

## Introduction

The purpose of this document is to offer Stakeholders and Flexibility Service Providers (FSP), who are either already or are interested in being involved in, the WPD Intraflex innovation trial, a better understanding about the individual tests that will be applied in the second phase. For more details on Phase 1 that was operated over the late summer 2020 you can find the documents at the [Western Power Distribution's Innovation<sup>1</sup>](#) pages of the main web site.

The Intraflex Trial is being completed in conjunction with project partners [NODES<sup>2</sup>](#) and [Smart Grid Consultancy<sup>3</sup>](#) and have created a flexibility market that operates close to real time. This provides a unique opportunity to determine the veracity of a continuously clearing market where FSPs can place offers on the platform when it is suitable to their own operational conditions, rather than in response to an arbitrary auction deadline. The week ahead model doesn't necessarily suit all FSPs as they may have other commercial services that they are engaged in or unsure about asset availability and baselines until closer to real time.

The 'Continuous Market Model' being tested would potentially compliment the week ahead declarations that WPD and other DNOs currently utilise through the Flexible Power<sup>4</sup> BaU service offerings. Having now established the technical robustness of the software and demonstrated the ability of FSPs to set up and use it, the 2021 tests will seek to determine the optimal usage patterns to encourage trading of flexibility and grow the liquidity on offer. For this reason, we will be attempting to encourage FSPs to make proactive offers on the platform as opposed to relying on them being able to respond to bids placed by WPD.

The overall structure of Phase 2 will initially require FSPs to complete a commissioning test and thereafter will proceed through 6 test phases. Each of the 6 phases will include a variation on some key principles and different combinations to establish the most effective. An effectiveness assessment will be carried out by the project team, incorporating feedback from FSPs and Stakeholders. The tests that are outlined later in this document are therefore indicative of what we intend to pursue but may be subject to some alteration based upon the learning and feedback we experience.

To maximise the potential for learning we are keen to reopen the FSP & Stakeholder recruitment from those that were involved in the first Phase and extend the opportunity to get involved and take advantage of the remuneration on offer as well as shape the future of the industry.

To help potential participants understand more about the trials, and what their involvement will include, the remainder of the document will explain the series of tests that we will be undertaking.

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<sup>1</sup> <https://www.westernpower.co.uk/projects/intraflex>

<sup>2</sup> <https://nodesmarket.com>

<sup>3</sup> <http://www.sgcprototype.com>

<sup>4</sup> <https://www.flexiblepower.co.uk>



## On-boarding and End to End testing (Test Zero)

Prior to the tests themselves, we will require any new participants to undergo the 'onboarding process' which is detailed separately in the Onboarding document, which will be available to download from the [myNODES<sup>5</sup>](#) space of NODES website from early January.

This includes;

- Set up metering API in portal
- Register and sign Membership Agreement with NODES
- (Set up the NODES API if the FSP decides to do so, though it is possible to act entirely manually on NODES using the web portal without using the API)
- Learn how to act on NODES
- Complete an end-to-end test (Test 0 ), demonstrating the ability to enter into a transaction on NODES and to transmit metering values

Previous participants will be able to fast track this process and will only be required to complete the end-to-end test zero to demonstrate their ongoing understanding of the platform and successful integration.

The first three steps need to be completed prior to the end of March in order to be ready for the end-to-end tests scheduled for April.



### 1- Overall timeline for Phase 2

A budget of up to £300 has been allocated to each FSP for the completion of T0. This is based upon a payment at £300 MWh and a minimum test duration of 30 mins and a max of 2 hours. This is subject to the payment mechanics that are in play throughout the trials and successful delivery in line with the forecast capacity / volume.

