

IntraFlex

Phase 2 - Overview Webinar

2nd December 2020



westernpower.co.uk/innovation

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Serving the Midlands, South West and Wales

Outline

AGENDA ITEM	Duration
• Project Overview	5 Mins
• Phase 1 Review	5 Mins
• Phase 2 Overview	
➤ Trial Plan/Sub Trials	15 Mins
➤ Q's	15 Mins
➤ Customer Journey	5 Mins
➤ Q's	10 Mins
➤ Developments	10 Mins
➤ Q's	10 Mins
• Questions	15 Mins



We want your feedback

Today

- Please ask questions throughout the presentation
- Discuss your thoughts
- Open questions at the end of the session

After the event

- Send feedback to : sofia.eng@NODESmarket.com



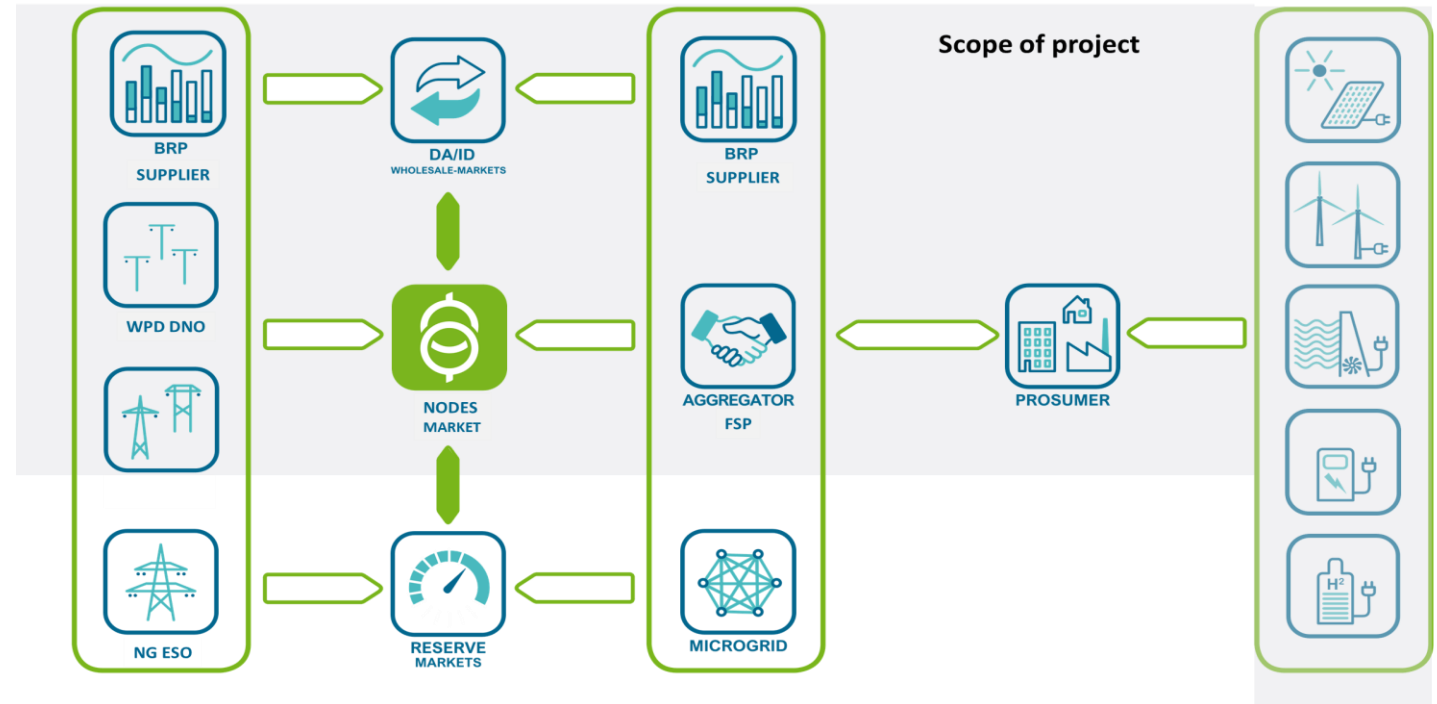
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Project Overview

- The project builds on WPD’s existing procurement of flexibility services through Flexible Power.
- IntraFlex aims to understand how to deliver a link between DNO procurement activity and Balance Responsible Party (BRP) imbalance positions.
- It will test a **short-term market** for DNO flexibility which actively **accounts for the imbalance it creates** in the electricity market.
- It is a £1.2m project (£0.89m NIA funded) and runs from October 19 to November 21. The project partners are NODES and SGC.



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Phase 1 Review

The Phase 1 trial was aiming to have a first pass at the platform, to gather learning and experience to feed into a larger Phase 2.

The Phase 1 trial was broken down into individual tests as follows;

Test 0 - Technical Proving

Test 1 - Basic Function and FSP Interaction

Test 2 - Speed of response to order requirements

Test 3 – Increased Base price (Optional pending outcome of Test 2)

Test 4 - Profiled Capacity linked to pricing.



Phase 1 Trial Plan

	Thr	Fri	Sat	Sun	Mon	Tue	Wed
Week 1	Test 1 Commences	Publish bids for week 1, and minded to position for Thr & Fri, week 2			Publish bids for week 2 Thr & Fri and minded to position for Mon – Wed.		
Week 2		Publish bids for week 1, and minded to position for Thr & Fri, week 2			Publish bids for week 2 Thr & Fri and minded to position for Mon – Wed.		
Week 3		Test 1 concludes Test 2 commences					



Phase 1 Review - What we saw

- ✓ There was a limited number of participants so results are anecdotal and shouldn't be seen as representative of a fully fledged market.
- ✓ We completed 241 trades procuring 50.15MW (½ hourly).
- ✓ We saw offers from 3MW down to 10kW and traded at prices £180 down to £120/MW/HH. Some bids matched within 10 minutes of submission; others matched within 2 hours of real time.
- ✓ Participant behaviour varied over the trial with different levels of engagement. Some of this was to do with the limited nature of the trial.
- ✓ We also believe that annual leave during the tests had an impact on the ability for participants to place offers.



Phase 1 Review - Learnings Summary

We operated 4 sub trials.

