display on the website is shown in Table 2.

Information	How it was displayed
What the services were	Service description
Where they were	Map and postcode checker
What the benefits were	Description and pricing table
How to participate	Process
How to contact us	Email and form
Key documentation	Document library
What Flexible Power was	About Us text

Table 2: Website Information

This was originally laid out in a long scrolling website as suggested by the website designers to reflect an on trend layout. This was then later amended to a shorter multipage site to reduce the amount of scrolling needed and to help track usage (see Figure 5).



Figure 5: Image of Website Homepage

As the project progressed, feedback from participants was used to amend and improve the information on the website. This included adding the mapping, pricing and process to the home page. A link to the Collar customer portal was added to the website to ensure participants could access it easily.

Throughout the trial, the website proved a hugely valuable tool for the delivery of information to end customers.

3.3.2 Social Media

Social Media accounts were created on all the major platforms to ensure suitable accounts were available when needed.

Whilst the benefits of social media advertising were identified, the ongoing resource commitment to keep them active and up to date meant that all accounts were initially left dormant.

As the project progressed, the Twitter account was utilised to help deliver a highly targeted advertising campaign. This allowed limited resource to be focussed on the limited subset of potential participants to make them aware of the Expression of Interest for the project.

The campaign was over a two week period in December and worked to give exposure to the wider market of the up and coming deadlines for one of the procurement periods.

Tweet activity

Your Tweets earned **75.8K impressions** over this **32 day** period

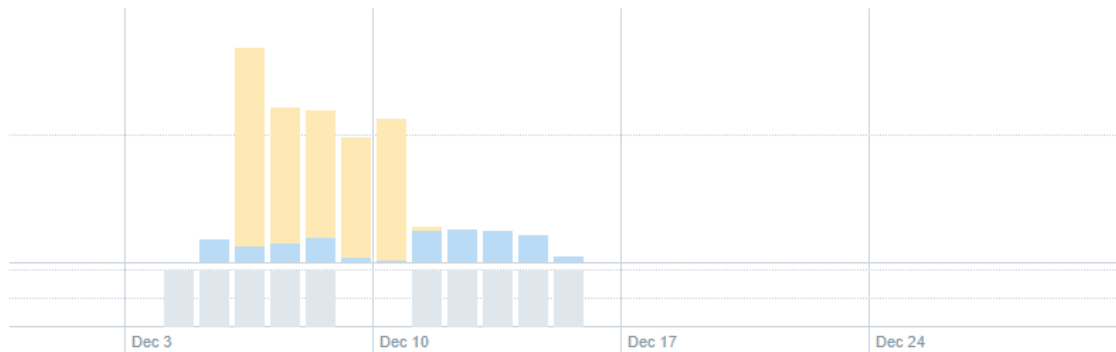


Figure 6: Results of Twitter Campaign

Figure 6 highlights the additional engagement levels between the campaign and the time around it.

In addition LinkedIn accounts of key project personnel were also used to widen the messaging on the project.

3.3.3 Trade Press

Another key medium of engagement was the use of the trade press. This was focused on titles aimed at energy users and aggregators to try and push the message to the relevant target market. Engagement was focussed around key dates such as service launches and deadlines. The majority of this was achieved simply through contact with publications and shared on the basis of genuine articles that were keen to report on the innovation work being carried out and no paid advertising was required. The impact of this was then increased through sharing of published articles on web platforms including Facebook and Linked In.

3.3.4 Aggregator List

As aggregators were key potential participants, Flexible Power proactively engaged with all known organisations. This was based primarily on the publically available list on the National Grid website. Each organisation was contacted by phone and email and offered a follow up meeting to understand what services were available and how they could participate

3.3.5 Webinars

Once the services were finalised and mass participant updates were required, a number of webinars were hosted and run to ensure that information could be easily disseminated. As with the Trade Press, the details of the webinars were circulated through Linked In and Facebook via the personal networks of users involved within the project.

3.3.6 Direct Engagement with the Commercial Officer

As part of the project a commercial officer was contracted by the project. With extensive experience in the flexibility sector, he was responsible for participant engagement. Alongside

the above he spent a large amount of time engaging directly with potential participants either by phone or via face to face meetings.

4 Customer Journey

4.1 Original Version

Based on the original scope of the project, and the offering of the managed service, an extensive customer journey was developed.

This was summarised in six key stages as shown in Figure 7.



Figure 7: High Level View of Original Customer Journey

1. Consultation with Customers – the team would have an initial phone with the client to assess if they had any flexibility within the site and set up a follow up meeting to educate about the service and do a pre-assessment of the site and get the basic information to hand to the engineer
2. Audit customers energy usage - we used the customer’s half hourly data to assess if they had any flexibility and if this proved to be correct we would then send an engineer to do a site survey to assess the amount of flexibility that could be used within the trial
3. Recommend revenue sources – once the team had assessed and audited the client the FP team would then give some indicative quotes on potential revenue from the FP service and other services that could create a revenue stack and add extra value for the client.
4. Install equipment – In certain cases for clients that would need to upgrade equipment or controls to be compatible with the services, the FP team and the client would then assess the best course of action and give predictive paybacks of all the services and the equipment included.
5. Bid the customer in – The team would then control the whole process and access the best pre-agreed flexibility strategy within the dedicated client to maximise revenue.
6. Send recurring payments to the customer – Once one the system and performing, the client would then receive payments for every time they participated in the services.

4.2 Revised Process

Following the project review recruitment was focused on the DNO only service; this gave a great opportunity to streamline the process with a greater focus on participant self-service.

At a high level this was split into four stages as shown in Figure 8:

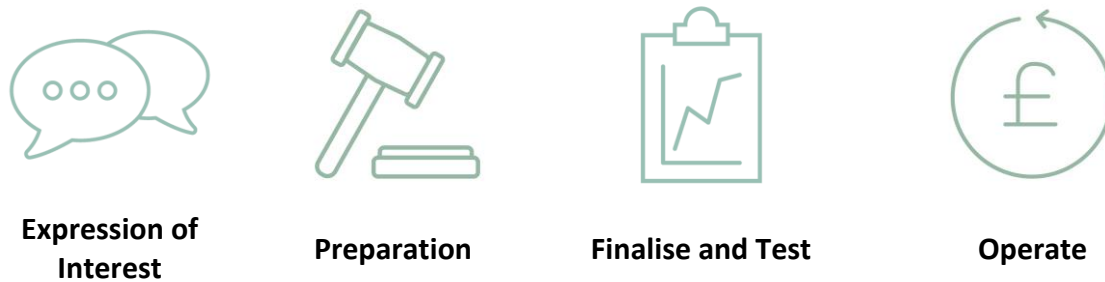


Figure 8: High Level View of Revised Customer Journey

This process was refined throughout the trial as learning was generated.

4.2.1 Expression of Interest

The initial stage of the process was the engagement and education of the wider market of the Flexible Power services. This was done using the mediums covered in section 3.3. The EoI stage formalised this process and asked customers for information on the potential flexibility available in the target areas. This could then be used to decide which zones should be taken to full procurement. This was aimed at ensuring resource from both the DNO and the participants were focussed on the zones with the best potential.

To facilitate this process, a two page service overview document was created (see Appendix A). This described the services and the minimum participation requirements. The overview was accompanied by a Meter Point Administration Number (MPAN) and Postcode checker that were made available on the website for participants to assess geographic suitability.

A simple site engagement form was also created for participants to log their interest and return to the Flexible Power team. A spreadsheet version was also created to ease the compilation of data for participants with multiple sites. An accompanying assistance guide was also created to help facilitate the process.

These documents were focussed on the collection of simple information to enable the Flexible Power team to assess the viability of the zone, whilst keep the burden of participant workload to a minimum.

To ensure all potential participants were made aware of the process, a significant marketing campaign was employed, using a mixture of articles in the trade press, twitter advertising and direct follow up with known parties. In addition two webinars were hosted to cover potential participant questions.

The results of this exercise are described in section 5.1 with 12 zones were taken forward to the following stage of full procurement.

4.2.2 Preparation

Once the zones to be taken forward had been finalised and the EoI results published, the preparation stage started. To try and widen all potential participation, no formal deadline was added to this stage. The main driver for sign up was the loss of potential earnings due to the delay in entering the operational phase.

This stage had three key tasks: prove technical compliance, sign the customer contract and establish the communication interface.

Prove technical compliance. This built on the information provided as part of the EoI stage and looked to collect further details so full technical compliance could be proven. This included information on the contracting party, basic site information, asset information and information on how the assets were controlled. A copy of the form can be found in Appendix B. An accompanying guidance document was also provided.

Sign Contract. This required the participant to sign the Flexible Power contract. This contract covered the terms of service as well as detailing the payment methodology. An accompanying guidance was also provided to facilitate the understanding of the contract.

Establish Interface. To enable the dispatch, metering and settlement of the sites, an interface was required between the WPD systems and the participant systems. Two options were available, an API and a hardware option. The API was the preferred option as it provided a lower cost, more flexible software to software link. The API was defined on the customer portal (www.flexiblepowerwpd.co.uk). Flexible Power also provided a guidance document. A hardware interface document was also produced, however limited generic information was available due to the case by case requirements of any hardware interface.

The stages and documents are summarised in Table 3.

Preparation			
Task	Document Name	Document Type	Response Required?
Sign Contract	CMZ Contract 1.0	Contract	Yes, Sign
	CMZ payment and contract assistance notes 1.0	Guidance document	No
Prove Technical compliance	FP Participation Requirements 1.0	Form	Yes, Complete
	FP Participation Requirements Assistance Document 1.0	Guidance document	No
Establish interface	API Definition 1.0	Technical specification	Use to build interface (for API users)
	API Guide 1.0	Guidance document	No
	Fruit Interface Manual 1.0	Technical specification	Use to build interface (for outstation users)

Table 3: Documents Provided at the Preparation Stage

4.2.3 Finalise and Test

As above there was no formal deadline specific to the completion of this stage. The main driver for sign up was the loss of potential earnings due to the delay in entering the operational phase.

The main aim of this stage was to get the participant ready for service delivery. This stage had two key tasks: Commissioning and testing the site, as well as providing billing details.

Commission and test site. This stage aimed to ensure that the link was fully operational and that metering and dispatch information was passing between WPD and the participant. To reduce the burden on the Flexible Power team, a self-test function was made available to participants on the User Acceptance Testing (UAT) customer portal. The UAT provided a safe environment in which participants could develop their API and learn how to use the declarations functions. Once they were ready, WPD could check the UAT setup and issue access to the full environment, known as 'Production'. The participant could then repeat the exercise within the full operating environment which would be subject to full formal testing.

The formal testing consisted of a test of:

- 30 minutes of reliable metering
- Receipt of a start signal for one of the relevant services in one of the zones
- Send of an emergency stop signal for the service.
- Receipt of a start signal for the other relevant service in another zone
- Receipt of a stop signal

This was summarised in a commissioning guide and checklist. An example is in Appendix E.

Provide billing details. To enable Flexible Power to pay customers, billing details were required. These were collected in a simple billing form.

The stages and documents are summarised in Table 4.

Finalise and Test			
Task	Document Name	Document Type	Response Required?
Provide billing details	Billing details 1.0	Form	Yes, Complete
	Billing guide 1.0	Guidance document	No
Commission and Test site	Commissioning and Testing Checklist 1.0	Form	Yes, Complete
	Commissioning and Testing Guide 1.0	Guidance document	No

Table 4 Documents Provided at the Finalise and Test

4.2.4 Operate

The recruitment process aimed to deliver as many participants to the operational stage as possible. Operational activities were broadly split into three areas: weekly availability declarations and acceptance, dispatch, settlement and billing. These were carried out primarily via the customer portal and the API.

Availability declaration and acceptance. Participants submitted their weekly availability via the customer portal (see Figure 9). They were free to change them until 24.00 on Wednesday evening. If these had not been changed, the previous week’s declarations were carried over. WPD then had until 12.00 on Thursday to accept the declarations. If not they were automatically rejected (the Restore service automatically accepted all declarations).

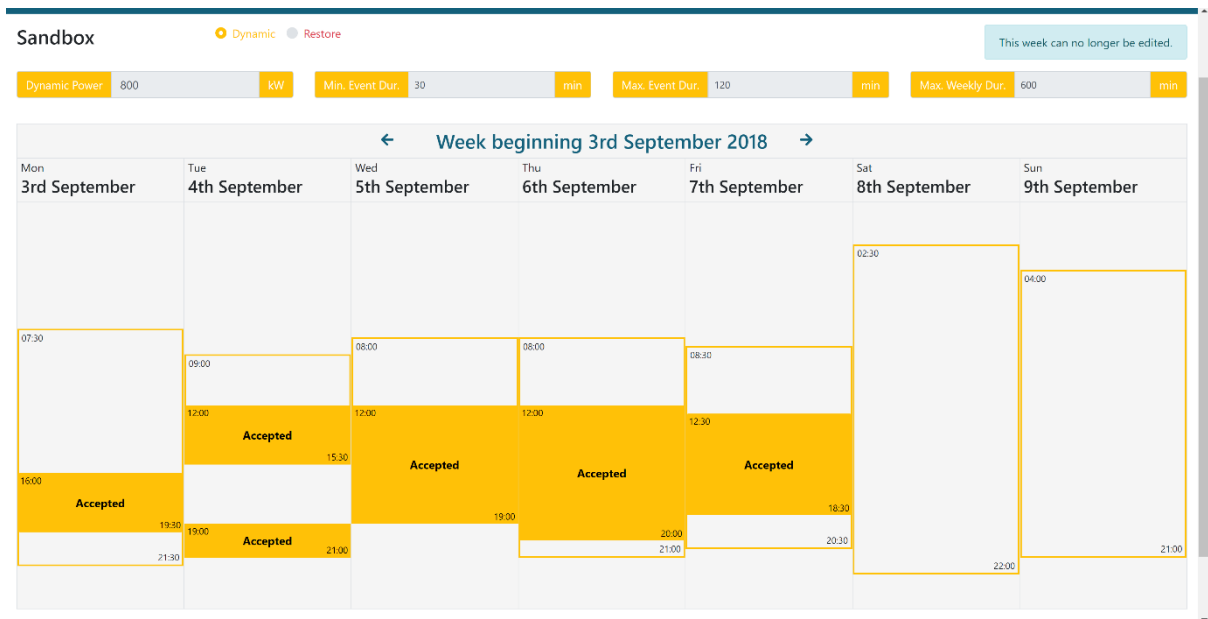


Figure 9: Customer Portal Acceptance Window

Dispatch. Whilst assets on the secure service could schedule their dispatch from the information in the acceptance calendar, customers on the dynamic service could not. As such the API was used to send signals for dispatch. Once sent, participants had 15 minutes to ramp up to full output.