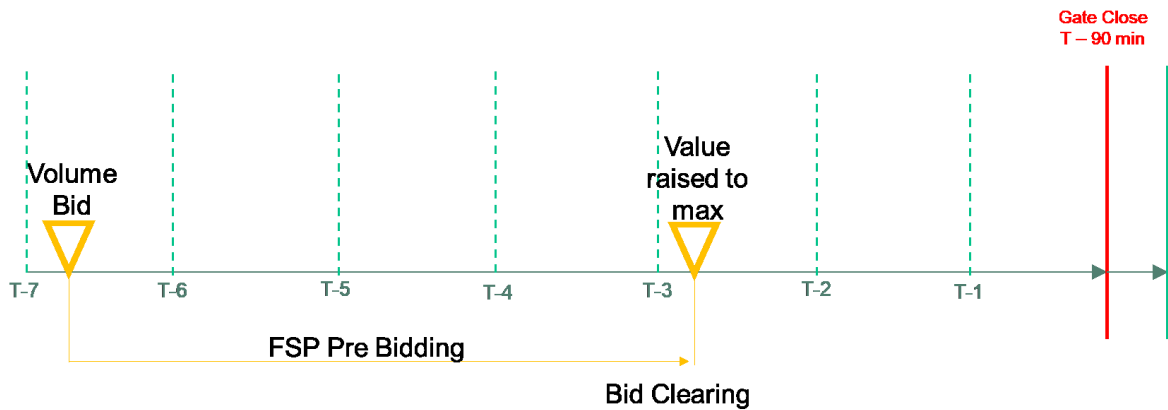
<sup>5</sup> <https://nodesmarket.com/log-in/>



## Trial Plan: Tests 1 - 6

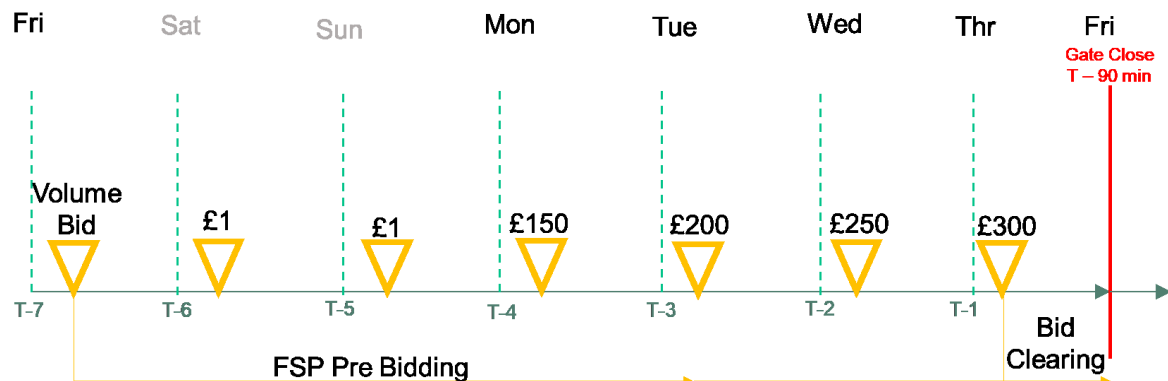
The market operation tests have been designed to help develop understanding and learning about the relative importance of various elements in the operation of a continuously clearing market. These start with a relatively simple example, with more features added as the trial develops.

The figure below highlights the basic bidding structure that is proposed for Test 1.



### 2- Simple bid and offer weekly scenario

By the time we progress through to Test 6 we will introduce more advanced concepts such as variable pricing increments, intraday bids and how this interplay's with weekends when the services are only expected to be required on weekdays.



### 3- Test 6 weekly scenario for Friday flex requirements

The Table below describes the evolution of the bidding mechanisms as the trial develops.

Test	Market Opens	Gate Close	Bid Alerts	Bid Time	Bid Increment	Scarcity Pricing	Max Value	Weekend Offers	Weekend Bids
1	7 days	90 mins	✓	10am	single	✗	T-3 days	✓	✗
2	7 days	90 mins	✓	10am	linear	✗	T-3 days	✓	✗
3	7 days	90 mins	✓	variable	variable	✗	T-3 days	✓	✗
4	7 days	90 mins	✓	10am	linear	✓	T-3 days	✓	✗
5	7 days	90 mins	✓	10am	linear	✗	Intraday	✓	✗
6a	7 days	90 mins	✓	10am	linear	✓	intraday	✓	✗
6b	7 days	90 mins	✓	variable	variable	✓	intraday	✓	✗



To help participants understand the objectives and differences between each of the 3 week tests that make up Phase 2 we have compiled the table above as a quick reference guide. Below is an explanation of each of the meaning to each of the column headings.