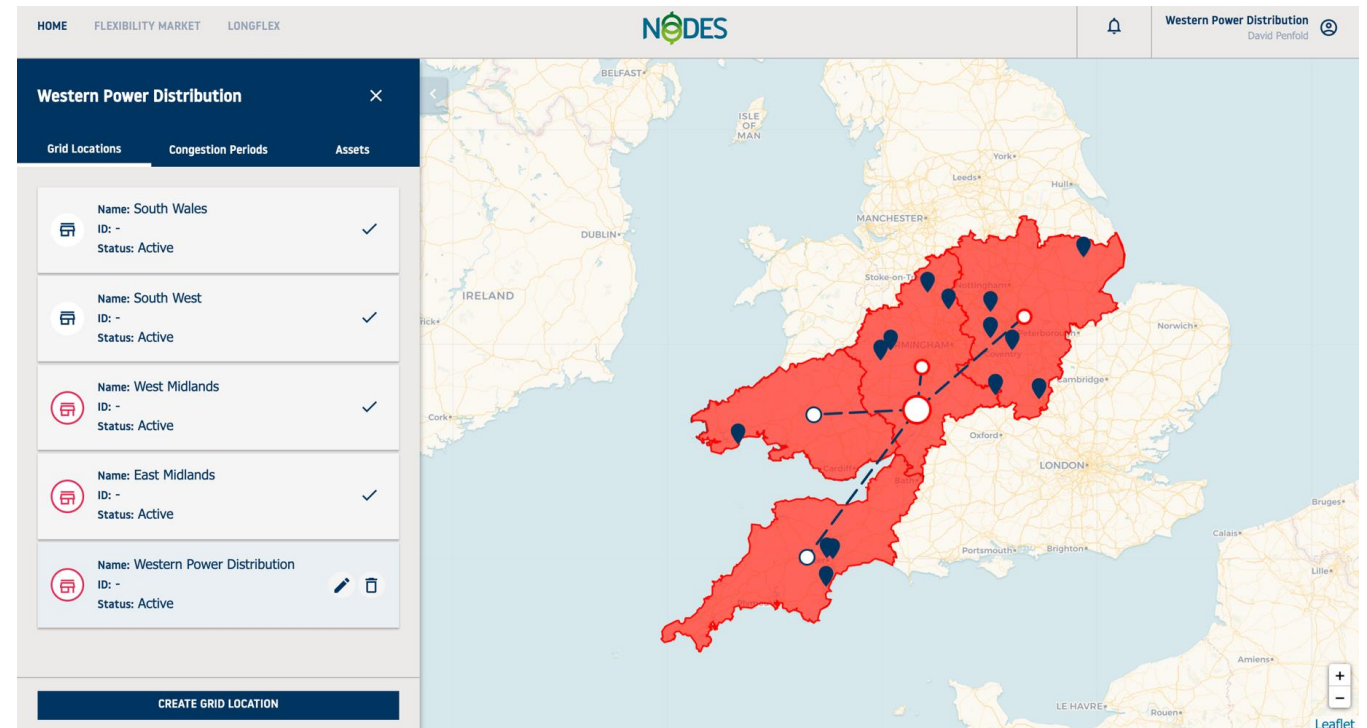
Bids put up proactively on Mondays and Fridays.

We learnt:

- Level of response was variable
- Speed of response was variable
- Bids driven by timings and volumes rather than price.

A lot of this driven by the early nature of the trial.

We hope to build on this going forward.



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Phase 2 Overview

The focus is on ramping up and delivering a larger trial in Spring 2021.

This Phase will focus on:

- Driving closer to a BaU behaviours
- Longer duration trial with more value on the platform
- Increased liquidity and hence competition.
- Active bids from providers to create competition on price rather than just speed.
- Platform and process improvements to make things simpler and easier to scale.
- Information Service.



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Phase 2 Sub Trials

Onboarding
End March '21

Test 0
4 Weeks

Test 1
3 Weeks

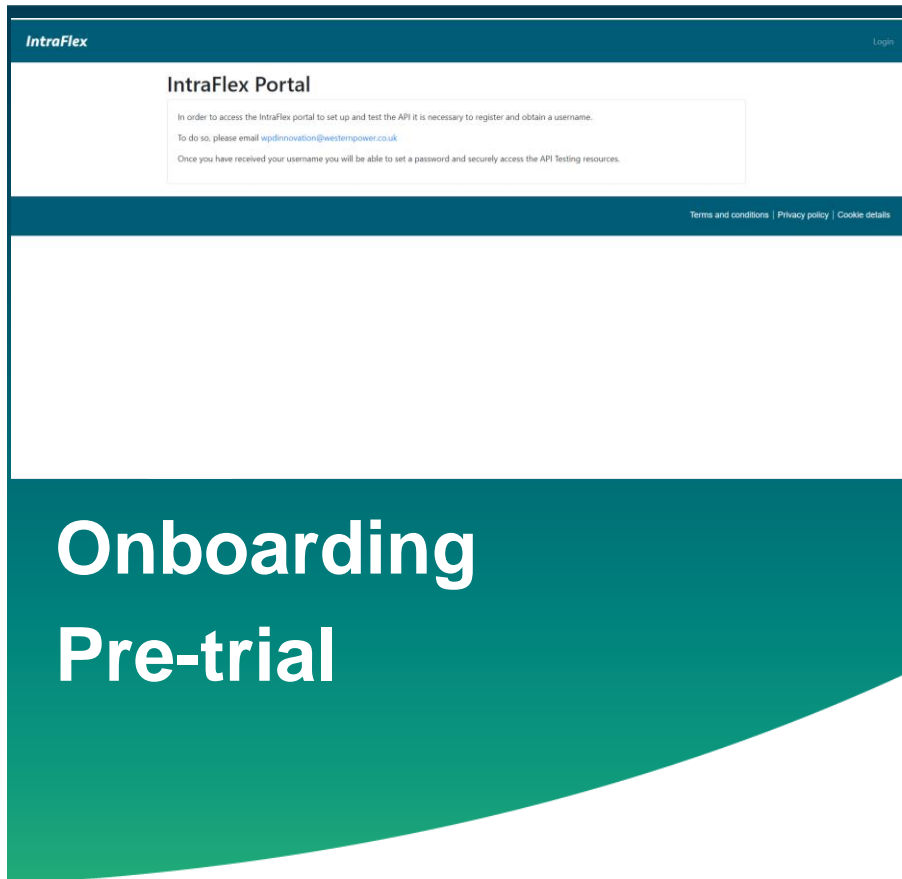
Test 2
3 Weeks

Test 3
3 Weeks

Test 4
3 Weeks

Test 5
3 Weeks

Test 6
3 Weeks



The screenshot shows the IntraFlex Portal registration page. At the top left is the 'IntraFlex' logo and a 'Login' link. The main heading is 'IntraFlex Portal'. Below it, a text box contains the following instructions: 'In order to access the IntraFlex portal to set up and test the API it is necessary to register and obtain a username. To do so, please email wpdinnovation@westernpower.co.uk. Once you have received your username you will be able to set a password and securely access the API testing resources.' At the bottom of the text box are links for 'Terms and conditions', 'Privacy policy', and 'Cookie details'. A large green banner at the bottom of the screenshot reads 'Onboarding Pre-trial'.