Settlement & Billing. Following every event a Performance report and Earning Statement were created (see appendix H). These enabled the participant to check on both their physical and financial performance during the event. At the end of each month an invoice was also created with participants given 14 days to review and raise any queries, allowing a further 14 days to resolve before they were sent for payment (see Figure 11).

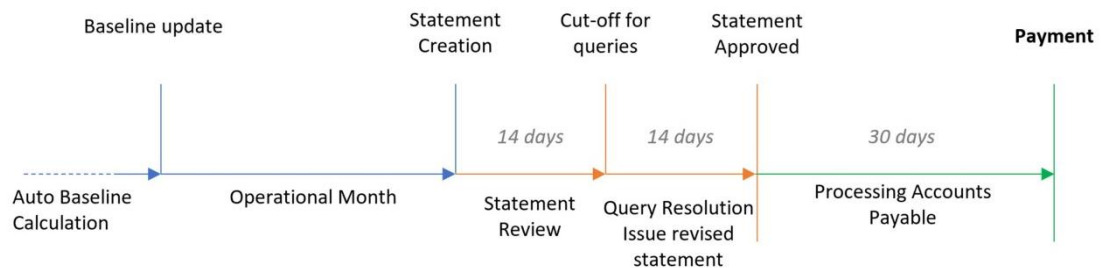


Figure 10: Customer Portal Acceptance Window

4.3 Account Management

Once participants were tested and live, a certain amount of ongoing interaction was required. This was primarily to follow up with any specific queries or comments.

Due to the limited number of participants, very little total account management was needed within the trial. However, even with the small sample size a number of questions and issues came up. These ranged from highlighting bugs on the customer portal, to questioning billing timeframes and fixing metering issues. Whilst many of these requirements are part of the learning process, it is expected that each participant will require ongoing account management.

5 Results

5.1 Expression of Interest

WPD closed the EoI stage of the project on the 15th of December 2017. The data provided was used to determine the potential flexibility within the target area and assess the high-level viability of the 14 CMZ sub zones.

In total over 121MW of capacity responded across 69 sites. These enquiries were then classified into three categories: Fully compliant, Potential and Non-compliant. The volumes in each category are highlighted in Table 5.

	Total	Compliant	Potential	Non-Compliant
Sites	69	34	23	12
MW	121.47	41.46	17.95	62.06

Table 5: EoI Response Summary

Sites in the Potential category included sites still to be built and sites where some information wasn't presented. In several cases this included the capacity. In such cases the MW value used was zero.

Non-compliant sites were generally split between sites that were not in the target area (8 sites totalling 21.06 MW), or were of a technology type that could not provide the required responses (4 sites totalling 41MW) as shown in Figure 12.

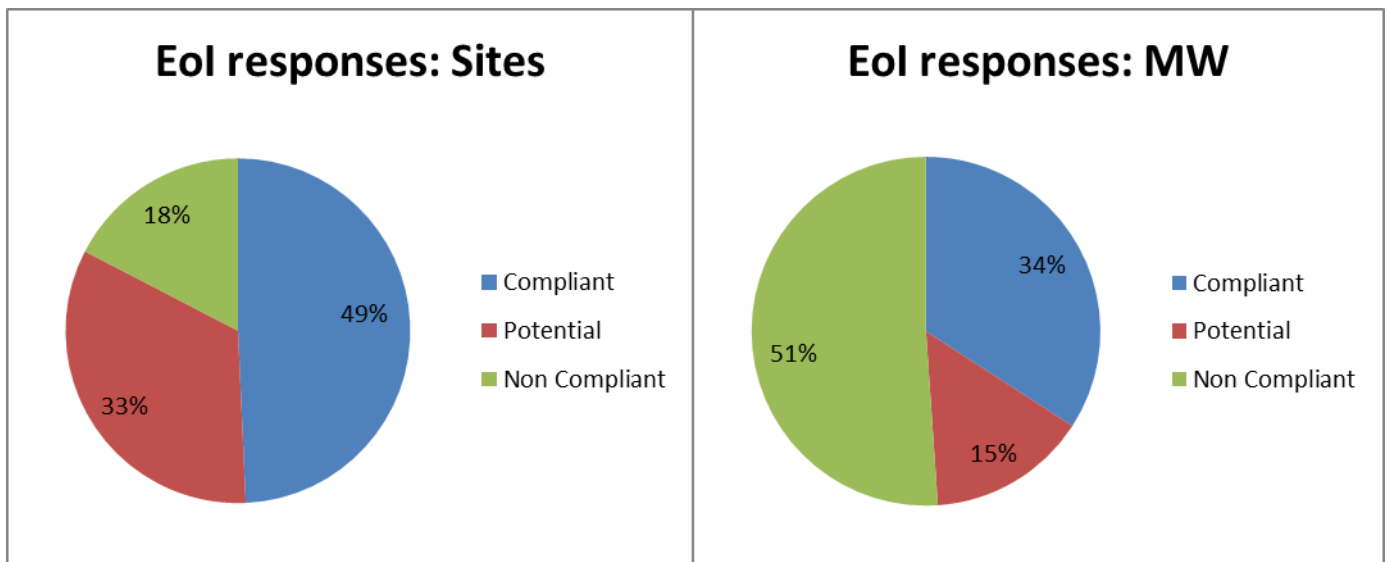


Figure 12: EoI Response Breakdown

The split between Generation, Demand reduction and Storage is highlighted in Table 6 and Figure 13. This shows a reflection of the wider DSR industry with the predominance of generation as the source of flexibility.

	Total	Compliant and potential
Generation sites	33	28
Demand reduction sites	11	10
Storage sites	9	3
Unknown sites	17	17
Generation MW	104.64	47.64
Demand reduction MW	11.23	8.87
Storage MW	5.6	2.9

Table 6: Eol Response Split

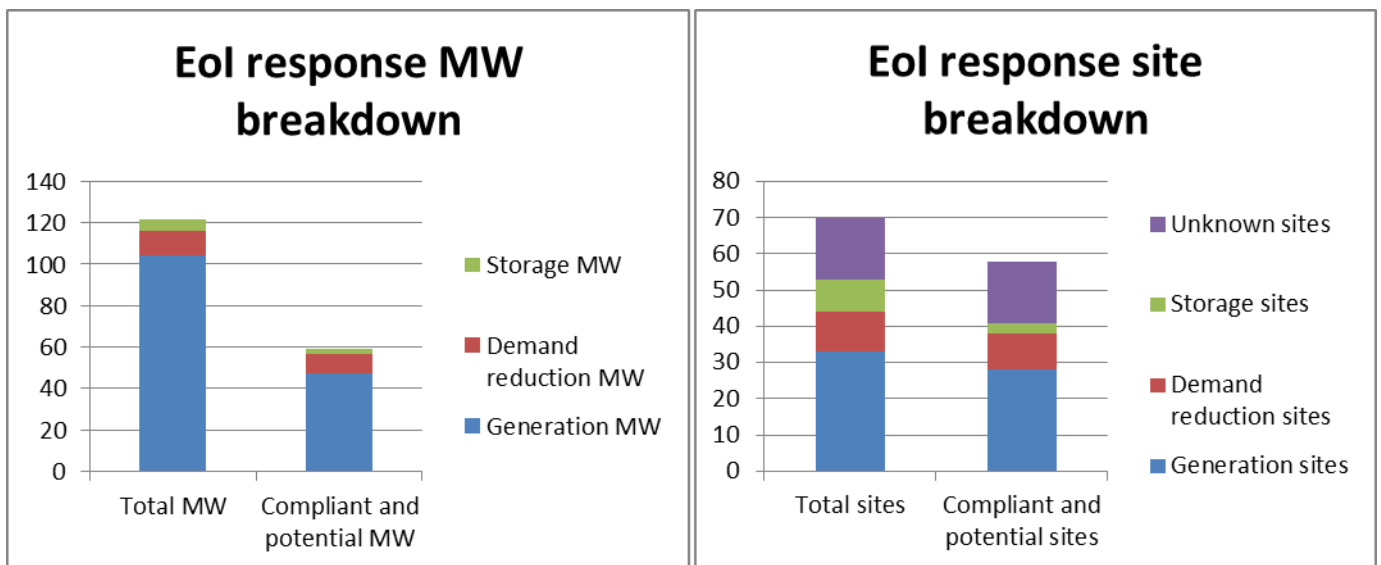


Figure 13: Eol Response Split

The distribution of sites across the CMZs was assessed with all but two zones taken forward. These zones had no response as part of the Eol process.

5.2 Operational Volumes

Despite the large initial response to the Eol, the conversion of that interest into tangible operational MW was very challenging. There was a significant drop off between interest and commitment. In total six contracts were signed with three sites and 2.299 MW active within the project. The drop off between contracts signed and sites active highlights the challenge involved with bringing volume live. Participant feedback highlighted a variety of reasons:

- **Busy marketplace.** There are currently a number of significant changes happening within the UK market for flexibility services. These included changes to schemes such as the reduction of embedded benefits, wider access to the Balancing Mechanism or the mergers and acquisitions of several firms. This limited the available resource that could be devoted to DNO services.
- **Trial fatigue.** There have been a number of DSR trials by DNOs within the UK, with limited roll out to business as usual. Such experience has created a reticence for participation, as participants saw limited scope for the return of the time investment necessary to operate within the innovation trials.

- Limited Value. A minority of potential participants highlighted that at the current scale, participation did not present enough value to warrant interest.

6 Learning Generated

6.1 Known Limitations

6.1.1 Limited New Participants

With the project review, it was acknowledged that potential to bring in new participants to flexibility markets was limited. Due to value proposition, participation in the Flexible Power services in isolation has limited commercial viability. As such participants would need to find additional revenue sources to make business cases work. Due to the relative sizes of the value propositions the DNO service does not provide sufficient incentive to begin participating.

6.1.2 Limited DNO Value

The Flexible Power proposition was created to reflect as accurately as possible the value and certainty to be expected from DNO led DSR services. These requirements are limited to relatively short durations in the year and are potentially time bound. As such, whilst the per unit value of a DNO service may be high, the yearly potential income is relatively low compared to other services.

6.1.3 Geographic Limitations

The Flexible Power services were limited to a 14 zones in the Midlands. This was done to manage the scale of the trial and the resource required. Whilst this had little impact on regionally based companies, this limited the value to nationally based companies who could not reflect the same services across all sites. This aspect of the trial does however reflect the expected future world where only parts of the DNO networks have requirements for flexibility services at any one point in time.

6.2 Learning Generated

6.2.1 Positive Feedback on Service Design

Through the initial engagement and throughout the project, feedback was generally positive on the design of the services and their user friendliness.

6.2.2 Clarification on DNO Role in Flexibility Services

The project review highlighted a clear direction from the regulator on the role of a DNO in the provision of flexibility services. This was to avoid involvement in any potentially competitive processes and to focus on the procurement of services to help manage the distribution network.

6.2.3 Value of Further Simplification

Despite all efforts to simplify the processes and documents, significant effort was spent clarifying the content to potential participants. As such there is value if further simplifying the process where possible. Key areas of focus could include the sign up forms, the contract and the communication of the process as a whole.

6.2.4 Requirements for Deadlines

In order to be as accommodating as possible of potential participants only a limited number of recruitment deadlines were set within the project. Where deadlines were set, a flurry of activity was seen close to the date. Where no deadlines were set many processes were delayed or deprioritised by participants.

6.2.5 Challenges of Aligning Service Provider and Asset Owner

Several challenges were observed with the project trying to align the requirements, information and contracts between the various parties involved. Whilst not the responsibility of WPD, the management of such interactions can have large impacts on the delivery of flexibility.

6.2.6 Differences Compared to Existing Market Services

Despite the attempts to design simple and accessible services, the difference between DNO requirements and those of the rest of the market proved a larger barrier than expected. Whether it is the specific geographic requirement of the DNO service, or the relative openness in terms of potential declarations, these differences took more time and resource to explain than expected.

6.2.7 Challenge of Conversion

A key piece of learning was of the significant resource and time required to convert interest in the service into a formal response. Even response to the relatively light EoI process proved challenging. Bring customers all the way to being operational was even more challenging. Aligning the three requirements of a signed contract, a build API and full details on the assets proved very challenging. This is highlighted by the fact that six contracts were signed but only two organisations went live.

6.2.8 Busy Market Place

Throughout the project participants expressed the limitation of their available resource. This was due primarily to the business of the flexibility market. Over the duration of the project the following market changes took place: Embedded benefit review, launch of National Grid's System Needs and Product Strategy (alongside associated product changes), launch of TCR and SCR, widening of BM to accommodate project Terre, suspension of the Capacity market. In addition a number of acquisitions took place for a number of aggregators. All this created a significant burden of industry participants limiting available resource for trials.

6.2.9 Requirement for Further Information

Whilst participants endorsed the openness of the Flexible Power unit pricing, it was noted that the limited information available on the amount of usage expected made income difficult to predict.

6.2.10 Trial Fatigue

A key limitation to customer sign up was expressed as trial fatigue. There have been a number of DNO led flexibility trials, most with limited or no route to BaU roll out. This has dented participant confidence in the value participation in such trials. Even where a trial will

be cost neutral or even slightly positive over its short duration, there is limited appetite in using scarce resource to participate in a trial.

6.3 Potential for Development

6.3.1 Commitment to Flexibility

To combat trial fatigue, WPD implemented a waterfall approach to the roll out of the learning from the project. As such new zones were rolled during the project, building on an improved process developed as part of the project. WPD launched 18 new zones in June 2018. The expression of interest generated over 260MW of response over 87 sites. WPD has also committed to the assessment of flexibility services against 90% of Load Related Reinforcement (LRR) as part of the DSO forward plan.

