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EBSIT 20
Welcome to National Grid

January 2017
Version 1.0

Attendance

Welcome to all those joining by phone. We are expecting the people below, if there is anyone on the call who is not on the list please let us know.

In the room	On the phone	
Clive Harper – Calon	Jon Burgess - Centrica	Joseph Dunn – Scottish Power
Chris Fisher – Centrica	Justyna Goworek – Dong	Paul Hardy – Siemens
Andrew Chaplin – Dustan Thomas	Andrew Gorton – Drax	Julia Byford-Smith – Smartest
Colin Berry – Elexon	Mark Hutton – EDF Energy	Claire McConnell – SSE
Stuart Middleton – ESB	Andrew Scott – Engie	Mark Houston – CGI
Ian Ross - ESB	Michael Joyce – EoN	Stuart Middleton
Mark Symes – GFP Trading	Graz Macdonald – Green Frog	Carl Lodge – Drax
John Sherban – Quorum	Paul Webber – RWE	Jerome Michel – EDF Trading
Alan Souche - RWE	Simon Peter Reid – SP	
Daniel Webb – Seabank		
Michael McDermott – Siemens		
Damian Jackman - SSE		
Shaun Harrall - Calon		

House keeping

We may take some pictures throughout the meeting to include in our newsletter. Please let one of us know if you don't want to be included.

The team today

Antonio Del Castillo Zas
EBS Business Lead
Antonio.DelCastilloZas@nationalgrid.com

Phil Johnson
Electricity Transition Manager
Philip.Johnson@nationalgrid.com

Pete Smith
Implementation Manager
Peter.Smith8@nationalgrid.com

James Cox
Communications
James.Cox1@nationalgrid.com

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Agenda

When	What	Who
09:30	Arrival tea & coffee	All
10:00	Welcome	Antonio Del Castillo Zas
10:05	Previous actions	Antonio Del Castillo Zas
10:15	EBS current status	Phil Johnson
11:00	Break	All
11:15	Testing & transition update	Pete Smith
11:50	Comms & feedback	James Cox
12:00	Demo & lunch	Jean Hamman

Previous actions

Open actions

The current list shown below is available on the National Grid website.

Action No.	Due Date	Responsibility	Action
061	March 2017	AO	Ascertain when suppliers will be able to access the test versions of EDL*/EDT* via their private communications. Ongoing Mar 2014 – awaiting availability of EDL*/EDT* server software. July 2014- New Interfaces will be available in Q4. However, National Grid will be testing these before being released to the Market Participants. Target date anticipated early 2015 March 2015 – Target date is January 2016 in line with revised project plan June 2015 – Work in progress Sep 2015 – VPN access is in place however National Grid will perform an end to end test sometime in January 2016 May 2016 – Work continues to resolve **Jan 2017 – Testing complete but failed in November. A new certificate is being issued.**
080	Jan 2017	SK	Any Trading Agents who have not been scheduled for Access Validation should contact Sarvesh Kumar (all to check). **To be closed – update to be provided at EBSIT.**
081	Jan 2017	SK	National Grid to publish the results of EDL connectivity to EBS during trials – for all connections not just failures. Positive confirmations to be issued. **Jan 2017 – 80% passed, 20% failed. Update to be provided at EBSIT.**
082	Jan 2017	PS	National Grid to consider how we can simulate worst/best case scenarios in terms of numbers of BOAs created, to test with Elexon. Work with Elexon to support any BMRS testing they wish to undertake. **To be closed - pending Elexon agreement.**
083	Jan 2017	PS	National Grid to share all available data in terms of BOA volumes. **To be closed – update to be provided at EBSIT.**
084	Jan 2017	JC	National Grid to improve communications for future EDL AV or RD Trials. This will include a review of the BAU communication process for BM Outages. **Closed.**
085	Jan 2017	JC	National Grid to produce a high-level briefing for external parties to explain the purpose and nature of Dispatch Trials. Consider if there should be two versions; one for traders and one for control points. **To be closed – update to be provided at EBSIT.**
086	Jan 2017	Market Participants	Market Participants to send any suggestions or comments on communications to the EBSIT mail box. **Closed.**
087	Jan 2017	JC	Check that contact information previously sent in has been incorporated in the communication plan (PS). **Closed.**

EBS Current Status

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Recap - what's being changed

The BM system is used for managing frequency and power flow in real time. Originally developed by the CEGB, it has now reached 'end-of-life' and is being replaced by the EBS system.