- Submit Registration Form
- Sign Membership agreement
- Complete relevant technical build
- Set up metering API in portal



Phase 2 Sub Trials

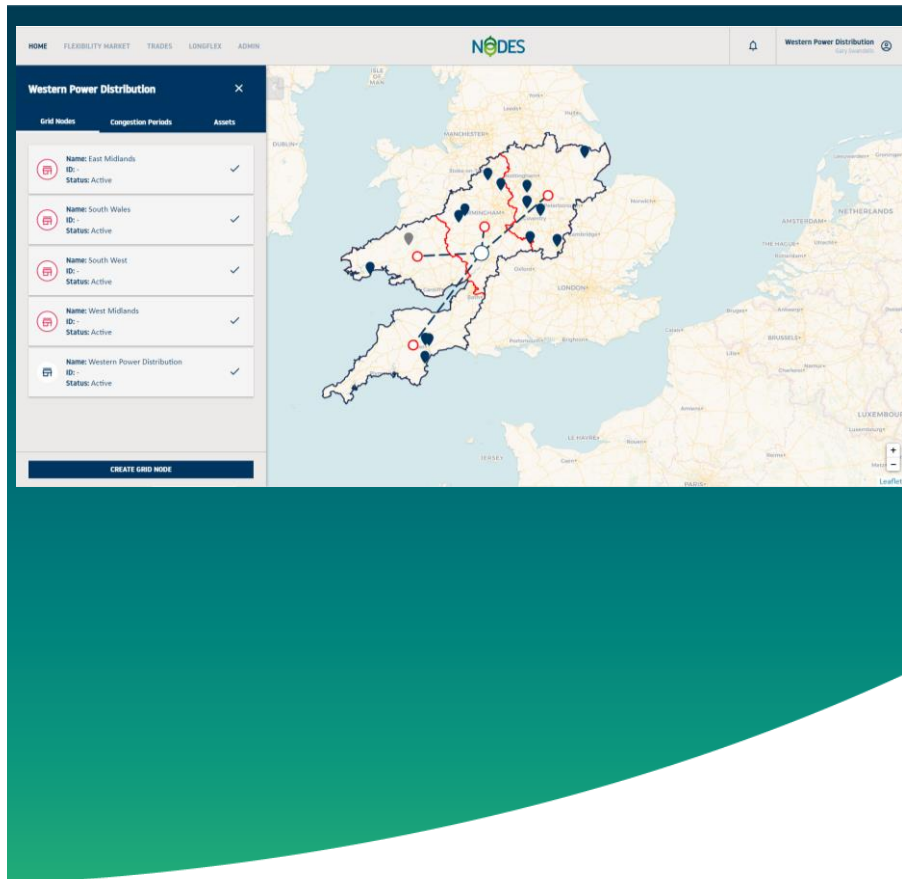


Test Zero (P2-T0) 4 weeks

- Complete Test Zero (T0)
 - Agree suitable assets and window for testing
 - Submit offer on Platform
 - WPD submit matching bid
 - Fulfil event delivery
 - Data check / settlement
- Approval to proceed into full trials



Phase 2 Sub Trials



- Complete Test Zero (T0)
 - Agree suitable assets and window for testing
 - Submit offer on Platform
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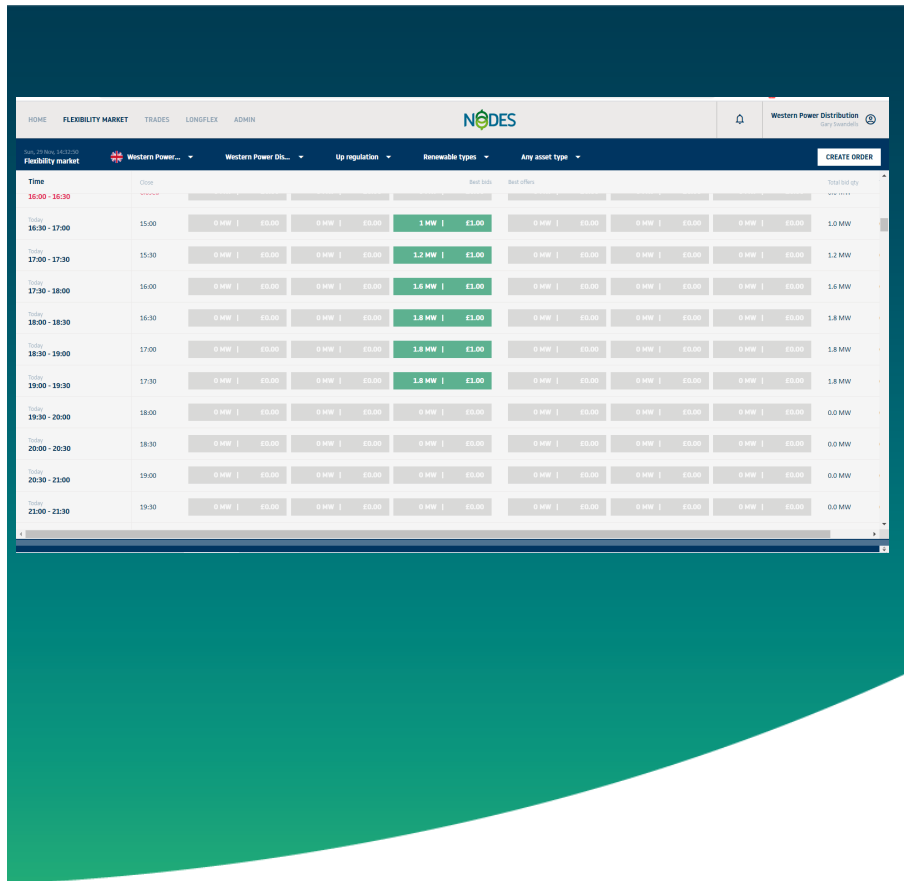


Phase 2 Sub Trials

Key Principals

- Increase participant interaction with the market
- Shift to participants leading the bid price
- DSO actions modified to support continuous clearing

Phase 2 Sub Trials



Time	Code	Asset type	Volume	Price	Asset type	Volume	Price	Asset type	Volume	Price	Asset type	Volume	Price
16:00 - 16:30	15:00	0 MW £0.00	0 MW £0.00	1 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.0 MW
16:30 - 17:00	15:30	0 MW £0.00	0 MW £0.00	1.2 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.2 MW
17:00 - 17:30	16:00	0 MW £0.00	0 MW £0.00	1.6 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.6 MW
17:30 - 18:00	16:30	0 MW £0.00	0 MW £0.00	1.8 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.8 MW
18:00 - 18:30	17:00	0 MW £0.00	0 MW £0.00	1.8 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.8 MW
18:30 - 19:00	17:30	0 MW £0.00	0 MW £0.00	1.8 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.8 MW
19:00 - 19:30	18:00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW
19:30 - 20:00	18:30	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW
20:00 - 20:30	19:00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW
20:30 - 21:00	19:30	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW
21:00 - 21:30		0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW

- Initial Market information bids placed 7 days ahead.
- Volume requirements communicated to participants
- Positive confirmation of network assessment
- Participants respond to volume with prices
- WPD submits value of bids closer to real time (to be discussed later)
- Bids clear
- Remaining volume stays

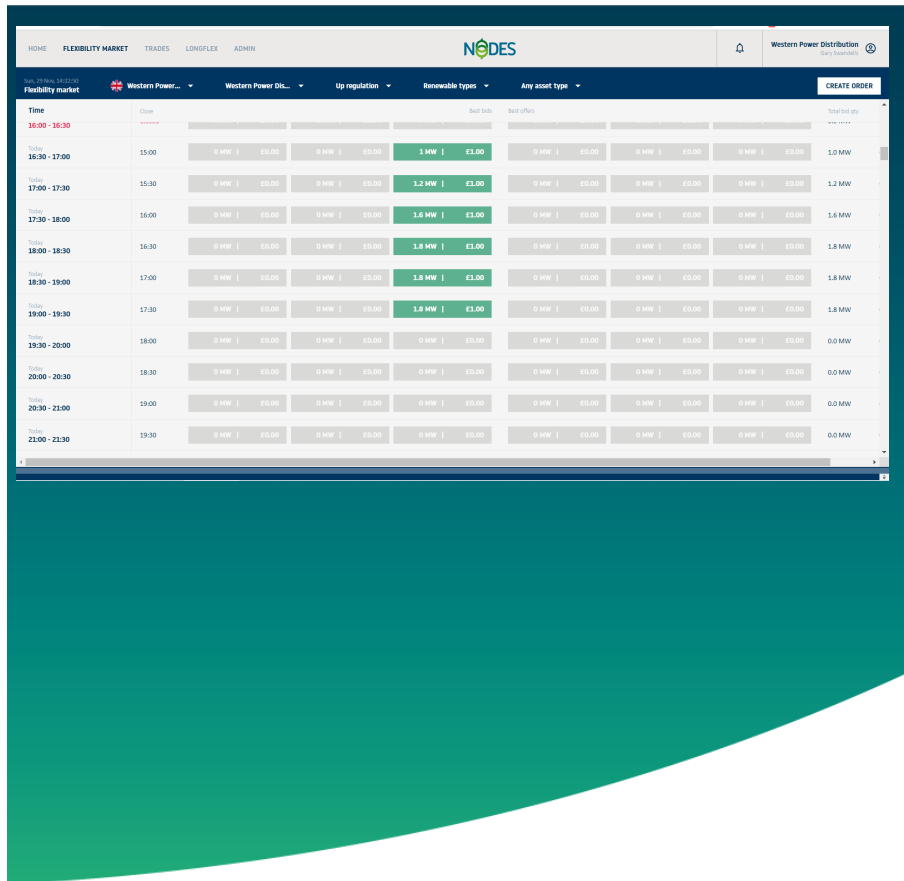


Volume Requirements

HOME FLEXIBILITY MARKET TRADES LONGFLEX ADMIN										NODES		Western Power Distribution Gary Swandells									
Sun, 29 Nov, 14:32:50 Flexibility market										Western Power...		Western Power Dis...		Up regulation		Renewable types		Any asset type		CREATE ORDER	
Time	Close	Best bids		Best offers								Total bid qty									
16:00 - 16:30																					
Today 16:30 - 17:00	15:00	0 MW £0.00	0 MW £0.00	1 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.0 MW							
Today 17:00 - 17:30	15:30	0 MW £0.00	0 MW £0.00	1.2 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.2 MW							
Today 17:30 - 18:00	16:00	0 MW £0.00	0 MW £0.00	1.6 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.6 MW							
Today 18:00 - 18:30	16:30	0 MW £0.00	0 MW £0.00	1.8 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.8 MW							
Today 18:30 - 19:00	17:00	0 MW £0.00	0 MW £0.00	1.8 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.8 MW							
Today 19:00 - 19:30	17:30	0 MW £0.00	0 MW £0.00	1.8 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.8 MW							
Today 19:30 - 20:00	18:00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW							
Today 20:00 - 20:30	18:30	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW							
Today 20:30 - 21:00	19:00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW							
Today 21:00 - 21:30	19:30	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW							



Phase 2 Sub Trials



Time	Close	Best bids				Best offers				Total bid qty
16:00 - 16:30	-----									-----
Today 16:30 - 17:00	15:00	0 MW £0.00	0 MW £0.00	1 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.0 MW
Today 17:00 - 17:30	15:30	0 MW £0.00	0 MW £0.00	1.2 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.2 MW
Today 17:30 - 18:00	16:00	0 MW £0.00	0 MW £0.00	1.5 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.5 MW
Today 18:00 - 18:30	16:30	0 MW £0.00	0 MW £0.00	1.5 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.5 MW
Today 18:30 - 19:00	17:00	0 MW £0.00	0 MW £0.00	1.5 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.5 MW
Today 19:00 - 19:30	17:30	0 MW £0.00	0 MW £0.00	1.5 MW £1.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	1.5 MW
Today 19:30 - 20:00	18:00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW
Today 20:00 - 20:30	18:30	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW
Today 20:30 - 21:00	19:00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW
Today 21:00 - 21:30	19:30	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0 MW £0.00	0.0 MW