Another round of procurement was launched in February 2019 with an additional 12 zones put to the market. WPD intends to open new zones to the market on a bi-annual basis.

6.3.2 Enhanced Account Management Systems

Several system issues such as missing metering data were only identified accidentally, or by participants. Proactive highlighting of such issues would allow for more active account management to limit both the technical and reputational risks associated.

6.3.3 Customer Relationship Management (CRM)

A key element for further development is the use of a more developed CRM tool. This would increase the ability to track participants through the process and allow for more complex recruitment analysis. As part of the transition to BaU, a new CRM tool has been scoped.

6.3.4 Signposting

Throughout the trial, Flexible Power representatives were in regular contact with participants and through this gained valuable feedback that has led to developing greatly increased intelligence to be published. It has become increasingly apparent that the more detail that can be provided to participants of when they might be required they will make extended efforts to be available to provide capacity. As such, WPD has been rapidly developing analytical capabilities alongside improved communications capability to regularly publish signposting notices. These cover multiple time horizons ranging from future tendering requirement through to forecasts of specific days when services will be desirable.

6.3.5 Enhanced Procurement Information

Alongside the development of the signposting information, further information on the expected call times and ultimately value available to participants as part of the service would be greatly valued by potential participants. WPD has developed such tools as part on the roll out of BaU zones

6.3.6 Pricing and Volume Flexibility

As the service develops, the ability for participants to be more flexible in the provision of volume and price over the week may provide additional interest to providers with less predictable outputs.

6.3.7 Procurement Compliance as Volume Increases

As the volumes of flexibility procured by DNOs increases, the thresholds for enhanced requirements under the Utilities Contract Regulations increase. As such adaption of the Flexible Power Process to accommodate these regulations will be required. Ahead of the second round of BaU zones the compliance was addressed with the establishment of a dynamic purchasing system.

7 Contact

Further details on replicating the project can be made available from the following points of contact:

Innovation Team

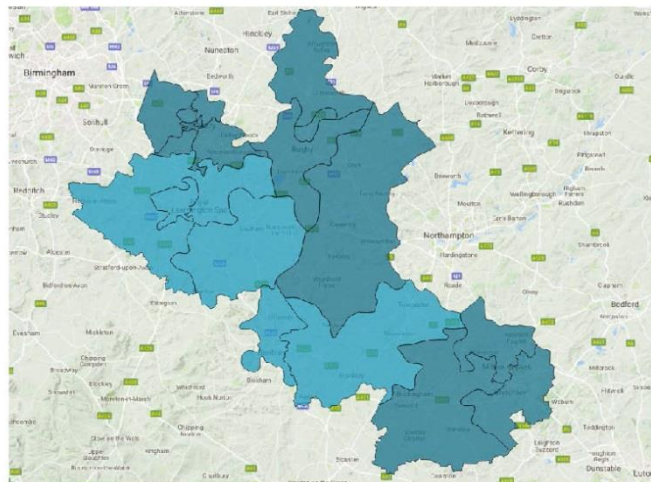
Western Power Distribution,
Pegasus Business Park,
Herald Way,
Castle Donington,
Derbyshire
DE74 2TU
Email: wpdinnovation@westernpower.co.uk

Appendix A: Service Overview Document



Constraint Management Zone (CMZ) Service Overview

Flexible Power is testing three DSR services to address different operational requirements on the Distribution Network. The services are called **Secure**, **Dynamic** and **Restore** and will be tested in 14 Constraint Management Zones (CMZ) in the East Midlands between April 2018 and March 2019. These zones are highlighted below



Secure and **Dynamic** are main response services and operate to reduce predictable stresses on the distribution network. Each zone will operate *either* a **Secure** or a **Dynamic** service (as highlighted on the map). Both services are used to manage known conditions of increased risk on the network. The advance notice is intended to assist participants in assessing their ability to declare capacity whilst minimising conflicts with any other DSR programmes.

The **Restore** service is an additional service and would only be activated in the event of rare faults occurring on the network. The service would help manage an incident and expedite the process of reinstating normal operations. Restore will be available across all the zones and is optional.

The CMZ services are available to half hourly metered customers in the target area who can increase generation output or reduce demand within 15 minutes of being called and can hold the response for at least 2 hours.

Please register your interest in the CMZ products by completing the site engagement form on the website (www.flexiblepower.co.uk/FlexiblePower/media/Documents/FP-Site-Engagement.docx) by **17.00** on **15/12/2017**.



Secure service

The **Secure** service is used to manage peak demand loading on the network. This service is expected to be required on weekday evenings and may occur throughout the year due to the seasonal ratings of assets.

As these requirements are predictable, **Secure** requirements are declared each Thursday for the following week (commencing Monday). Payments consist of an Arming fee which is credited when the service is scheduled and a further utilisation payment awarded on delivery.

The week-ahead declarations are scheduled to allow customers to participate in alternative services when not required for the **Secure** service.

Dynamic service

The **Dynamic** service has been developed to support the network during maintenance work. This will generally occur during British Summer Time.

As the service is required following a network fault, it consists of an Availability and Utilisation fee. By accepting an Availability fee, participants are expected to be ready to respond to Utilisation calls within 15 minutes. **Dynamic** availability windows are declared each Thursday for the following week (commencing Monday).

The week-ahead declarations are scheduled to allow customers to participate in alternative services when not required for the **Dynamic** service.

Restore service

The **Restore** service is intended to support the network or help restoration in the occurrence of rare faults. Such events are rare and offer no warning as they depend on failure of equipment. Under such circumstances, response can be used to reduce the stress on the network. This is the purpose of **Restore**.

As the requirement is inherently unpredictable, **Restore** is based on a premium 'utilisation only' service. This will reward response that aids network restoration, but will pay no arming or availability fees. Participants declared available for the **Restore** service will be expected to respond to any utilisation calls within 15 minutes and will receive an associated utilisation fee.

	Secure	Dynamic	Restore
Advance Payment	Arming	Availability	None
Utilisation	Medium	High	Premium
Customer declaration	Week Ahead	Week Ahead	Week Ahead
FP Accept / Reject	Week Ahead	Week Ahead	Automatic Accept
Dispatch Notice	Week Ahead	15 minutes	15 Minutes
Seasonal Requirement	All	Summer	All
Site Type	Half Hourly Metered	Half Hourly Metered	Half Hourly Metered
Generation	✓	✓	✓
Load Reduction	✓	✓	✓

Appendix B: Expression of Interest Response Form



DOCUMENT No. FP-SE

Please return a form for each relevant site to WPDflexiblepower@westernpower.co.uk by 17.00 on 15/12/2017.

Guidance of the document can be found at:
www.flexiblepower.co.uk/FlexiblePower/media/Documents/FP-Site-Engagement-assistance-document.pdf

Section 1

Contracting Party for Flexible Power CMZ

Contracting Party				
Will the site be attached to an existing Framework contract?	YES		NO	
<i>If answer 'YES' then proceed to section 2</i>				
Main Address				
Postcode				
Main contact				
Email Address				
Phone Number				
Technical Capability				
Do you have a central control capability?	YES		NO	
Can you dispatch and cease sites remotely?	YES		NO	
Can you provide aggregated 1 min metering?	YES		NO	





DOCUMENT No. FP-SE

Section 2

Basic Site information for Flexible Power CMZ

Company Name on delivery site					
Address					
Postcode					
MPAN (Meter Point Administration Number)					
Brief summary of the business and site activity					
What flexible asset(s) are in use?					
Estimated size of flexible asset(s)?					
Typical asset response time in minutes					
How long can the response be held?					
Does the site already provide DSR services?	<table border="1"> <tr> <td>YES</td> <td></td> <td>NO</td> <td></td> </tr> </table>	YES		NO	
YES		NO			
<i>If yes, which services? (for example: STOR, Capacity Market, FCDM, FFR, EFR, TRIAD avoidance, Energy trading, Peak Charge Avoidance...)</i>					
For generators only					
Generator(s) details:					
- Type (stand-by / CHP / battery)					
- Size					
- Fuel					
- Number of assets on site					

Site Contact Details	
Name	
Phone Number	
Email	
<i>Any additional notes</i>	



Appendix C: Participation Requirement Form



Participation Requirements MT v1

Section 1: Contracting Party for Flexible Power CMZ

Contracting Information	
Contracting Party <i>(Company Name / Aggregator)</i>	
Main Address	
Postcode	
Has the framework contract been completed?	

Section 2: Basic Site information for Flexible Power CMZ

Site Information	
Company Name on delivery site	
Address	
Postcode	
Import MPAN (Meter Point Administration Number)	
Export MPAN (Meter Point Administration Number)	
Site Import Capacity (MW)	
Site Export Capacity (MW)	

Site Contact Details	
<i>site contact is required in the event that WPD wish to audit the information provided within this document.</i>	
Name	
Phone Number	
Email	
Any additional notes	





Participation Requirements MT v1

Section 3: Asset Information

Site Assets			
	Add columns for each asset	Asset 1	Asset 2
1	Asset Name		
2	What flexible asset(s) do you have on site?	Generator: <input type="checkbox"/> Demand Turndown: <input type="checkbox"/> Storage: <input type="checkbox"/> Other:	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3	What is the primary purpose of the asset(s)?	Emergency Back Up: <input type="checkbox"/> Energy Generation: <input type="checkbox"/> Production: <input type="checkbox"/> Ancillary Services: <input type="checkbox"/> Other:	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4	What performance characteristics do these asset(s)?	Output (kW): Min Operating Duration (minutes): Max Operating Duration (minutes): Response time (minutes):	: : : :
5	Are there any known restrictions to the operation of the asset(s)?	No: <input type="checkbox"/> Yes: <input type="checkbox"/> please complete the appropriate option below Planned Maintenance: No <input type="checkbox"/> Yes <input type="checkbox"/> Dates..... Holiday periods: No <input type="checkbox"/> Yes <input type="checkbox"/> Dates..... Peak trading periods: No <input type="checkbox"/> Yes <input type="checkbox"/> Dates..... Non activity embargos: No <input type="checkbox"/> Yes <input type="checkbox"/> Dates..... Other: No <input type="checkbox"/> Yes <input type="checkbox"/> Dates.....	<input type="checkbox"/> <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/>
6	Do the asset(s) operate independently or as a group?	Independently <input type="checkbox"/> Grouped: - Asset can be dispatched separately but metering is combined with others: <input type="checkbox"/> Please list the associated assets:..... - Asset are metered separately but dispatched with others: <input type="checkbox"/> Please list the associated assets:..... - Other please state	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>





Participation Requirements MT v1

7	For any generation assets, what parallel running permissions are in place?	- None: <input type="checkbox"/> - Short term parallel: <input type="checkbox"/> - Long term parallel: <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
8	Can asset(s) provide live metering at 1 min intervals? <i>Please detail the metering arrangements</i>	No: <input type="checkbox"/> Yes: <input type="checkbox"/> Metering Details.....	<input type="checkbox"/> <input type="checkbox"/>
9	Has the asset(s) been used for other DSR services?	No: <input type="checkbox"/> Yes: <input type="checkbox"/> Please detail which services: STOR: <input type="checkbox"/> Capacity Market: <input type="checkbox"/> Frequency Response: <input type="checkbox"/> EFR: <input type="checkbox"/> Traid Avoidance: <input type="checkbox"/> Peak Charge avoidance: <input type="checkbox"/> Energy Trading: <input type="checkbox"/> Other (please state):.....	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>





Participation Requirements MT v1

Section 4: Asset Control

System Architecture	
1	<p>Please give an overview of the intended control system architecture. This should summarise how the dispatch, metering and availability signals flow from Flexible Power to the assets. This should also include communication mediums and the locations of each component. Please refer to the guidance notes for examples.</p>
2	<p>Where there are multiple assets on the site please describe how they are controlled and how they interact. Please cover dispatch, metering and availability.</p>
3	<p>Please provide a description and or diagram to demonstrate the dispatch process. This should highlight the steps between the issue of the dispatch from Flexible Power, to the final dispatch of the asset.</p>



Appendix D: Customer Contract

Constraint Management Zone (CMZ) Services Agreement

Between:

- (1) **Western Power Distribution (East Midlands) plc** (company number: 02366923 whose registered office is at Avonbank, Feeder Road, Bristol BS2 0TB ("WPD"); and
- (2) _____ **Limited** (company number: _____) whose registered office is at _____ (the "**Participant**").

Date of Agreement (date of signature by both parties)	
WPD Authorised Person(s)	[insert name(s), address and email address of WPD individual(s)]
Participant Authorised Person(s)	[insert name(s), address and email address of Participant individual(s)]

1. General Acknowledgement

The Participant hereby acknowledges that: (a) the provision of, or the permitting by the Participant of the remote despatch by WPD of, Demand Response pursuant to this Agreement and (b) the participation in CMZ service programme is entirely voluntary.

2. Participant Warranty and Indemnity

- 2.1 The Participant warrants to WPD that the provision by it, or the permitting by the Participant of the despatch by WPD, of Demand Response will not cause the Participant:
- (a) to be in breach of the Electricity Safety, Quality and Continuity Regulations 2002 (as amended from time to time) (available from WPD on request) or of any regulations made under Section 29 of the Electricity Act 1989 or of any other enactment relating to safety or standards applicable in respect of the business of the Participant;
 - (b) to be in breach of any provisions of the Grid Code or (where applicable) the Distribution Code or make its compliance with any provision of either of these impossible;
 - (c) (where any Site is Embedded (as defined in the Grid Code)) to be in breach of or to otherwise be non-compliant with any connection agreement governing the terms of connection of any plant and apparatus to, and/or any agreement for the supply of electricity to the plant or for the acceptance of electricity into, and its delivery from, any electrical distribution or transmission system;
 - (d) to be in breach of any restrictions and conditions attaching to relevant authorisations of the Environment Agency; or
 - (e) to be in breach of any other agreement or arrangement of whatever nature with any other person.
- 2.2 If at any time during the term in which Demand Response may be provided by the Participant or despatched by WPD, this would cause the Participant to be in breach or non-compliance as described in clause 2.1, the Participant agrees that it will, in advance of any despatch by WPD

or Instruction to despatch issue a notification of unavailability or, following the despatch by WPD or receipt of an Instruction, not comply with such Instruction or operate the Manual Override.