The BM is essentially a manual system designed in 1980s to allow for the control of a handful of coal units

It now has to handle 100s of balancing units so manual balancing can be "difficult" during high wind

The EBS incorporates automated dispatch which will assist with frequency control

A key implementation objective for the EBS is not to change existing interfaces to industry participants

9

Recap – EBS, a big programme

The EBS system has 34 bespoke interfaces to other internal systems together with external interfaces to the industry. It is also designed as a highly resilient double - dual redundant system.
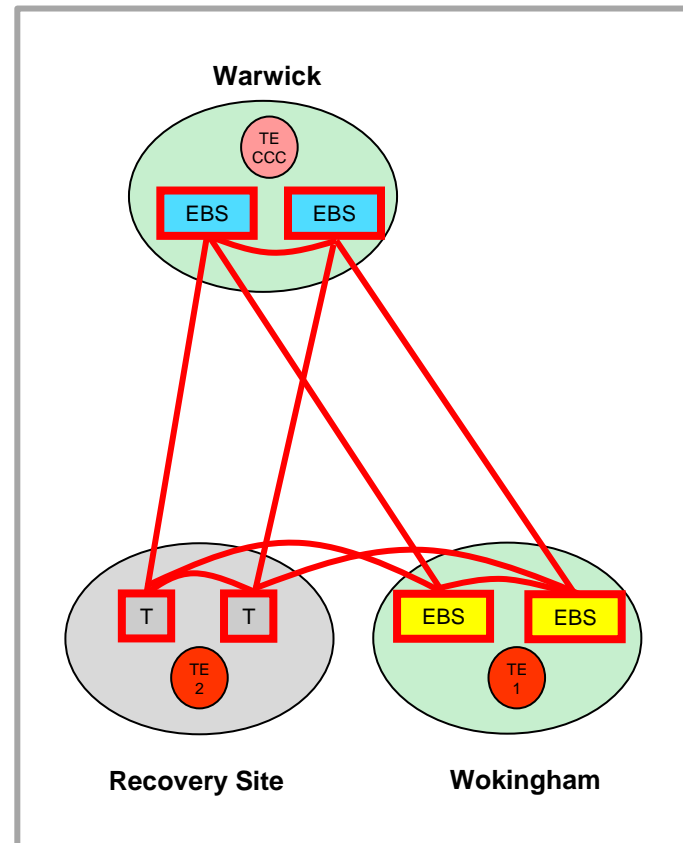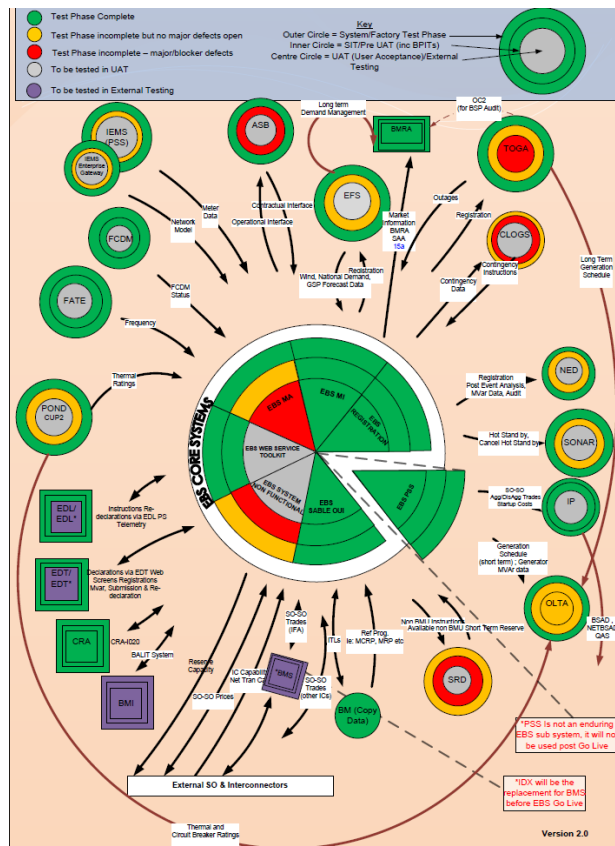
Summary

**The visual below denotes the latest plan for 2017. You will be kept informed of updates through the Powering Up Newsletter.**

Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May

Scheduling Roll Out ▽ Current Position

- Parallel run familiarisation
- Parallel run authorisation
- Embedding
- 1.3.7 Testing ✦ **CNI live**
- 1.3.8 Testing ✦