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Phase 2 Sub Trials

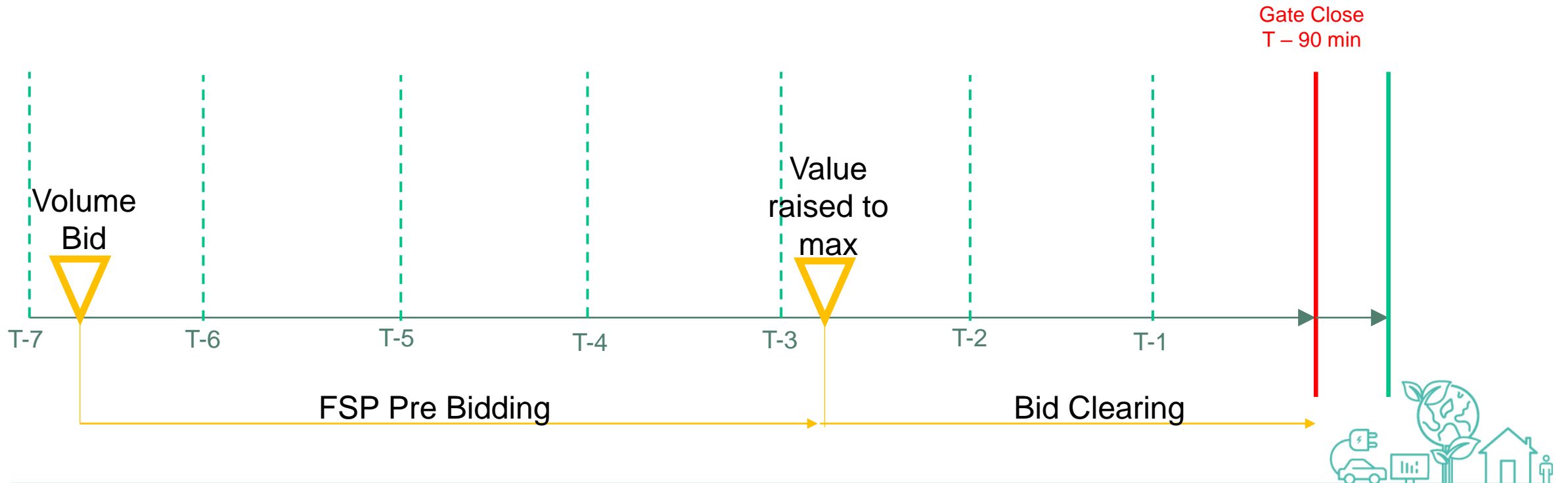


Test 2 (P2-T1) Simple Bidding 3 weeks

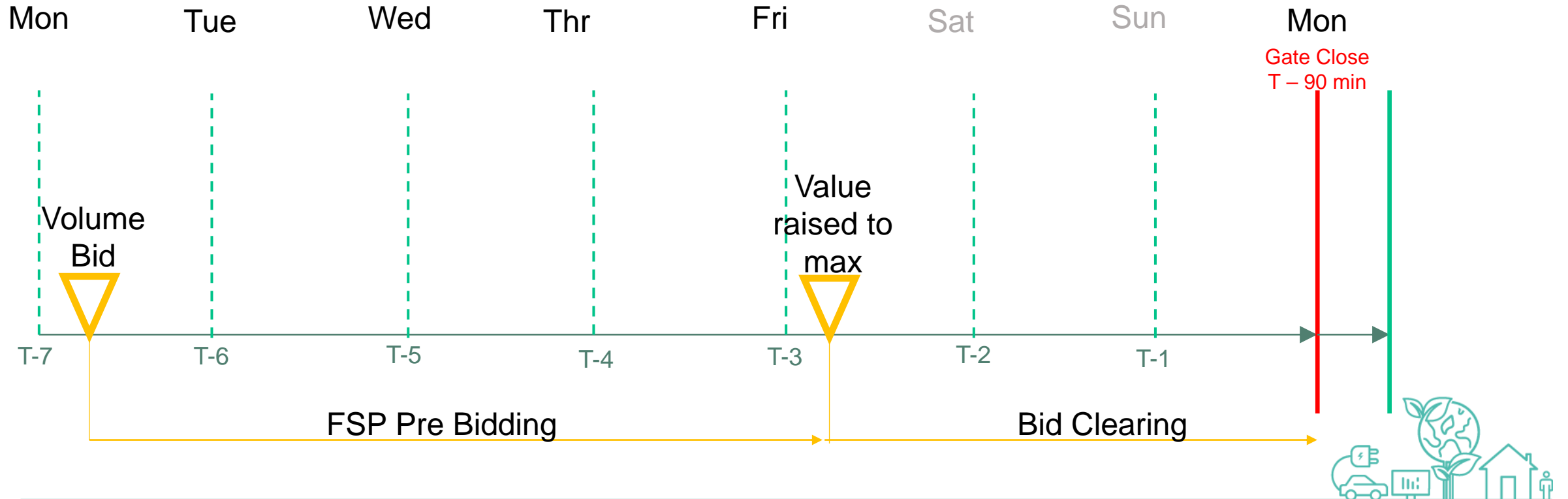
- ✓ Retain a predictable timing for all actions
- ✓ Rather than email notice of requirements bids only reflect volume
- ✓ System notifications of any activity
- ✓ Initial bid at T – 7 days with just volume at 10:00
- ✓ FSP submit offers when they are ready with baseline and asset availability
- ✓ Max bid value published at T - 3 days ahead at 10:00
- ✓ Full price available by Friday for following Monday
- ✓ Uncleared bids remain to T – 90mins