- 2.3 In the event that, in contravention of clause 2.2, Demand Response is despatched which causes the Participant to be in breach or non-compliance as described in clause 2.1 above, then Demand Response shall be deemed to be unavailable from the Site during any Contracted Arming Window or Contracted Availability Window (as relevant) and the Participant shall indemnify WPD against all and any claims made against WPD arising out of or resulting from such breach or non-compliance. Such indemnity shall include any legal costs and expenses reasonably incurred in the contesting of such claims including court costs and reasonable attorney's fees and other professional advisors' fees.
- 2.4 In the event of any such claim referred to in clause 2.3 above being made against WPD, WPD shall as soon as reasonably practicable give notice of the claim together with all relevant supporting documentation to the Participant. The Participant shall be entitled, upon written notice to WPD and subject to WPD receiving from the Participant such reasonable undertakings as WPD shall reasonably require to assume, at its own expense, sole conduct of all proceedings relating to such claim including the right to contest such claim in the name of WPD and WPD shall supply the Participant with all information, assistance and particulars reasonably required by the Participant in connection therewith. WPD shall not accept, settle, pay or compromise any such claim without the prior written approval of the Participant (such approval not to be unreasonably withheld or delayed). The Participant shall reimburse WPD's reasonable expenses incurred in connection with the provision of any such information, assistance or particulars in the contesting of any such claim.
- 2.5 The amount or amounts for which the Participant may be liable to WPD pursuant to paragraph 2.3 shall not exceed the sum of £250,000, provided that, in the event that the Participant's liability pursuant to paragraph 2.3 equals or exceeds £250,000, WPD may by notice in writing immediately terminate this Agreement.

3. Electricity Regulations

To the extent that the terms of this Agreement conflict with any of the rights or obligations of the parties under the Electricity Act 1989, the Utilities Act 2000, the Energy Acts 2008 – 2016, the National Terms of Connection and any other licences, codes or industry agreements related to such legislation (the "**Electricity Regulations**"), the terms of the Electricity Regulations shall prevail.

4. Site(s) / Group

Site(s) / Group	MPAN(s)	Initial Contracted Capacity (MW)	CMZ

WPD and the Participant agree to be bound by the terms of this Agreement (as defined in paragraph 1.1 (Definitions and Interpretations) of the terms and conditions attached at Schedule 3).

<p>Signed on behalf of Western Power Distribution (East Midlands) plc:</p> <p><i>Signature:</i> _____</p> <p><i>Name:</i> _____</p> <p><i>Role:</i> _ _____</p>
<p>Signed on behalf of: _____:</p> <p><i>Signature:</i> _____</p> <p><i>Name:</i> _____</p> <p><i>Role:</i> _ _____</p>

Schedule 1

1. (CMZ Services)

1. By 23:59 hours on each Wednesday (or as otherwise agreed between the parties), the Participant shall notify Central Control of any Site(s) / Group that is **available** for the despatch of Demand Response, the Service(s) that the Site(s) / Group is available for and the capacity it is declaring in respect of such Site(s) / Group and Service during the following Week. In the absence of any notification to the contrary in respect of a particular Site(s) / Group, WPD shall be entitled to assume that that Site(s) / Group is **available** for the despatch of Demand Response at all times and for the most recently declared capacity (or the Contracted Capacity set out in Clause 4 of this Agreement if no declarations or updated capacity declarations have been made).
2. By 1200 hours on each Thursday (or as otherwise agreed between the parties), Central Control shall confirm to the Participant the Arming Windows and/or Availability Windows available during the following Week.
3. If, at any time, the Participant becomes aware that:
 - 3.1 Demand Response will not be available for despatch from a Site(s) / Group for any time during a Committed Arming Window, Committed Availability Window and/or any other period of time for which availability was declared pursuant to paragraph 1 above and/or paragraph 3.2 below; or
 - 3.2 Demand Response will be available for despatch from a Site(s) / Group for any time during any Arming Window or Availability Window that was notified as unavailable and/or any other period of time for which unavailability was declared pursuant to paragraph 1 above and/or paragraph 3.1 above,
then it shall update Central Control of such change as soon as reasonably practicable, including details of the Site(s) / Group, the Service, the relevant period of time that will be available or unavailable and (where declaring availability), the contracted capacity it is declaring. Any period during an Arming Window or Availability Window previously notified as unavailable and updated as a Committed Arming Window or Committed Availability Window may (at the discretion of WPD) become a Contracted Arming Window or Contracted Availability Window (as relevant).
4. Notwithstanding any notification or deemed notification that Demand Response is available for despatch:
 - 4.1 WPD may determine that, based on any Site(s) / Group and asset status monitoring data and information available to it (including where no data or information is available as a result of a failure of the control or communications systems), and taking into account any asset or Site(s) / Group operational capabilities agreed between WPD and the Participant from time to time, Demand Response is unavailable for despatch for any period during any Contracted Arming Window, Contracted Availability Window and/or other period of time which has not been declared or deemed to be unavailable;
 - 4.2 in the event that the Manual Override is operated by the Participant during a Contracted Arming Window, Contracted Availability Window and/or other period of time, or if no Demand Response is provided for a period of time during a Contracted Arming Window, Contracted Availability Window and/or other period of time following an Instruction, then Demand Response shall be deemed to be unavailable following operation of the Manual Override or for the period of failure to provide any Demand Response during that Contracted Arming Window, Contracted Availability Window and/or other period of time; and
 - 4.3 unless otherwise agreed with the Participant, Demand Response shall be deemed to be unavailable from a Site(s) / Group during each Contracted Arming Window, Contracted

Availability Window and/or other period of time previously notified, or deemed to be notified, as being available that overlaps with a Recovery Period or in respect of which, were Demand Response to be despatched during such Contracted Arming Window, Contracted Availability Window or other period of time previously notified, or deemed to be notified, as being available, the number of Utilisations would exceed the relevant Weekly Limit, Monthly and/or Annual Limit.

5. Where:
 - 5.1 WPD has determined, in accordance with paragraph 4(a) above, that Demand Response is not available for despatch from a Site(s) / Group (s), then it shall notify the Participant of this as soon as reasonably practicable thereafter. Upon such notification (and without prejudice to paragraph 5 of Schedule 3), the Participant shall investigate and shall provide a report to WPD setting out the reasons why Demand Response was unavailable for despatch;
 - 5.2 the Participant operates the Manual Override during a Contracted Arming Window, Contracted Availability Window or other period of time or if no Demand Response is provided for a period of time following an Instruction from WPD, then the Participant shall, as soon as practicable thereafter, provide a report to WPD setting out the reasons why such Manual Override was operated or Demand Response not provided following an Instruction.
6. WPD may, in any Contracted Arming Window, Contracted Availability Window or other period of time in respect of a Site(s) / Group which has not been declared or deemed to be unavailable at that time, issue a notice (an "**Instruction**") requiring the Participant to provide Demand Response, or may itself remotely despatch Demand Response from that Site(s) / Group (s).
7. Where WPD remotely despatches Demand Response this shall be notified by Central Control to the Participant and shall continue continuously for a minimum of the Minimum Utilisation Period until the earlier of:
 - 7.1 the expiry of the Maximum Utilisation Period;
 - 7.2 any other time as required by WPD; and
 - 7.3 the end of the relevant Arming Window or Contracted Availability Window (as relevant).
8. Where WPD issues an Instruction requiring the Participant to provide Demand Response the Participant shall, within the Response Time, provide Demand Response from the Site(s) / Group continuously for a minimum of the Minimum Utilisation Period until the earlier of:
 - 8.1 the expiry of the Maximum Utilisation Period;
 - 8.2 any other time as required by WPD; and
 - 8.3 the end of the relevant Arming Window or Contracted Availability Window (as relevant).
9. In the event that, in respect of the despatch of Demand Response in any Contracted Arming Window, Contracted Availability Window or other period of time previously notified, or deemed to be notified, as being available at any Site(s) / Group:-
 - 9.1 Demand Response is not provided at a level of at least the required level of Contracted Capacity less any applicable grace factor (each as set out in Part E of Schedule 2) as measured at the minute in which the Response Time ends;
 - 9.2 the volume in MWh of Demand Response provided following despatch in accordance with paragraph 6 is less than the required level of Contracted Capacity less any applicable grace factor (each as set out in Part E of Schedule 2) as multiplied by the number of hours (including parts thereof) comprised in the period from the expiry of the Response Time until the first to occur of the times described in paragraphs 7.1, 7.2 or 7.3 or 8.2(a), (b) or (c) (as relevant); or

- 9.3 Demand Response is not provided continuously at a level of at least the required level of Contracted Capacity less any applicable grace factor (each as set out in Part E of Schedule 2) from the expiry of the Response Time until the first to occur of the times described in paragraphs 7.1, 7.2 or 7.3 or 8.2(a), (b) or (c) (as relevant),
- then the WPD Service Charges otherwise payable by WPD to the Participant shall be reduced in accordance with Schedule 2.

Schedule 2

(Payment and Performance Calculations)

PART A: Introduction

1.1. Definitions and interpretation

In this Schedule 2, terms shall be defined and interpreted in accordance with the Terms and Conditions in Schedule 3, unless the context otherwise requires or such terms are defined below:

"Arming Fee" has the meaning given in to it in Paragraph **Error! Reference source not found.** of this Part A of Schedule 2 below;

"Arming Payment" means any payment calculated in accordance with Paragraph 2 of Part B of this Schedule 2 below;

"Arming Settlement Period" means each full thirty (30) minute period within a Contracted Arming Window, as described in Paragraph **Error! Reference source not found.** of this Part A of Schedule 2 below;

"Availability Fee" has the meaning given in to it in Paragraph 1.3(d) of this Part A of Schedule 2 below;

"Availability Payment" means any payment calculated in accordance with Paragraph 3 of Part B of this Schedule 2 below;

"Availability Settlement Period" means each full thirty (30) minute period within a Contracted Availability Window, as described in Paragraph 1.2 of this Part A of Schedule 2 below;

"Constraint Event Delivery Proportion" has the meaning given to it in Paragraph **Error! Reference source not found.** of Part B of this Schedule 2 below;

"Delivery Proportion" has the meaning given to it in Paragraph **Error! Reference source not found.** of Part B of this Schedule 2 in respect of WPD Dynamic Services and/or WPD Secure Services, and/or in Paragraph 2.2 of Part C of this Schedule 2 in respect of WPD Restore Services below;

"Delivery Target Threshold" has the meaning given to it in Paragraph 2.1 of Part C of Schedule 2;

"Event Delivery Proportion" has the meaning given to it in Paragraph **Error! Reference source not found.** of Part B of this Schedule 2 below;

"Grace Factor" has the meaning given to it in Paragraph **Error! Reference source not found.** of Part B of this Schedule 2;

"Monthly Delivery Proportion" has the meaning given to it in Paragraph **Error! Reference source not found.** of Part B of this Schedule 2 below;

"Payable Overdelivery" means the % of overpayment above 100% that will be available in respect of Utilisation Payments for WPD Restore Services as set out in Paragraph 2.1 of Part C of this Schedule 2;

"Payment Proportion" means the value calculated in accordance with Paragraph **Error! Reference source not found.** of Part B of this Schedule 2 in respect of WPD Dynamic Services and/or WPD Secure Services, and/or in Paragraph 2 of Part C of this Schedule 2 in respect of WPD Restore Services below;

"Penalisation Multiplier" has the meaning given to it in Paragraph **Error! Reference source not found.** of Part B of this Schedule 2 in respect of WPD Dynamic Services and/or WPD

Secure Services, and/or in Paragraph 2.3 of Part C of this Schedule 2 in respect of WPD Restore Services below;

"Reconciliation Grace Factor" has the meaning given to it in Paragraph **Error! Reference source not found.** of Part B of this Schedule 2 below;

"Utilisation Cost" has the meaning given to it in Paragraph **Error! Reference source not found.** of this Part A of Schedule 2 below;

"Utilisation Payment" means any payment in respect of WPD Dynamic Services and/or WPD Secure Services calculated in accordance with Paragraph **Error! Reference source not found.** of Part B of this Schedule 2 below, and/or any payment in respect of WPD Restore Services calculated in accordance with Paragraph 1 of Part C of this Schedule 2 below;

"Utilisation Settlement Period" means each full one (1) minute period during a Utilisation event, as described in Paragraph **Error! Reference source not found.** of this Part A of Schedule 2 below.

1.2. General

1.2.1. For WPD Dynamic Services, there are two primary payments: Utilisation Payments and Availability Payments. For WPD Secure Services, there are two primary payments: Utilisation Payments and Arming Payments. For WPD Restore Services, there is one payment: the Utilisation Payment. Utilisation Payments are made when Demand Response is dispatched where a *constraint event* is in progress. Arming Payments are paid for every Contracted Arming Window in respect of the Site(s) / Group (s). Availability Payments are paid for every Contracted Availability Window in respect of the Site(s) / Group (s).

1.2.2. Arming Payments, Availability Payments and Utilisation Payments are calculated at a different granularity called the Arming Settlement Period, the Availability Settlement Period and the Utilisation Settlement Period. The constants used to convert between MWh values and the individual time segments are (SP_u) and (SP_a) , which correspond to the fraction of an hour for Utilisation, availability and arming. The Utilisation Settlement Period is 1 minute. The Arming Settlement Periods and Availability Settlement Periods are 30 minutes i.e.:

$$SP_u = \frac{1}{60} \text{ and } SP_a = 0.5$$

1.2.3. In respect of each Site(s) / Group there are four constant values:

- 1) The Contracted Capacity (CC_s), given in MW;
- 2) A Utilisation Cost (UC_s), which is the payment per MWh delivery by the Site(s) / Group during a Utilisation. The Utilisation Cost will be determined by WPD from time to time in respect of each of the WPD Dynamic Services, the WPD Secure Services and the WPD Restore Services and confirmed by Central Control, provided that any change to the then exiting rate shall be notified by Central Control to the Participant no later than 1 month before such changed rate will take effect;
- 3) An Arming Fee (AF_s), which is the payment for arming availability in respect of a Contracted Arming Window at a Site(s) / Group (s). This is a payment per MW per hour of availability. The Arming Fee will be determined by WPD from time to time and confirmed by Central Control provided that any change to the then exiting rate shall be notified by Central Control to the Participant no later than 1 month before such changed rate will take effect;
- 4) An Availability Fee (AC_s), which is the payment for availability in respect of a Contracted Availability Window at a Site(s) / Group. This is a payment per MW per hour of

availability. The Availability Fee will be determined by WPD from time to time and confirmed by Central Control provided that any change to the then exiting rate shall be notified by Central Control to the Participant no later than 1 month before such changed rate will take effect.