Phase	The term ‘phase’ is interchangeable with ‘tests’ and represents the 6 differing approaches that will be tried. Test 6 has two options that reflect a moderate difference in scope and relate to tests earlier in the sequence. A decision will be taken based on the outcome of those test as to whether 6a or 6b will be executed.
Market Opens	During the first Phase the market operated at 5 days prior to real time. Phase 2 has increased this to 7 days to provide FSPs with a full week of visibility to the Flexibility requirements. These will be published each week day based upon the assessment of network needs. So that FSPs can discriminate between a period without flexibility requirements vs a period that has not yet been assessed a notification or ‘positive confirmation’ will be sent and published on NODES to let participants know to what point in the calendar assessments have been completed.
Gate Closure	Once bids have been published then FSPs can submit offers at any time until the capacity is either matched with an offer and converted into an order or until 90 min ahead of real time. At T-90min the market ceases to accept trades and any outstanding capacity will expire.
Bid Alerts	In order to avoid burdening FSPs and requiring FSPs to log into the marketplace just to identify if there are any bids that they can submit offers against we will be providing bid alerts. Alerts will be submitted from the system to FSP in the form of an email if they are operating manually through the portal and orders can also be picked up via the NODES API if the FSPs have set up the integration.
Bid Time	For the majority of the tests, we will upload Bids at a consistent time of 10am. We will however be running at least one test where the time of publishing bids will be variable and FSPs will be more reliant on the Bid Alerts to know when to respond to bids.
Bid Increment	Initial bids at T-7 days will be set at the nominal price of £1 alongside the desired capacity. Over the following 7 days the price will be incremented up towards the maximum value. The first test will see a <u>single</u> increment from £1 to £300. FSPs will have the opportunity to submit competitive offers ahead of this and when the bids are increased to £300 any offers below that level will be matched and converted <u>Variable</u> increments may result in the increments not being made every day and when they are increased these will not be in as predictable and consistent manner.
Scarcity Pricing	When scarcity pricing is not part of the test then all periods during which Flexibility are required will be treated equally and the value on offer will be consistent regardless of volume or time of day. The scarcity pricing applies a formula to increase the value on offer per MWh based on capacity. I.e. periods with greater capacity will be paid more per MW than those with less than the daily average.
Max Value	A maximum value for flexibility is known by the DNO in advance of commencing bidding but as there is potentially a competitive market from FSPs to fulfil the requirements then it is necessary to establish the best price on offer. Initial test will achieve the maximum value through increments at



T-3 days. The final tests will not reach this value until the day of service allowing extra time for a competitive market to match bids at the best and final price.

Weekend Offers / Bids The market has 7 days forward visibility, and it remains operational 24/7. However, WPD do not anticipate a significant requirement to procure flexibility for demand constraints during weekends and bank holidays and therefore no bids will be placed at the weekend during any phase of the trial. This will also mean that there will be no changes to the incremental bid prices on the system. The pricing on a Friday will remain static over the weekend and then any missed increments will be implemented on Monday. The market will accept and match FSP offers over the weekend.

## Feedback

We welcome your comments and feedback on the trial plan. Please submit these to: [sofia.eng@NODESmarket.com](mailto:sofia.eng@NODESmarket.com).

Feedback could consider, but not be limited to:

- Are there any perceived issues with this trial plan?
- Do the proposed mechanisms drive competition?
  - Simple bidding?
  - Incrementing pricing?
  - Scarcity pricing?
- Do the timings seem workable?
  - Initial bids?
  - Final bids?
  - Fixed vs variable timings?