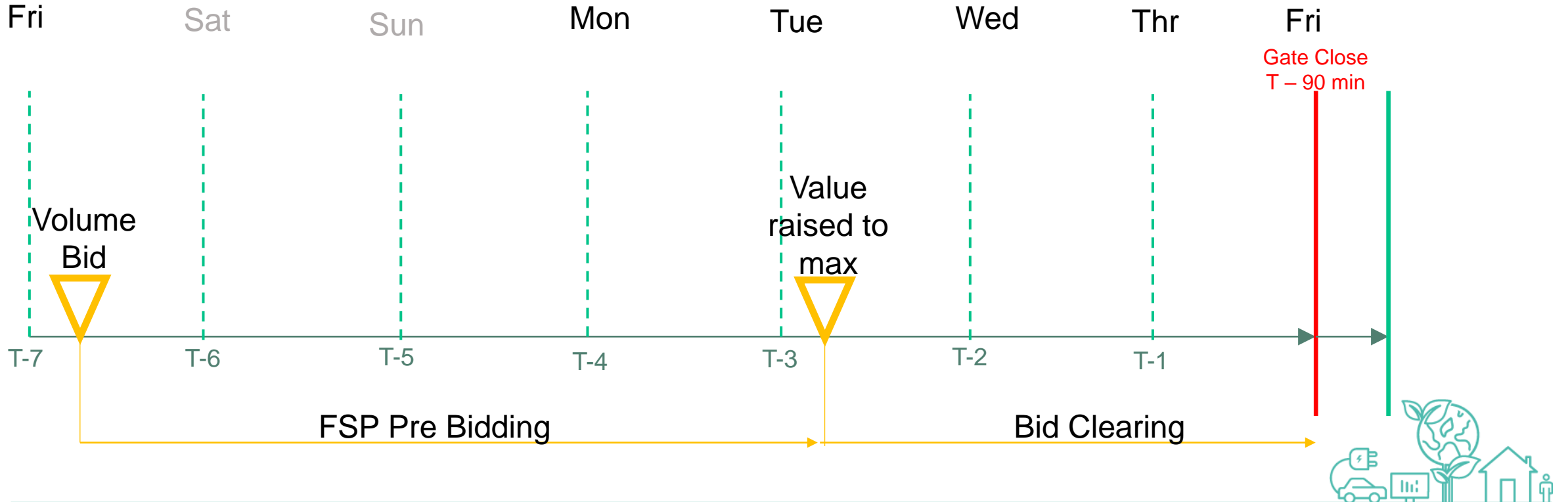
P2-T1 Timeline



P2-T1 Timeline



P2-T1 Timeline

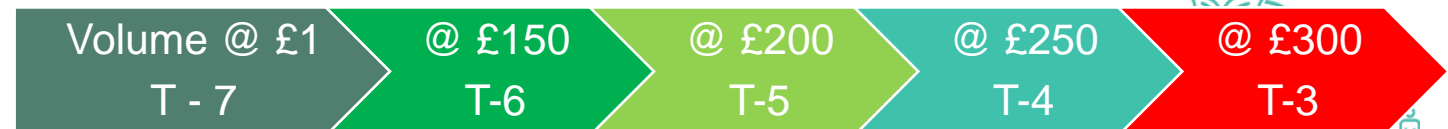


Phase 2 Sub Trials

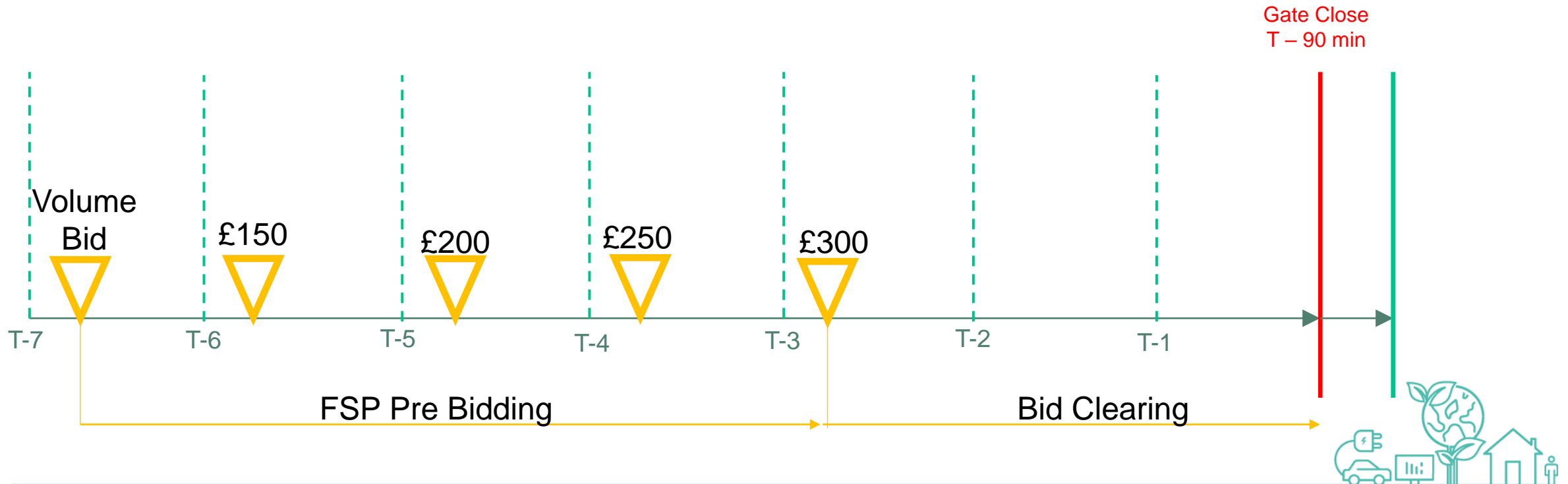


Test 2 (P2-T2) Introducing Increments 3 weeks

- ✓ Retain a predictable timing for all actions
- ✓ Initial bid at T – 7 days
- ✓ System notifications of any activity
- ✓ Fixed schedule for bid increments each day at set time
- ✓ Fixed increase in bid price increments.
- ✓ Max bid value reached by 3 days ahead
- ✓ Full price available by Friday for following Monday



P2-T2 Timeline



Phase 2 Sub Trials



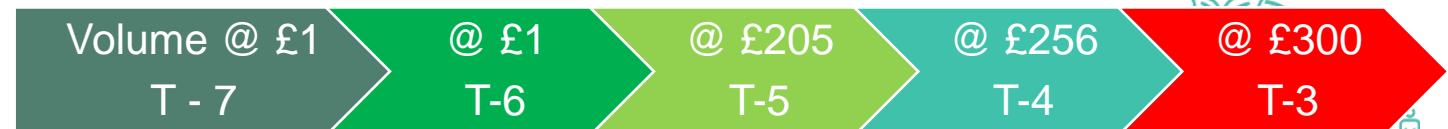
Test 3 (P2-T3)

Variable increments at variable timing

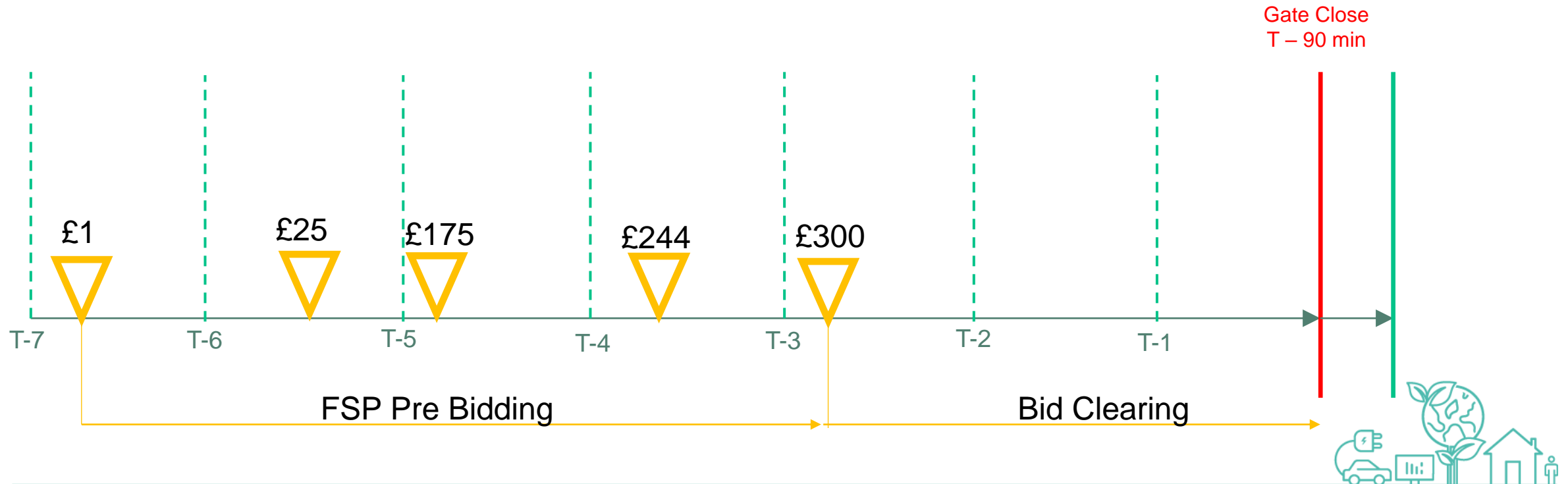
3 weeks

Further reduction in the structure of the bidding process encouraging FSPs to be more responsive to activity alerts from NODES system;