1.2.4. Payments are calculated on a month-by-month basis. The calculations in this Schedule 2 determine the Utilisation Payments, the Availability Payments and the Arming Payments due to a Site(s) / Group for a given month.

1.2.5. For WPD Dynamic Services and WPD Secure Services, for each month, (m), there is a list of Arming Windows or Availability Windows (as appropriate) and a list of constraint events, which are written as (AW_m) and (E_m) for Arming of Secure services and (AP_m) and (E_m) for Availability of Dynamic services. The top-level calculations will loop through these lists, but the bulk of the work is performed for an individual Arming Window or Availability Window and an individual constraint event.

PART B: WPD Dynamic Services and WPD Secure Services

1. WPD Secure Services Arming Payment

1.2.6. Arming Payments for a Contracted Arming Window are determined as the sum for all Arming Settlement Periods in that Contracted Arming Window, based on binary values for availability during each Arming Settlement Period.

1.2.7. ST_{aw} and FT_{aw} are written for the start and finish time of the given Contracted Arming Window.

1.2.8. The raw Arming Payment given to a Site(s) / Group for a Contracted Arming Window is as follows:

Where the Arming Fee is a payment per MW per hour:

$$AWP_{aw,s} = \left(\sum_{j=ST_{aw}}^{FT_{aw}} AF_{s,aw} \cdot SP_{aw} \cdot CC_s \cdot SA_{s,j} \right)$$

Where:

$AWP_{aw,s}$ is the Arming Window Payment for Site(s) / Group (s) during Contracted Arming Window (aw)

$\sum_{j=ST_{aw}}^{FT_{aw}}$ sums the payment for every Arming Settlement Period in the Contracted Arming Window, from start to finish time inclusive

AF_s is the Arming Fee for that Site(s) / Group and Contracted Arming Window on a per MW per hour basis

SP_{aw} is the Arming Settlement Period

CC_s is the Contracted Capacity

$SA_{s,j}$ is the availability for each Arming Settlement Period for the Site(s) / Group within a Contracted Arming Window which is supplied as binary data into the system, based on the reporting and the conditions outlined elsewhere in the Agreement

1.3. WPD Dynamic Services Availability Payment

1.3.1. Availability Payments for a Contracted Availability Window are determined as the sum for all Availability Settlement Periods in that Contracted Availability Window, based on binary values for availability during each Availability Settlement Period.

1.3.2. ST_{aw} and FT_{aw} are written for the start and finish time of the given Contracted Availability Window.

1.3.3. The raw Availability Payment given to a Site(s) / Group for a Contracted Availability Window is as follows:

Where the Availability Fee is a payment per MW per hour:

$$AP_{s,w} = \left(\sum_{j=ST_w}^{FT_w} AC_s \cdot SP_a \cdot CC_s \cdot SA_{s,j} \right)$$

Where:

$AP_{s,w}$ is the Availability Payment for Site(s) / Group (s) during Contracted Availability Window (w)

$\sum_{j=ST_w}^{FT_w}$ sums the payment for every Availability Settlement Period in the Contracted Availability Window, from start to finish time inclusive

$AC_{s,w}$ is the Availability Fee for that Site(s) / Group and Contracted Availability Window on a per MW per hour basis

SP_a is the Availability Settlement Period

CC_s is the Contracted Capacity

$SA_{s,j}$ is the availability for each Availability Settlement Period for the Site(s) / Group within a Contracted Availability Window which is supplied as binary data into the system, based on the reporting and the conditions outlined elsewhere in the Agreement

1.4. Utilisation Payment

1.4.1. For a Site(s) / Group (s), Utilisation Payments for WPD Dynamic Services and WPD Secure Services are calculated per-constraint Utilisation event (e). Each constraint Utilisation event has a start time (ST_e) and a finish time (FT_e), such that $ST_e < FT_e$.

1.4.2. The Utilisation Payment for a Site(s) / Group (s) per constraint Utilisation event (e) is calculated as follows:

$$U_{s,e} = \sum_{j=ST_e}^{FT_e} CC_s \cdot UC_s \cdot SP_u \cdot PP(CC_s, AD_{s,j})$$

Where:

$U_{s,e}$ is the Utilisation Payment for Site(s) / Group (s) during each constraint Utilisation event (e)

$\sum_{j=ST_e}^{FT_e}$ sum of the Utilisation Settlement Periods during the constraint Utilisation event

CC_s Contracted Capacity,

UC_s Utilisation Cost,

SP_u Settlement Period of the Site(s) / Group, as defined above. $AD_{s,j}$ is the actual, metered MW delivery of the Site(s) / Group (s) for each Utilisation Settlement Period during the constraint Utilisation event (j). In the payment calculations, there is no difference between Generator Sites and Demand Reduction Sites, since this value is the 'reported to grid' value

PP is the Payment Proportion and works out what fraction of the full price is due to the Site(s) / Group for every Utilisation Settlement Period based on the Contracted Capacity and the actual delivery.

1.5. Payment Proportion

A margin of error as set out in Part E of this Schedule 2, known as the Grace Factor (GF) is allowed in respect of under-delivery of the Contracted Capacity (CC).

1.5.1.at a Site(s) / Group (assessed against each of the metrics set out at paragraph 9 of Schedule 1). Delivery of equal to or greater than the required level of Contracted Capacity less the applicable Grace Factor is awarded the full Utilisation Payment. A deduction from the full payment will be made for delivery of less than the required level of Contracted Capacity less the applicable Grace Factor.

1.5.2.The Delivery Proportion ($DP_{s,j}$) is defined as the ratio of actual MW delivery (calculated from the baseline set out in Part C of this Schedule 2) to Contracted Capacity. This ratio is a value that represents a percentage and rounded to two significant figures to ensure it represents a whole percentage.

1.5.3.The Grace Factor determines the acceptable under-delivery for a Site(s) / Group. For every % point under that level, a fixed proportion as set out in Part E of this Schedule 2, called the Penalisation Multiplier, (PM) of the full payment is deducted. Over-delivery is capped, and paid at Contracted Capacity.

1.5.4.Thus, the Payment Proportion is a value between 0 and 1 (or 0 and 100%). The calculation contains two separate cases:

1) if $DP_{s,j} \geq (1 - GF)$, $PP_{s,j} = 1$

2) if $DP_{s,j} < (1 - GF)$, $PP_{s,j} = \text{Max}(0, 1 - GF - PM \cdot [1 - GF - DP_{s,j}])$

1.6. Monthly Reconciliation

1.6.1.In addition to the above, the Arming Payments and Availability Payments for a Site(s) / Group are subject to a monthly reconciliation based on the Site's / Group's individual Utilisation performance over the month.

1.6.2.This is calculated as follows: the Monthly Delivery Proportion ($MDP_{s,m}$) for a Site(s) / Group for a given month is

$$MDP_{s,m} = \frac{\sum_{e \in E_m} \text{Min}(1, EP_{s,e})}{\#E_m}$$

i.e. the capped proportion of average deliveries in a given month.

Where:

$e \in E_m$ is the Delivery Proportion during each and every constraint Utilisation event in the set of constraint Utilisation events for the month (m)

$\#E_m$ is the number of constraint Utilisation events in the month

$\text{Min}(1, EP_{s,e})$ caps the Delivery Proportion during each and every constraint Utilisation event at 100%, even if the Site(s) / Group over-delivers. The Constraint Event Delivery Proportion $EP_{s,e}$ for a Site(s) / Group and a Utilisation event is defined below.

1.6.3.In order to define the Constraint Events Monthly Delivery Proportion, we first need the Event Delivery Proportion (EDP). For each individual constraint Utilisation event the total, uncapped Delivery Proportions for each Utilisation Settlement Period are summed.

$$EDP_{s,e} = \left(\sum_{j=ST_e}^{FT_e} DP_{s,j} \right) / (FT_e - ST_e + 1)$$

1.6.4.As such, the Delivery Proportion for each Utilisation Settlement Period of the constraint Utilisation event is calculated. It is important to note that this is uncapped. This does not

apply across constraint Utilisation events in the month, as shown in the $MDP_{s,m}$ calculation.

1.6.5. When calculating the Constraint Event Delivery Proportion, the Event Delivery Proportions are also given a grace factor, called the Reconciliation Grace Factor (RGF). Thus the Constraint Event Proportion is:

- 1) if $1 \leq EDP_{s,e} + RGF < 1 + RGF, EP_{s,e} = 1$
- 2) otherwise $EP_{s,e} = EDP_{s,e}$

1.7. Monthly Arming Window and Availability Window Payments

The monthly Arming Payment and Availability Payment for a Site(s) / Group for a given month is calculated as follows:

$$AP_{s,m} = \left(\sum_{w \in M} AP_{s,w} \right) \cdot MDP_{s,m}$$

That is, the total Arming Payments and Availability Payments due for the Site(s) / Group for the month multiplied by the Constraint Event Delivery Proportion.

1.8. Monthly Utilisation Payments

Similarly, the monthly Utilisation Payments due for a given Site(s) / Group in a month is calculated as the sum of the individual Utilisation Payments:

$$UP_{s,m} = \left(\sum_{e \in M} UP_{s,e} \right)$$

PART C: WPD Restore Services

2. Utilisation Payment

1.8.1. For a Site(s) / Group (s), Utilisation Payments for WPD Restore Services are calculated per-constraint Utilisation event (e). Each constraint Utilisation event has a start time (ST_e) and a finish time (FT_e), such that $ST_e < FT_e$.

1.8.2. The Utilisation Payment for a Site(s) / Group (s) per constraint Utilisation event (e) is calculated as follows:

$$U_{s,e} = \sum_{j=ST_e}^{FT_e} CC_s \cdot UC_s \cdot SP_u \cdot PP (CC_s, AD_{s,j})$$

Where:

- $U_{s,e}$ is the Utilisation Payment for Site(s) / Group (s) during each constraint Utilisation event (ce)
- $\sum_{j=ST_e}^{FT_e}$ sum of the Utilisation Settlement Periods during the constraint Utilisation event
- CC_s Contracted Capacity,
- UC_s Utilisation Cost,
- SP_u Settlement Period of the Site(s) / Group , as defined above.
- PP is the Payment Proportion and works out what fraction of the full price is due to the Site(s) / Group for every Utilisation Settlement Period based on the Contracted Capacity and the actual delivery.
- $AD_{s,j}$ is the actual, metered MW delivery of the Site(s) / Group (s) for each Utilisation Settlement Period during the constraint Utilisation event j. In the payment calculations, there is no difference between Generator Sites and Demand reduction Sites, since this value is the 'reported to grid' value

1.9. Payment Proportion

1.9.1. Delivery of the Contracted Capacity at a Site(s) / Group (assessed against each of the metrics set out at paragraph 9 of Schedule 1) of equal to or greater than the target delivery threshold set out in Part E of this Schedule 2, the Delivery Target Threshold (DTT) is awarded the Utilisation Payment "at rate" (i.e. the payment % will equate to the delivery %), provided that delivery over the required level of Contracted Capacity will be paid up to a maximum Payable Overdelivery (PO) of the Contracted Capacity as set out in Part E of this Schedule 2. A deduction from full payment of will be made based on the rules below for delivery of less than target delivery threshold of Contracted Capacity.

1.9.2. The Delivery Proportion ($DP_{s,j}$) is defined as the ratio of actual MW delivery (calculated from the baseline set out in Part C of this Schedule 2) to Contracted Capacity. This ratio is a value that represents a percentage and is rounded to two significant figures to ensure it represents a whole percentage.

1.9.3. The Delivery Target Threshold (DTT) determines the acceptable under-delivery for a Site(s) / Group . For every % point under that level, a fixed proportion as set out in Part E of this Schedule 2, called the Penalisation Multiplier, (PM) of the full payment is deducted.

2.5 Thus, the Payment Proportion is a value between 0 and $1+PO$ (or 0 and $100\%+PO\%$). The calculation contains three cases:

1) if $DP_{s,j} \geq (1 - DTT)$ and $DP_{s,j} \leq 1 + PO$, $PP_{s,j} = DP_{s,j}$

2) if $DP_{s,j} < (1 - DTT)$, $PP_{s,j} = \text{Max}(0, 1 - DTT - PM \cdot [1 - DTT - DP_{s,j}])$

3) if $DP_{s,j} > 1 + PO$, $PP_{s,j} = 1 + PO$

PART D: Baseline for Measuring Actual Delivery

3. For Demand Reduction Sites, delivery of Demand Response will be measured at the point of supply. The lowest level of demand that a Site can reliably reduce its demand to at any point during weekdays will be established on a month by month basis (unless otherwise agreed by the parties) by taking demand between 3pm and 8pm (Monday to Friday) over a period of the first three (3) weeks of the previous month. This consumption will then be totalled and divided by any de-rating factor agreed between WPD and the Participant and will be used to establish the monthly average demand which will then become the baseline from which delivery of Demand Response will be measured.
4. For Generation Sites, delivery of Demand Response will be measured at the output terminals of the generator. In respect of "standby generators", the baseline will be set at 0. In respect of "parallel operation generators" including, for example, CHP installations, then a distinction will be made between a Site that does **not** generate to the extent that it exports during the hours of 3pm to 8pm on any weekday, in which case the Site will be treated in the same way as a Demand reduction Site above, and a Site that does export, in which case the same principles as used in respect of Demand Reduction will be apply to data collected from the generator during the three week period.

PART E: Payment Mechanism Values

This Part E may be updated from time to time in writing as agreed between the parties. Any agreed update shall be deemed to be incorporated into this Part E and this part E shall be read and construed accordingly.