- ✓ Initial bid at T – 7 days
- ✓ System notifications of any activity
- ~~✗ Fixed schedule for bid increments each day at set time~~
- ~~✗ Fixed increase in bid value.~~
- ✓ Max bid value reached by 3 days ahead
- ✓ Full price available by Friday for following Monday



P2-T3 Timeline



Phase 2 Sub Trials



Test 4 (P2-T4) Scarcity Pricing model 3 weeks

Further reduction in the structure of the bidding process encouraging FSPs to be more responsive to activity alerts from NODES system;

- ✓ Initial bid at T – 7 days
- ✓ System notification of bid activity
- ✓ Price increments relative to volume requirement
- ✓ Max bid value reached by 3 days ahead
- ✓ Full price available by Friday for following Monday

0.2 MW	Volume @ £1 T - 7	@ £50 T-6	@ £130 T-5	@ £180 T-4	@ £270 T-3
0.8 MW	Volume @ £1 T - 7	@ £60 T-6	@ £150 T-5	@ £200 T-4	@ £300 T-3
1.0 MW	Volume @ £1 T - 7	@ £70 T-6	@ £160 T-5	@ £210 T-4	@ £315 T-3

Phase 2 Sub Trials



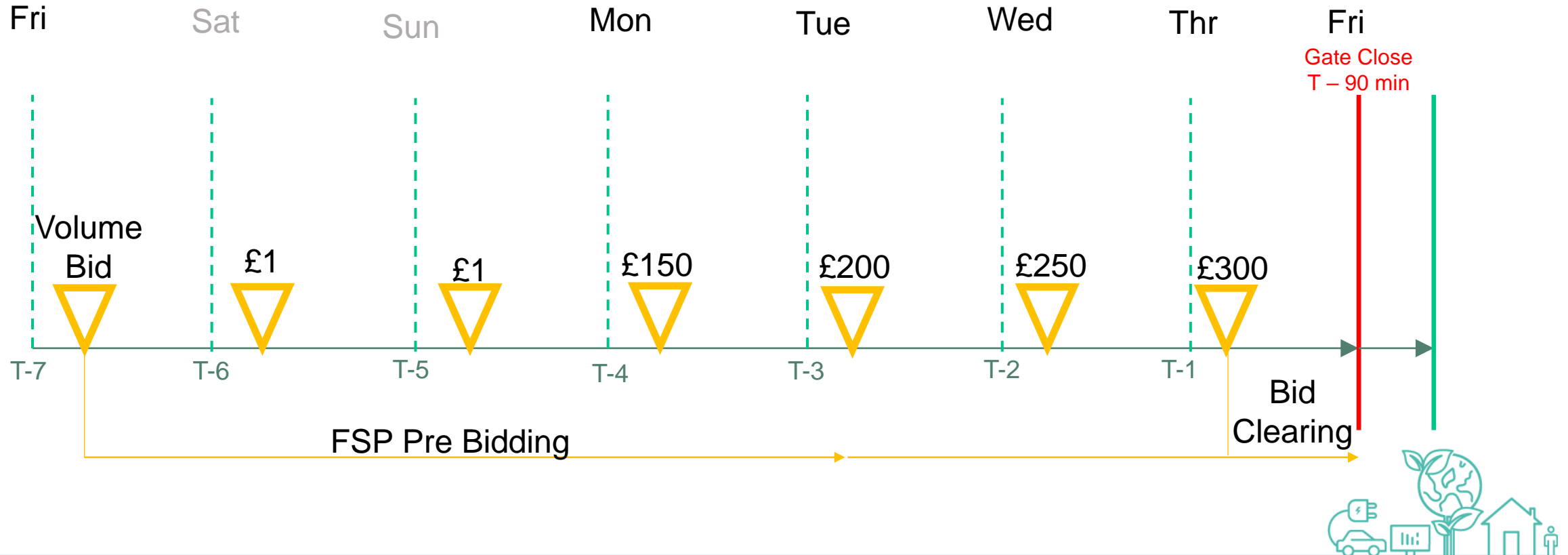
Test 5 (P2-T5) Intraday with Predictable Increments 3 weeks

Further reduction in the structure of the bidding process encouraging FSPs to be more responsive to activity alerts from NODES system;

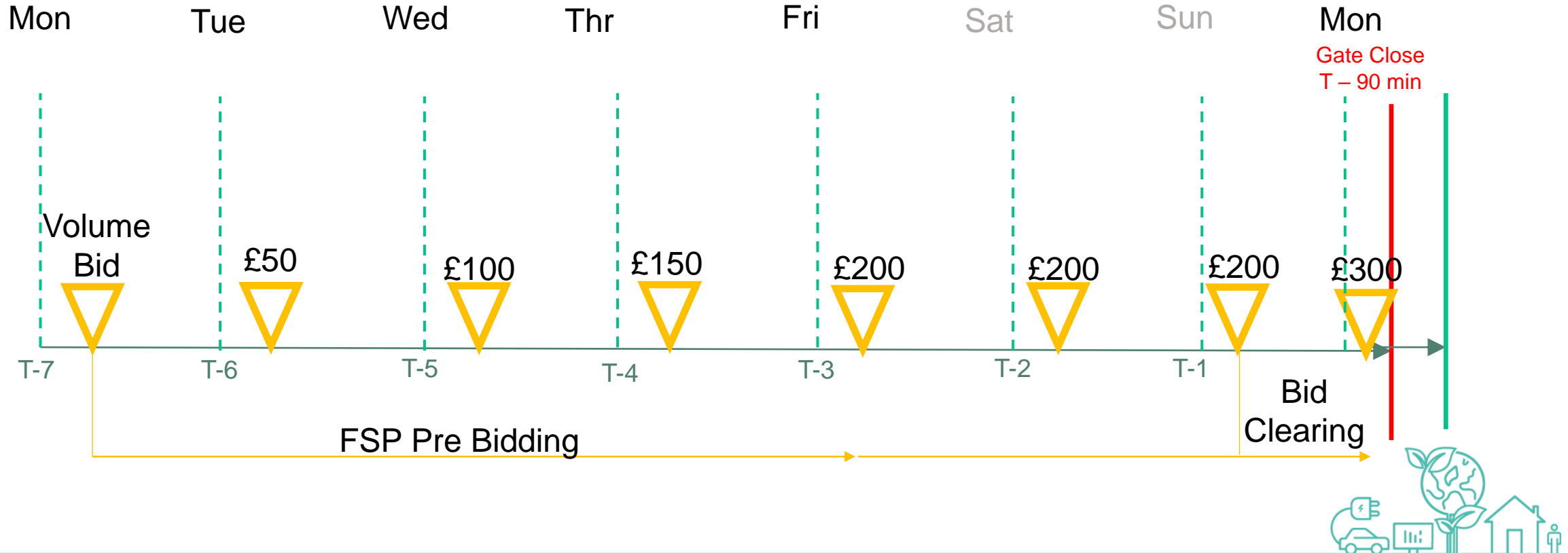
- ✓ Initial bid at T – 7 days
- ✓ System notification of bid activity
- ✓ Fixed schedule for bid increments each day at set time
- ✓ Fixed increase in bid value.
- ✓ Max bid value only reached Intraday
- ✓ Bids will not be placed over the weekend



P2-T5 Timeline



P2-T5 Timeline



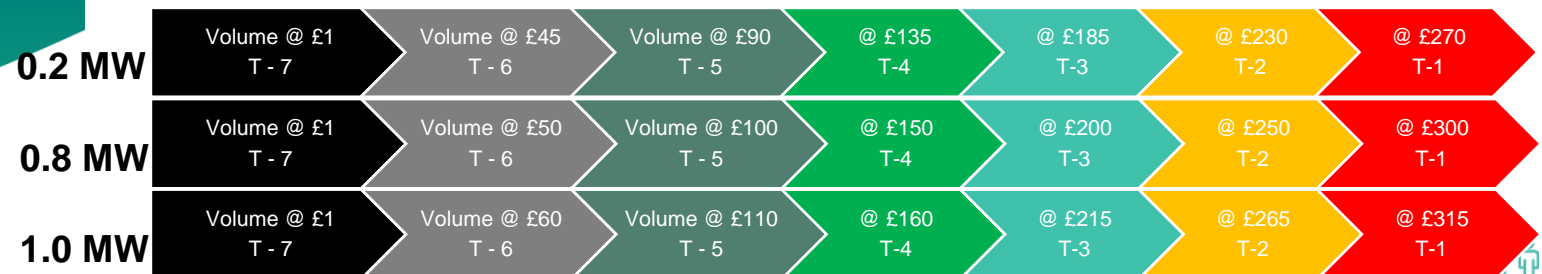
Phase 2 Sub Trials



Test 6 (P2-T6a) Intraday Scarcity Bids 3 weeks

Further reduction in the structure of the bidding process encouraging FSPs to be more responsive to activity alerts from NODES system;

- ✓ Initial bid at T – 7 days
- ✓ System notification of bid activity
- ✓ Fixed schedule for bid increments each day at set time
- ~~✗ Fixed increase in bid value~~
- ✓ Max bid value only reached Intraday
- ✓ Bids will not be placed over the weekend



Phase 2 Sub Trials



Test 6 (P2-T6b) Intraday Scarcity Bids 3 weeks

Further reduction in the structure of the bidding process encouraging FSPs to be more responsive to activity alerts from NODES system;

- ✓ Initial bid at T – 7 days
- ✓ System notification of bid activity
- ~~✗ Fixed schedule for bid increments each day at set time~~
- ~~✗ Fixed increase in bid value.~~
- ✓ Max bid value only reached Intraday
- ✓ Bids will not be placed over the weekend



Phase 2: Participants Trial Plan Check In

**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?
- Any other comments?



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➤ Developments	10 Mins
➤ Q's	10 Mins
• Questions	15 Mins



Participant Journey - Onboarding

**5 step process with
dedicated support via
NODES**

For providers with assets in the relevant zones, there are 5 tasks needed before the trial can start:

1. Submit Registration Form
2. Sign Membership agreement
3. Complete relevant technical build
4. End to End System testing
5. Asset Approval

Submit all documents & raise any queries by email on:

member.services@nodesmarket.com



Participant Journey – Relevant Systems overview

Participants interact with 2 systems

Metering system

- Collects meter values from participants
- Uses these to provide the NODES system with (i) default baseline values and (ii) meter values for the validation of service delivery

Access via API

NODES marketplace

- Commercial system that provides order matching and settlement services
 - Dispatch signal
- +

Access via web interface or API



Participant Journey – Timeline

Start Jan - End Jan '21

Registration Form

End Jan '21 - End Feb '21

Sign Agreement

Mid Jan '21 – Mid March '21

Build Technical Systems

Start Feb '21 – End March '21

Test system access

Production system access

29th March '21 – 25th April '21

Test Zero

26th April '21 – 29th August '21

Phase 2 Trials running

Your feedback please!



Phase 2: Participants Journey Check In

Are there any perceived issues with this participant journey?

- Timings ?
- Realistic ?



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➤ Q's	15 Mins
➤ Customer Journey	5 Mins
➤ Q's	10 Mins
➤ Developments	10 Mins
➤ Q's	10 Mins
• Questions	15 Mins



Phase 2 Initiatives: NODES Platform Developments

- NODES are taking forward a number of platform developments related to orders and other features of the platform, following feedback from the Phase 1 participants.
- We welcome continued feedback throughout the project.



Phase 2 Initiatives: Participants Check In

**Phase 1 Participants -
Have we missed
anything?**



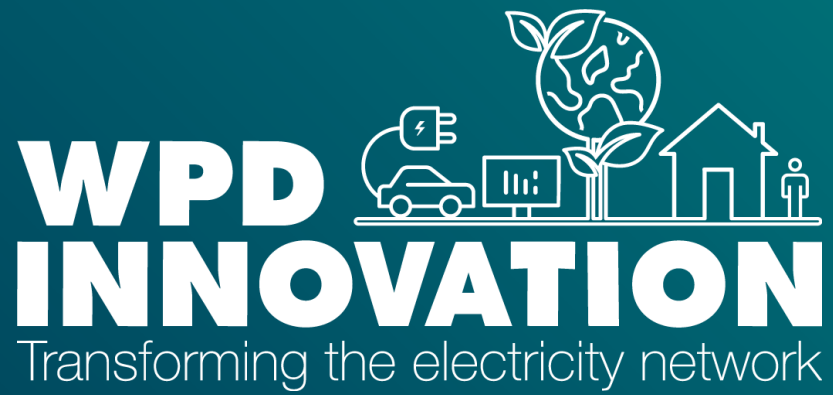
Outline

AGENDA ITEM	Duration
• Project Overview	5 Mins
• Phase 1 Review	5 Mins
• Phase 2 Overview	
➤ Trial Plan/Sub Trials	15 Mins
➤ Q's	15 Mins
➤ Customer Journey	5 Mins
➤ Q's	10 Mins
➤ Developments	10 Mins
➤ Q's	10 Mins
• Questions	15 Mins



Questions





THANK YOU FOR YOUR PARTICIPATION



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