1. WPD Dynamic Services:

Attribute	Value
Grace Factor (<i>GF</i>)	5%
Penalisation Multiplier (<i>PM</i>)	3
Reconciliation Grace Factor (<i>RGF</i>)	0%

2. WPD Secure Services:

Attribute	Value
Grace Factor (<i>GF</i>)	5%
Penalisation Multiplier (<i>PM</i>)	3
Reconciliation Grace Factor (<i>RGF</i>)	0%

3. WPD Restore Services:

Attribute	Value
Delivery Target Threshold (<i>DTT</i>)	80%
Payable Overdelivery (<i>PO</i>)	10%
Penalisation Multiplier (<i>PM</i>)	2

2. Schedule 3

3. (Terms and Conditions)

It is agreed as follows:

1. Definitions and interpretation

1.1 In this Agreement, unless the context otherwise requires, the following words have the following meanings:

"Agreement" means this agreement (including the Terms and Conditions and any other schedule or annexure to it) made between the parties;

"Annual Limit" means, in relation to any calendar year in respect of any Site(s) / Group, the annual limit as set out in Schedule 4;

"Applicable Legislation" means all Policies and laws, statutes, acts, regulations, codes, judgments, orders, directives or determinations applicable to the performance of the Services;

"Arming Window" means, for each Site(s) / Group, the window of time during which WPD Secure Services may be required to be available as notified pursuant to paragraph 2 of Schedule 1;

"Authorised Persons" means the individuals of WPD and the Participant specified as the authorised person on the front page of this Agreement;

"Availability Window" means, for each Site(s) / Group, the window of time during which WPD Dynamic Services may be required to be available as notified pursuant to paragraph 2 of Schedule 1;

"Business Day" means any day other than a Saturday or a Sunday on which banks are open for domestic business in the City of London;

"CDM Regulations" means the Construction (Design and Management) Regulations 2015 and any amendment thereto;

"Cease Time" means the end of the minute during which WPD ceases, or requires the cessation of, the despatch of Demand Response in accordance with this Agreement;

"Central Control" means the WPD control facility from where the network is monitored and managed. Unless otherwise set out in this Agreement or agreed between parties from time to time, any notice or other communication with Central Control shall be via the Contact Method;

"Committed Arming Window" means an Arming Window (or any part thereof) in respect of which a notification or assumption of availability pursuant to paragraphs 1 or 3 of Schedule 1 corresponds;

"Committed Availability Window" means an Availability Window (or any part thereof) in respect of which a notification or assumption of availability pursuant to paragraphs 1 or 3 of Schedule 1 corresponds;

"Contact Method" means the password protected customer area of the flexible power website accessible via <http://www.flexiblepower.co.uk/>;

"Contracted Arming Window" means a Committed Arming Window in respect of a Site(s) / Group which is allocated by WPD for WPD Secure Services;

"Contracted Availability Window" means a Committed Availability Window in respect of a Site(s) / Group which is allocated by WPD for WPD Dynamic Services;

"Contracted Capacity" means the target net MW of Demand Response at a Site(s) / Group as set out in Clause 4 of this Agreement and as may be updated by the Participant in its declarations made pursuant to paragraph 1 and/or 3 of Schedule 1;

"Date of Agreement" means the date specified as the date of signature on the front page of this Agreement;

"Demand" the demand of MW and Mvar of electricity;

"Demand Response" means the increase of net export of active power to, or the reduction of net import of active power from, WPD's distribution system. The delivery method for providing Demand Response for a particular Site(s) / Group is set out in Schedule 4;

"Despatch Equipment" means any equipment (including any routers, computers, input / output notes and cables) owned by WPD and provided in respect of the provision of the Services under this Agreement;

"Distribution Code" means the Distribution Code of Licensed Distribution Network Operators of Great Britain (available to view at www.dcode.org.uk);

"Event End Time" means the earlier to occur of the events set out in paragraphs 7 or 8 (as relevant) of Schedule 1;

"Expected Availability" means those Arming Windows and Availability Windows which it is agreed between WPD and the Participant from time to time would be likely to be declared or deemed available and constitute a Committed Arming Window or Committed Availability Window (as appropriate);

"Generation" means the electrical output (in MW) of any apparatus which produces electricity;

"Good Industry Practice" means the degree of skill, care, prudence and foresight and operating practice that would reasonably and ordinarily be expected from time to time of a skilled and experienced operator engaged in the same type of undertaking under the same or similar circumstances and conditions;

"Group" means a multiple of sites as set out in the table at clause 4 of this Agreement and as further detailed in Schedule 4, that are otherwise aggregated and regarded as a single entity.

"Instruction" has the meaning given in paragraph 6 of Schedule 1;

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"Manual Override" means the inhibit switch installed at each Participant Site(s) / Group which may be operated to prevent the despatch of Demand Response by WPD;

"Maximum Utilisation Period" means the period of time in respect of a Site(s) / Group beginning at the time at which either the output of that Site(s) / Group is greater than 0MW or the Demand is less than the Contracted Capacity as set out in Schedule 4 as the same may be updated from time to time;

"Minimum Utilisation Period" means the period of time in respect of a Site(s) / Group beginning at the time at which either the output of that Site(s) / Group is greater than 0MW or the Demand is less than the Contracted Capacity (including any ramping period) as set out in Schedule 4 as the same may be updated from time to time;

"Monthly Limit" means, in relation to any calendar month in respect of any Site(s) / Group, the monthly limit as set out in Schedule 4;

"Operational Day" means the period from 0500 hours on one day to 0500 hours on the following day;

"Policies" means any instructions, rules or policies issued by WPD from time to time, including without limitation Policy Document: LE7 Relating to Bribery;

"Recovery Period" means the period specified in Schedule 4, which commences upon expiry of the Cease Time, for which the Site(s) / Group is not available to be despatched;

"Response Time" means the maximum period of time (in minutes) which is permitted to elapse from despatch of Demand Response by WPD or issue of an Instruction by WPD (as relevant) to achieving the Contracted Capacity at the relevant Site(s) / Group in connection with the Services at set out in Schedule 4;

"Service Charges" means the charges for the Services calculated in accordance with Schedule 2;

"Services" means any or all of the WPD Dynamic Services, WPD Restore Services and/or the WPD Secure Services;

"Settlement Period" means the period defined as such in of Schedule 2;

"Site" means each of the sites set out in the table at clause 4 of this Agreement and as further detailed in Schedule 4;

"Term" means the duration of this Agreement;

"Utilisation" means, in respect of a Site(s) / Group, any despatch of Demand Response which is provided continuously until the Event End Time and **"Utilised"** shall be construed accordingly;

"VAT" means value added tax chargeable under English law for the time being and any similar, additional tax;

"Week" a period of seven Operational Days commencing at 05.00 hours on a Monday and terminating at 05.00 hours on the next following Monday;

"Weekly Limit" means, in relation to any Week in respect of any Site(s) / Group, the weekly limit as set out in Schedule 4;

"WPD Dynamic Services" means the WPD 'dynamic' constraint management zone services (as further explained in WPD's "CMZ Payment and Contract Assistance Notes" document) required in the areas identified by WPD to be provided by the Participant pursuant to Schedule 1 including, for the avoidance of doubt, the permitting by the Participant of remote despatch of Demand Response by WPD from a Site(s) / Group;

"WPD Restore Services" means the WPD 'restore' constraint management zone services (as further explained in WPD's "CMZ Payment and Contract Assistance Notes" document) required in the areas identified by WPD to be provided by the Participant pursuant to Schedule 1 including, for the avoidance of doubt, the permitting by the Participant of remote despatch of Demand Response by WPD from a Site(s) / Group;

"WPD Secure Services" means the WPD 'secure' constraint management zone services (as further explained in WPD's "CMZ Payment and Contract Assistance Notes" document) required in the areas identified by WPD to be provided by the Participant pursuant to Schedule 1 including, for the avoidance of doubt, the permitting by the Participant of remote despatch of Demand Response by WPD from a Site(s) / Group.

1.2 In this Agreement, unless the context otherwise requires: (a) words in the singular include the plural and vice versa and words in one gender include any other gender; (b) a reference to a statute or statutory provision includes: (i) any subordinate legislation (as defined in Section 21(1), Interpretation Act 1978) made under it; (ii) any repealed statute or statutory provision which it re-enacts (with or without modification); and (iii) any statute or statutory provision which modifies, consolidates, re-enacts or supersedes it; (c) general words shall not be given a restrictive meaning where they follow one or more specific terms indicating a particular category of act, matter or thing or where they are followed by examples, and the words "including" and "in particular" (or similar) shall not limit the generality of any preceding words, and (d) references to: (i) any party include its successors in title and permitted assigns; (ii) a "person" include any individual, firm, body corporate, association or partnership, government or state (whether or not having a separate legal personality); (iii) clauses and schedules are to clauses and schedules of this Agreement and references to sub-clauses and paragraphs are references to sub-clauses and paragraphs of the clause or schedule in which they appear; and (iv) the

headings are for convenience only and shall not affect the interpretation of this Agreement.

2. Commencement and Duration

2.1 This Agreement shall commence on the Date of Agreement and shall (unless terminated at an earlier date in accordance with paragraph 12 (Termination)) continue in force until 30 April 2019 (the "**Initial Term**"), and then terminate automatically without notice unless it is extended in accordance with paragraph 2.2.

2.2 Either party may extend the Term at its sole discretion for one further period to be agreed at the time (the "**Renewed Term**") by giving not less than three (3) months' notice in writing to the other party before expiry of the Initial Term. Upon giving such notice this Agreement shall remain in full force and effect until the earlier of the end of the Renewed Term (unless otherwise agreed by the parties) or termination in accordance with paragraph 12 (Termination) subject to the agreement by the parties of the terms of such extension

3. Services

3.1 The Participant and WPD shall during the Term of this Agreement, carry out their obligations as set out in Schedule 1 in accordance with Applicable Legislation and the terms of this Agreement.

3.2 WPD may sub-contract its obligations under Schedule 1 to any third party.

3.3 The Participant may not assign, transfer, charge or otherwise encumber, declare a trust over or deal in any other manner with this Agreement or any right, benefit or interest under it without the prior written consent of WPD.

3.4 The Participant shall maintain the plant and apparatus comprising each Site(s) / Group to such a standard that the Participant can meet its obligations to provide, or permit the despatch by WPD of, Demand Response in accordance with the terms of this Agreement, and otherwise in accordance with Good Industry Practice.

4. Payment

4.1 In consideration of the provision by the Participant of the Services in accordance with the terms of this Agreement, WPD shall pay to the Participant the Service Charges.

4.2 WPD will, within 1 week following the end of each month calculate the Service Charges for the preceding month in accordance with Schedule 2 in respect of the provision of Services and provide a statement setting out the calculations to the Participant.

4.3 By the end of the month in which the Service Charges calculations statement is received from WPD, the Participant shall either raise an invoice in respect of the amount shown in the statement, or confirm if the calculations are disputed and provide full details of the same to WPD. If the Participant disputes any

PARTICIPANT RECRUITMENT REPORT

calculations, then within 1 month following resolution or determination of such dispute it shall raise an invoice for the agreed amount.

4.4 Each invoice must: (a) contain all the following information: (i) the Site(s) / Group where the Services have been carried out; (ii) the period to which the invoice relates; (iii) the Participant's or, as relevant, WPD's details for payment; (iv) the Service Charges for the period of the invoice, excluding VAT; and (v) any other information that may reasonably be requested; and (b) in respect of an invoice sent to WPD, be sent to: Western Power Distribution, Accounts Payable, Elliott Road, Prince Rock, Plymouth, Devon, PL4 0SD or, in respect of an invoice sent to the Participant, be sent to the Participant Authorised Person identified on page 1 of this Agreement, and (c) be dated the date that it is issued.

4.5 All invoices shall be paid within 28 days of the date of invoice.

4.6 All sums payable under this Agreement shall be exclusive of VAT. The payor of any sums shall pay an amount equal to such VAT to the payee in addition to any sum or consideration on receipt of a valid VAT invoice from the payee.

4.7 If the payor fails to pay to the payee any undisputed amount payable by it under this Agreement, the payee may charge the payor interest on the overdue amount from the due date up to the date of actual payment at the rate of 4% per annum above the base rate of the Bank of England. Such interest shall accrue from day to day.

4.8 The payor may, without limiting any other rights or remedies it may have, withhold or set off any amounts owed to it by the payee against any amounts payable by the payor to the payee under this Agreement.

5. Performance

5.1 Where, in respect of any Site a Service Failure (as defined in paragraph 5.4) occurs, WPD may serve a notice on the Participant requiring the Participant to (a) put forward within the time period set out in the notice, and subsequently implement in accordance with its terms, a rectification plan for improving performance and/or reducing the number of occurrences of unavailability, which such rectification plan may include (at the discretion of WPD) a repeat of any commissioning tests undertaken on initial installation of the relevant plant or apparatus, (b) propose a variation to the Contracted Capacity or (c) take any other action as may be specified by WPD (acting reasonably).

5.2 Where (a) (i) no acceptable rectification plan has been provided within the required time period, or (ii) the rectification plan has not been implemented in accordance with its terms, and (iii) in respect of either (i) or (ii), the Participant's performance in respect of

the Service Failure the subject of the notice given under paragraph 5.1 has not significantly improved (as determined by WPD) in the month following the date of the notice, (b) no acceptable variation to the Contracted Capacity has been proposed by the Participant, or (c) any other action specified by WPD has not been taken, then WPD may, at its discretion, terminate (with immediate effect by notice) this Agreement or to require a variation.

5.3 Where WPD requires a variation to the Agreement pursuant to paragraph 5.2 above, WPD shall give notice of this to the Participant. If the Participant disputes or does not accept (in accordance with its terms) any required variation, then WPD shall have the option to terminate (with immediate effect by notice) the Agreement.

5.4. For the purposes of this paragraph 5, a **Service Failure** shall mean where, in respect of a Site(s) / Group, (a) WPD has been entitled, in accordance with this Agreement, to make performance adjustments of 20% or more to the Service Charges in any 2 consecutive months or in three or more months in any six (6) month period; or (b) the number of Arming Windows and Availability Windows which are subject to a declaration or notification of unavailability, or which are otherwise deemed to be unavailable, is greater than 20% of the Expected Availability.

6. Contract Management

6.1 The Participant hereby appoints the Participant's Authorised Person who shall have the authority contractually to bind the Participant on all matters relating to this Agreement.

6.2 The Authorised Persons shall be available to meet at least once every quarter to review the parties' performance under this Agreement if required in writing (email sufficient) by either party.

7. Monitoring and Metering and Despatch Equipment

7.1 The Participant's provision of Demand Response and the amount of Demand Response provided shall be monitored, metered and determined by reference to the minute by minute metering data communicated to Central Control and for such purpose the Participant shall permit WPD to collect, and on request shall provide or procure the provision to WPD of, accurate minute by minute metering data in respect of each Site(s) / Group.

7.2 The Participant shall (a) permit and grant free and unrestricted rights of access to and over and egress from the Sites to WPD and/or its agents or sub-contractors (upon reasonable notice) in order to install, inspect, maintain, test, repair, replace, renew, alter, use and remove any Despatch Equipment; (b) take proper care of the Despatch Equipment and ensure that it is properly protected and either insured to its full replacement value (and ensure that WPD's interest

PARTICIPANT RECRUITMENT REPORT

is noted on the relevant insurance policy) or, if damaged or destroyed as a result of the Participant's failure to do so, pay for the cost of its repair and/or replacement; (c) notify WPD immediately upon becoming aware of any failure or likely failure of the Despatch Equipment to monitor the provision of Demand Response; (d) notify WPD as soon as reasonably practicable upon becoming aware of any adverse conditions which may affect the Despatch Equipment and comply with WPD's instructions relating to its care in such conditions; (e) not change the location of the Despatch Equipment without WPD's prior written consent; (f) comply with any reasonable instructions of WPD in respect of such Despatch Equipment.

7.3 The Participant shall indemnify WPD for any costs incurred by WPD as a result of any failure by the Participant to comply with the provisions of paragraph 7.4.

7.4. The Participant shall reimburse to WPD the reasonable costs incurred by WPD in installing, and maintaining the Despatch Equipment from the Sites if this Agreement is terminated due to an act or default by Participant.

8. Liability

8.1 Subject to paragraph 8.3 and without prejudice to paragraph 8.2, WPD's liability to the Participant (save in respect of payment of the Service Charges) shall not exceed two million pounds sterling (£2,000,000) and WPD shall not be liable for any other payments incurred by the Participant in the provision of the Services.

8.2 Subject to paragraph 8.3, and save where this Agreement provides for an indemnity, neither party shall be liable to the other for any losses arising from a breach of this Agreement other than for losses directly resulting from such breach and which, at the date of this Agreement was reasonably foreseeable as not unlikely to occur in the ordinary course of events from such breach in respect of physical damage to the property of the other or any third party, and provided further that liability for such losses shall not exceed one million pounds sterling (£1,000,000) per incident or series of related incidents.

8.3 Nothing in this Agreement shall limit or exclude either party's liability for death or personal injury caused by its negligence, or the negligence of its employees, agents or subcontractors; its fraud or fraudulent misrepresentation; and any other liability which cannot by law be excluded or limited.

8.4 Subject to paragraph 8.3 above, and save where this Agreement provides for an indemnity, neither party shall be liable to the other for (a) any loss of profits, loss of revenue, loss of use, loss of contract or loss of goodwill; (b) any indirect or consequential losses; or (c) loss resulting from the liability of the other party to any other person save as provided for in paragraphs 8.2 and/or 8.3 above.

9. Confidentiality

Except with the consent of the disclosing party or as required by law, a court order or by any relevant regulatory or government authority or to the extent that information has come into the public domain through no fault of the receiving party, each party shall treat as strictly confidential all commercial and technical information relating to the other party received or obtained as a result of entering into or performing this Agreement including but not limited to information which relates to the provisions or subject matter of this Agreement, to any other party or to the negotiations of this Agreement.

10. Anti-Bribery

The Participant shall not engage in any activity, practice or conduct which would constitute an offence under the Bribery Act 2010 and shall promptly report to WPD any request or demand for any undue financial or other advantage of any kind received or offered by the Participant in connection with this Agreement.

11. Force Majeure

Neither party shall be deemed to be in breach of this Agreement, or otherwise be liable to the other, by reason of any delay in performance or non-performance of any of its obligations under this Agreement to the extent that such delay or non-performance is due to an event beyond the reasonable control of that party.

12. Termination and consequences of termination or expiry

12.1 Either party may by notice in writing immediately terminate this Agreement, if the other party commits a material breach of this Agreement which in the case of a breach capable of remedy shall not have been remedied within 30 days of the receipt of a notice identifying the breach and requiring its remedy.

12.2 WPD may by notice in writing terminate the Agreement with immediate effect by notice on or at any time after the happening of any of the following: (a) the passing of a resolution for the Participant's winding-up or the making by a court of competent jurisdiction of an order for the winding-up or the dissolution of the Participant; (b) the making of an administration order or the appointment of an administrator under the out-of-court procedure under the Enterprise Act 2002 or the appointment of a receiver or an administrative receiver over, or the taking possession or sale by an encumbrancer of, any of the Participant's assets; (c) the Participant making an arrangement or composition with its creditors generally or making an application to a court of competent jurisdiction for protection from its creditors generally; or (d) the Participant ceasing to do business at any time for 30 consecutive days.

PARTICIPANT RECRUITMENT REPORT

12.3 Without affecting any other right or remedy available to it, either party may terminate this Agreement on written notice to the other provided that such termination shall not occur until the date falling one month after the date of the notice.

12.4 All rights and obligations of the parties shall cease to have effect immediately on termination or expiry of this Agreement except that termination or expiry shall not affect: (a) the accrued rights and obligations of the parties at the date of termination; (b) the continued existence and the validity of the rights and obligations of the parties under paragraphs 1, 8, 9, 13 and 14; and (c) any provisions of this Agreement necessary for the interpretation or enforcement of this Agreement.

12.5. On expiry or termination, however caused, the Participant will remove and return to WPD the Despatch Equipment within 2 months of such expiry or termination. If the Participant fails to remove and return the Despatch Equipment to WPD within 2 months of expiry or termination, with without prejudice to WPD's right to enter the Site in order to recover the same (in which case the Participant will reimburse to WPD the reasonable costs incurred by WPD in such removal), the Participant shall pay to WPD a late return fee of £5000.

13. Dispute Resolution

13.1 Subject to paragraph 13.3, if a dispute arises out of or in connection with this Agreement, the parties shall: (a) within 30 days of written notice of the dispute being received by the receiving party in good faith seek to resolve the dispute through negotiations between the parties' senior representatives who have the authority to settle it; and (b) not pursue any other remedies available to them until at least 30 days after the first written notification of the dispute.

13.2 The appointed representatives shall use reasonable endeavours to resolve the dispute. If the dispute is not resolved in accordance with this paragraph, either party may propose to the other in writing that the matter be referred to a non-binding mediation. If the parties are unable to agree on a mediator either party may apply to the Centre for Dispute Resolution (CEDR) to appoint one.

13.3 Nothing in this paragraph shall prevent any party from having recourse to a court of competent jurisdiction for the sole purpose of seeking a preliminary injunction or such other provisional judicial relief as it considers necessary to avoid irreparable damage.

14. Intellectual Property

14.1 All intellectual property rights owned by or licensed to WPD shall at all times both during the term of the Agreement and after its termination or expiry, belong to WPD and the Participant shall not make any use of such intellectual property other than to the extent reasonably necessary in performing its

PARTICIPANT RECRUITMENT REPORT

obligations pursuant to this Agreement provided that nothing in this paragraph 14 shall operate so as to exclude any non-excludable rights of the Participant. The Participant shall indemnify WPD against any costs or losses arising from any breach of this paragraph 14.1.

14.2 If WPD agrees, the Participant may be permitted to take such copies of the data from Despatch Equipment as may be reasonably necessary in performing its obligations pursuant to this Agreement. Upon termination or expiry of this Agreement, the data and any copies of the data in any medium taken by the Participant shall, at WPD's option, be returned to WPD or disposed of in such manner as WPD in its absolute discretion may deem appropriate.

15. CDM Regulations

15.1 WPD and the Participant agree that the Participant is to be treated for the purposes of the CDM Regulations as the only Client (as defined in the CDM Regulations).

15.2 The Participant agrees to undertake all the obligations of a Client (including appointing any Principal Contractor and/or Principal Designer (as defined in the CDM Regulations)) and to ensure that the installation of the Despatch Equipment is carried out in accordance with the CDM Regulations.

15.3 The Participant shall indemnify and keep WPD indemnified against liability for any breach of the Participant's obligations under or in connection with this paragraph 15.

16. General

16.1 This Agreement (and any appendices attached to it) sets out the entire agreement and understanding between the parties and supersedes all prior agreements, understandings or arrangements (whether oral or written) in respect of the subject matter of this Agreement.

16.2 To the extent that any provision of this Agreement is found by any court or competent authority to be invalid, unlawful or unenforceable in any jurisdiction, that provision shall be deemed not to be a part of this Agreement, it shall not affect the enforceability of the remainder of this Agreement nor shall it affect the validity, lawfulness or enforceability of that provision in any other jurisdiction.

16.3 The rights, powers and remedies conferred on either party by this Agreement and the remedies available to either party are cumulative and are additional to any right, power or remedy which it may have under general law or otherwise.

16.4 Either party may, in whole or in part, release, compound, compromise, waive, or postpone, in its absolute discretion, any liability owed to it or right granted to it in this Agreement by the other party without in any way prejudicing or affecting its rights in respect of that or any other liability or right not so

released, compounded, compromised, waived or postponed.

16.5 The Participant acknowledges that it has entered into this Agreement in reliance only upon the representations, warranties, conditions and promises specifically contained or incorporated in this Agreement and, subject to paragraph 8.3, WPD shall have no liability to the Participant in respect of any other representation, warranty, condition or promise made prior to the date of this Agreement, unless it was made fraudulently, or implied into this Agreement.

16.6 No single or partial exercise, or failure or delay in exercising any right, power or remedy by either party shall constitute a waiver by that party of, or impair or preclude any further exercise of, that or any right, power or remedy arising under this Agreement or otherwise.

16.7 No announcement concerning the terms of this Agreement shall be made by or on behalf of either party without the prior written consent of the other, such consent not to be unreasonably withheld or delayed.

16.8 Nothing in this Agreement or in any document referred to in it or in any arrangement contemplated by it shall create a partnership or joint venture between the parties or render a party the agent of the other, nor shall a party hold itself out as such (whether by an oral or written representation or by any other conduct) and neither party shall enter into or have authority to enter into any engagement, or make any representation or warranty on behalf of, or pledge the credit of, or otherwise bind or oblige the other party.

16.9 This Agreement may be executed in any number of counterparts and by the parties on separate counterparts, but shall not be effective until each party has executed at least one counterpart. Each counterpart, when executed, shall be an original of this Agreement and all counterparts shall together constitute one instrument.

16.10 Unless otherwise set out in this Agreement, any notice to either party under this Agreement shall be in writing signed by or on behalf of the party giving it and shall, unless delivered to the party personally, be left at, or sent by prepaid first class post or prepaid recorded delivery to the address of the party as set out on the front page of this Agreement or as otherwise notified in writing from time to time. A notice shall be deemed to have been served at the time of delivery, if delivered personally, or 48 hours after posting.

16.11 No term of this Agreement is enforceable pursuant to the Contracts (Rights of Third Parties) Act 1999 by any person who is not a party to it.

16.12 Unless otherwise expressly provided, no variation of this Agreement shall be valid unless it is in writing (which excludes email) and signed by or on behalf of each of the parties by its respective authorised representatives. The expression "variation"

includes any variation, supplement, deletion or replacement, however effected.

16.13 This Agreement and any dispute, claim or obligation (whether contractual or non-contractual) arising out of or in connection with it, its subject matter or formation shall be governed by the laws of England and Wales.

16.14 Subject to paragraph 13, the parties irrevocably agree that the courts of England and Wales shall have exclusive jurisdiction to settle any dispute or claim (whether contractual or non-contractual) arising out of or in connection with this Agreement, its subject matter or formation.

This Agreement has been signed on the date stated as the "Date of Agreement" on the front page of this Agreement.

Schedule 4
(Site Details)

Site: [REDACTED]

Address: [REDACTED]

CMZ Group: [REDACTED]

Unit	Capacity (KW)	Delivery Method	[Metering]	Minimum Utilisation Period (in minutes)	Maximum Utilisation Period (in minutes)	Response Time (in minutes)	Weekly Limit (in minutes)	Monthly Limit (in minutes)	Annual Limit (in hours)	Recovery Period (in hours)
A		Gen / Reduce								
B		Gen / Reduce								
C		Gen / Reduce								
D		Gen / Reduce								

(Site Details)

Site: [REDACTED]

Address: [REDACTED]

CMZ Group: [REDACTED]

Unit	Capacity (KW)	Delivery Method	[Metering]	Minimum Utilisation Period (in minutes)	Maximum Utilisation Period (in minutes)	Response Time (in minutes)	Weekly Limit (in minutes)	Monthly Limit (in minutes)	Annual Limit (in hours)	Recovery Period (in hours)
A		Gen / Reduce								
B		Gen / Reduce								
C		Gen / Reduce								
D		Gen / Reduce								

(Site Details)

Site: [REDACTED]

Address: [REDACTED]

CMZ Group: [REDACTED]

Unit	Capacity (KW)	Delivery Method	[Metering]	Minimum Utilisation Period (in minutes)	Maximum Utilisation Period (in minutes)	Response Time (in minutes)	Weekly Limit (in minutes)	Monthly Limit (in minutes)	Annual Limit (in hours)	Recovery Period (in hours)
A		Gen / Reduce								
B		Gen / Reduce								
C		Gen / Reduce								
D		Gen / Reduce								

Appendix E: Commissioning and Testing Guide



Overview

The purpose of this document is to describe the commissioning and testing requirements for a site to go live.

This should be read in conjunction with the Commissioning and testing checklist.

The requirements are split into 3 areas

- Documentation
- Interface testing
- Customer Portal set up

Documentation

All relevant documentation must be in place before a participant can go live.

This includes signing a framework agreement (one per participant) and completing the relevant participation requirements form (one per site). The latter must be approved by Flexible Power to ensure the minimum technical standards are met. Flexible Power will endeavour to review the forms as quickly as possible. The relevant assistance documents cover the requirements.

Finally Flexible Power needs the billing details form to arrange payments.

Interface testing

The interface testing is simply to ensure that the operational interface, either via the API or an outstation is operating correctly. This ensures both Flexible Power and the Participant are confident that communication is effective.

It should be noted that the aim is to test the interface and not the asset it connects to. As such Flexible Power is happy to test off line.

An interface can be scheduled with Flexible Power once the interface has been built and tested locally.

This process differs slightly for the API or the Outstation options.

API

For API interfaces, a self-test environment is available for basic testing and debugging. It is available at <https://uat.flexiblepowerwpc.co.uk>

Following comprehensive self-testing, a test can be arranged with Flexible Power. This will involve:

- Sending metering data (this can be dummy data) reliably for 30 minutes (the full duration of the test).
- Receiving a start signal for one of the relevant services in one of the zones
- Sending an emergency stop signal for the service.
- Receiving a start signal for the other relevant service in another zone
- Receiving a stop signal

Following the test, the participant must supply a log of all signals sent and received (including metering signals) to allow Flexible Power to verify both ends have seen the same information.

If the test is successful, the participant's API will be transferred to the live environment. If not, the participant will be asked to rebuild the interface and test again in the test environment.

Outstation

Outstation interfaces require site by site design in coordination with Flexible Power. Following the installation of the outstation the participant will be expected to conduct the following test in conjunction with Flexible Power:

- Sending metering data (this can be dummy data) reliably for 30 minutes (the full duration of the test).
- Receiving a start signal for one of the relevant services in one of the zones
- Sending an emergency stop signal for the service.
- Receiving a start signal for the other relevant service in another zone
- Receiving a stop signal

Following the test, the participant must supply a log of all signals sent and received (including metering signals) to allow Flexible Power to verify both ends have seen the same information.

Customer Portal set up

The final task is to set up the customer portal.

FP Document Commissioning and Testing guide MT v1

Flexible Power will provide a participant login and one time pass word.

Participants will then be asked to set a new password.

Participants will then be required to fill in the basic availability information.

More details can be found in the availability declaration guidance document.

Appendix F: Commissioning Checklist

FP Documents – Commissioning Checklist V1 MT

Commissioning checklist

This checklist highlights the tasks required before a participant can go live. This is broken into 3 sections:

- Documentation
- Interface testing
- Customer Portal set up

Documentation

The follow documents are needed:

Signed Contract	
Approved FP participation requirements form for each site	
Billing details form submitted	

Interface Testing

The interface testing requirements depend on the interface chosen. Participants may either choose the API or an on-site Outstation

API test

At a minimum the customer will be expected to operate the following test on the self-test environment.

Provision of reliable metering	
Reliable provision of emergency stop signal	
Receive a start signals reliably	
Receive a stop signals reliably	

For the API a test will be arranged with Flexible Power to test and confirm the following

30 minutes of reliable metering	
Receive a start signal for one of the relevant services in one of the zones	
Send an emergency stop signal for the service.	
Receive a start signal for the other relevant service in another zone	
Receive a stop signal	

A log of outputs will be expected from the customer to ensure both systems are well interfaced.

Outstation test

The outstation installations will vary on a site by site basis and must be coordinated with Flexible Power. Once installed a test will be arranged with Flexible Power for each outstation

30 minutes of reliable metering	
---------------------------------	--

FP Documents – Commissioning Checklist V1 MT

Receive a start signal for the main service	
Send an emergency stop signal for the service.	
Receive a start signal for restore	
Receive a stop signal	

A log of actions will be expected from the customer to ensure both systems are well interfaced.

Customer Portal set up

To set up the customer portal, participants need to :

Receive Login	
Update Password	
Update initial availability per zone	

Appendix G: Billing Guide



FP Documents Billing details 1.1 Midlands Trial

Introduction

This document explains the stages and the timescales associated with the billing process for Flexible Power's CMZ services. This document does not cover the wider topics that explain the mechanics of how the payments are calculated which are provided in detail in the CMZ payment and contract assistance notes. The CMZ services are based on performance contracts. As such Flexible Power has to collect all the appropriate data relating to services over a calendar month. After all the data is present for a month of service it must then be processed to create event performance summaries, billing statements then finally invoices as part of the self-billing arrangement. This process also includes an opportunity for participants to review and approve the reports before payments are finalised and settled.

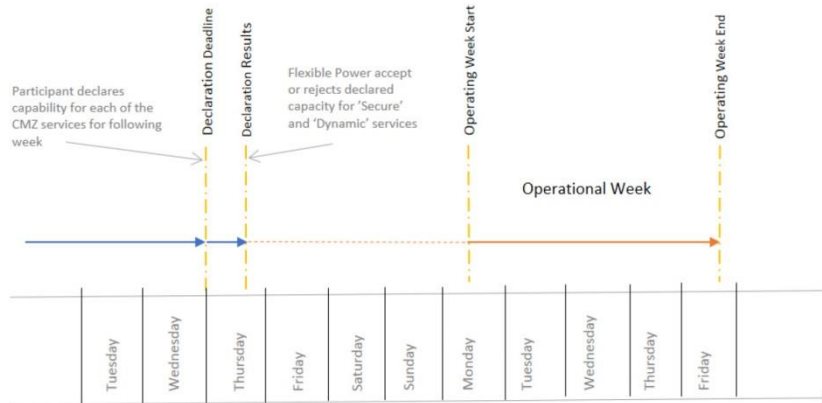
Initial billing details will need to be provided for payments to take place.

Background

As part of the contract set up, Flexible Power will create a user account that will provide a participant with access to their Participant Service Portal. This is the primary point of communication and fulfils multiple functions vital to the provision of services. The Portal identifies all the Constraint Management Zones in which a participant has contracted capacity and allows them to make the week-ahead declarations of service that can then be assessed by WPD's control engineers to determine if they can assist with an optimised network configuration. The outcome of the analysis and the decision as to whether service declarations are to be accepted or rejected are notified to participants via the portal and they will need to log in after midday Thursday to access this. When a participant's capacity is accepted for service the following week it will then need to be scheduled for use the following week if for 'Secure' or held in a state of readiness at the appropriate times for 'Dynamic' and 'Restore'. Dynamic and Restore are both dispatchable services which is notified to the participant with 15 minutes notice.

For all three service variants the operating week then commences on the following Monday. This aspect of service provision is outlined in the diagram below.

FP Documents Billing details 1.1 Midlands Trial



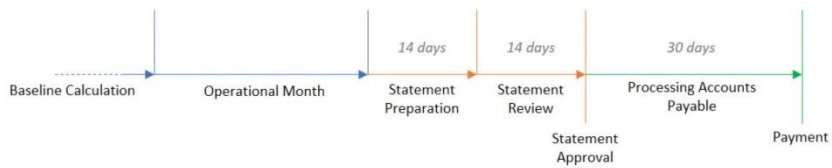
Billing stages and timeline

Flexible Power’s services require constant metering with data collected throughout the course of the month. This is collected via the API or the outstation and confirms that we have operational communications, but also facilitates the acquisition of background data to calculate the historic consumption, used for establishing a baseline. The service and payment cycles are based on a calendar month and therefore we operate a total of 12 billing cycles within a year. After the end of each event a performance report is created and provided to the participant via the web portal, and this allows the participant to review their results. At the end of the month these event reports are then compiled along with the availability / arming payments and reconciliations for any shortfall of delivery. Participants should allow up to 14 days from the last day of the month to allow for the processing of the data to produce a full earnings statement. Once the statement has been created and provided to the participant there is then a further 14 days during which they can raise a query against any aspect if there is any dispute over performance or subsequent earnings calculations. If a query is raised, then the earnings statement is placed on hold until any concerns have been resolved. We would endeavour to try and complete this within the 14 day ‘approval’ window so as to avoid deviating from the standard payment timeline. If however this can’t be achieved we will defer the payment to the following months billing cycle.

There will be a ‘check box’ with each monthly statement so that the participant can proactively ‘approve’ and confirm that they are happy with the

FP Documents Billing details 1.1 Midlands Trial

calculations. If however no query is raised within the 14 day window it is then assumed to be correct and will generate a 'self-billing' invoice which can be downloaded for financial records and a duplicate sent to WPD accounts payable for processing. This should then be paid directly into the bank account provided within a 30 days.



FP Documents Billing details 1.1 Midlands Trial

Supplier Details

Full Company Name	
Company Registered Number	
VAT Registration Number	
Registered Address Line 1	
Address Line 2	
Address Line 3	
Town / City	
Post Code	
Telephone number / Fax number	
Supplier Contact Name	
E-mail address for remittances	
E-mail address for Purchase Orders	
Bank Sort Code	
Bank Account Number	

Please Note.

Your billing details will need to be verified by your company after submission of banking details via a phone call or email.

Appendix H: Performance Report and Earning Statement



FLEXIBLE POWER - SECURE EVENT REPORT

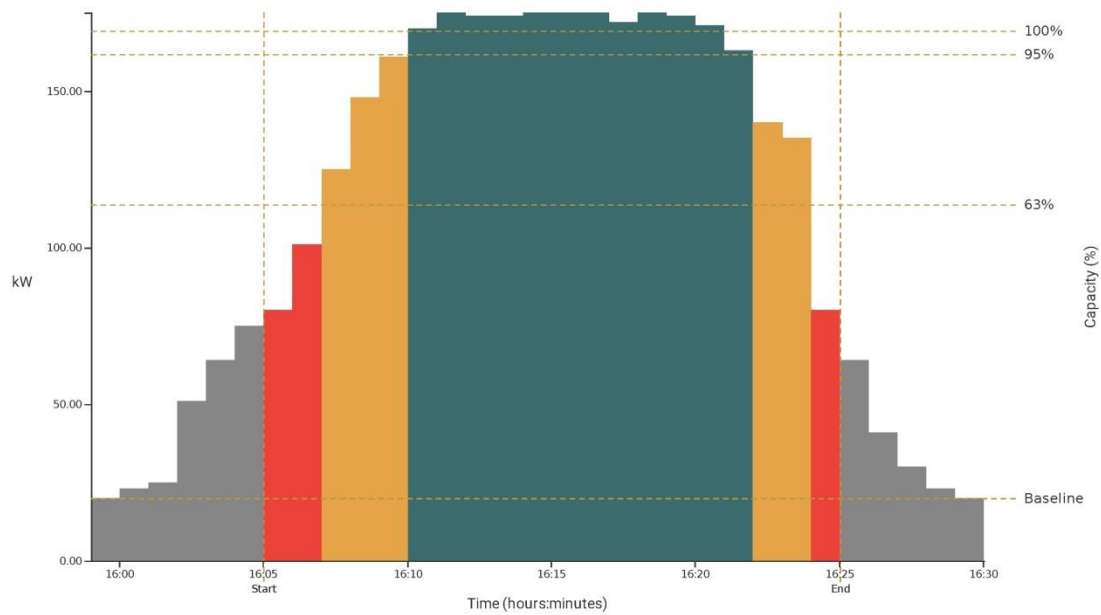
Acme Corporation

The North

Event ID: S0

Time: Thu 15, February 2018 16:05 - 16:25 UTC

Event Overview



Performance Highlights

Expected Total Volume	50.00 kWh
Actual Total Volume	42.61 kWh
Fraction of Contracted Capacity	85%



FLEXIBLE POWER - SECURE EARNINGS STATEMENT

Acme Corporation

The North

Event ID: S0

Time: Thu 15, February 2018 16:05 - 16:25 UTC

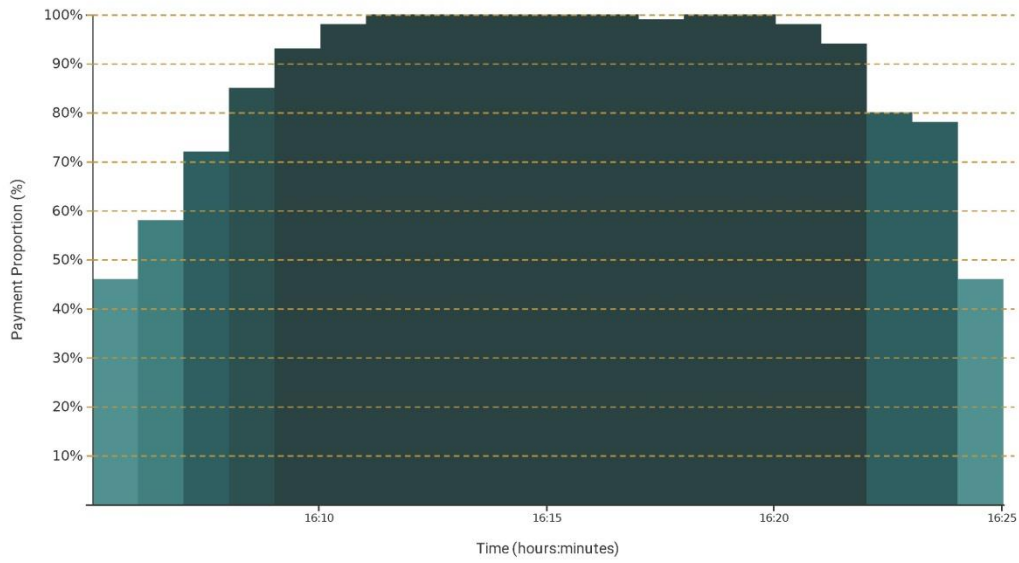
Expected Total Volume: 50.00

Actual Total Volume: 42.61 (85%)

Utilisation Payment Rate: 150

Maximum Possible Earnings: £80.42

Actual Earnings: £67.21



Payment Band Breakdown

Payment Band	Minutes
90% - 100%	13
80% - 89%	2
70% - 79%	2
60% - 69%	0
50% - 59%	1
40% - 49%	2
30% - 39%	0
20% - 29%	0
10% - 19%	0
0% - 9%	0
No Readings	0