Dispatch Roll Out

- Dispatch Investigation
- Dispatch Development
- Dispatch Trials ➤

11

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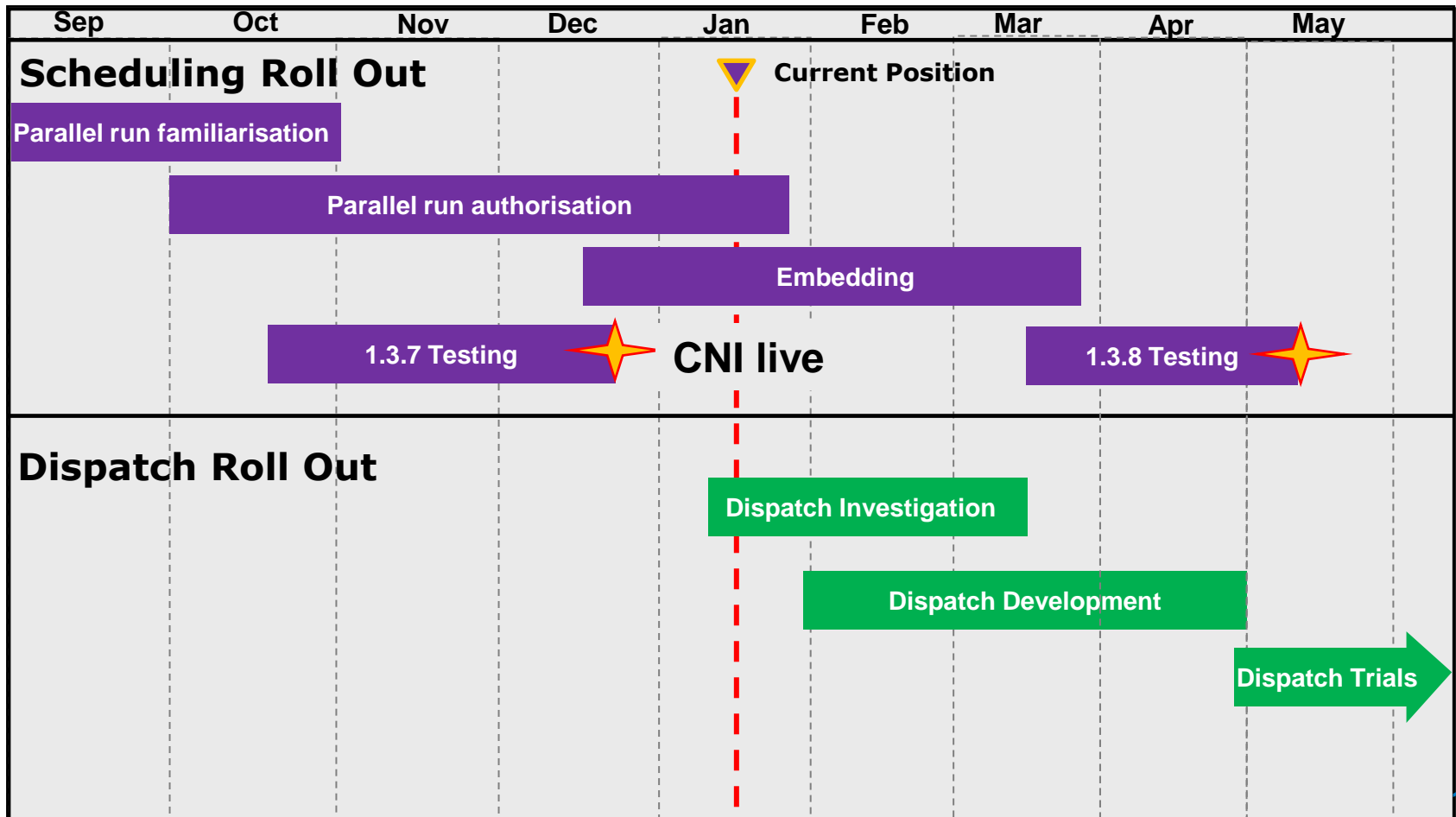
EBS balancing – how does it work?

- Co-optimisation of all costs up to **48 hours** ahead

- Costs considered include
  - **balancing power** (generators including pumped storage, interconnectors, flexible demand)
  - **frequency response** holding
  - rebalancing to create **reserve capacity**
  - **generator warming**

- Uses **mixed integer linear program optimiser** (CPLEX)

- Models at **5 minutes** resolution within market gate

- GB **balancing instructions** derived from optimal results

Creation of balancing instructions

- Instructions are created separately after optimisation

  1. Optimiser creates a power profile at **5-min intervals**

  2. Potential instructions are created from **optimal power profile**

  3. Issue **selected instructions** to reduce imbalance to set tolerance at **t+10**

- Manual top-up instructions for **<10 minutes**

- **Decouples optimiser** from market / product changes

Optimiser sequence study ranges
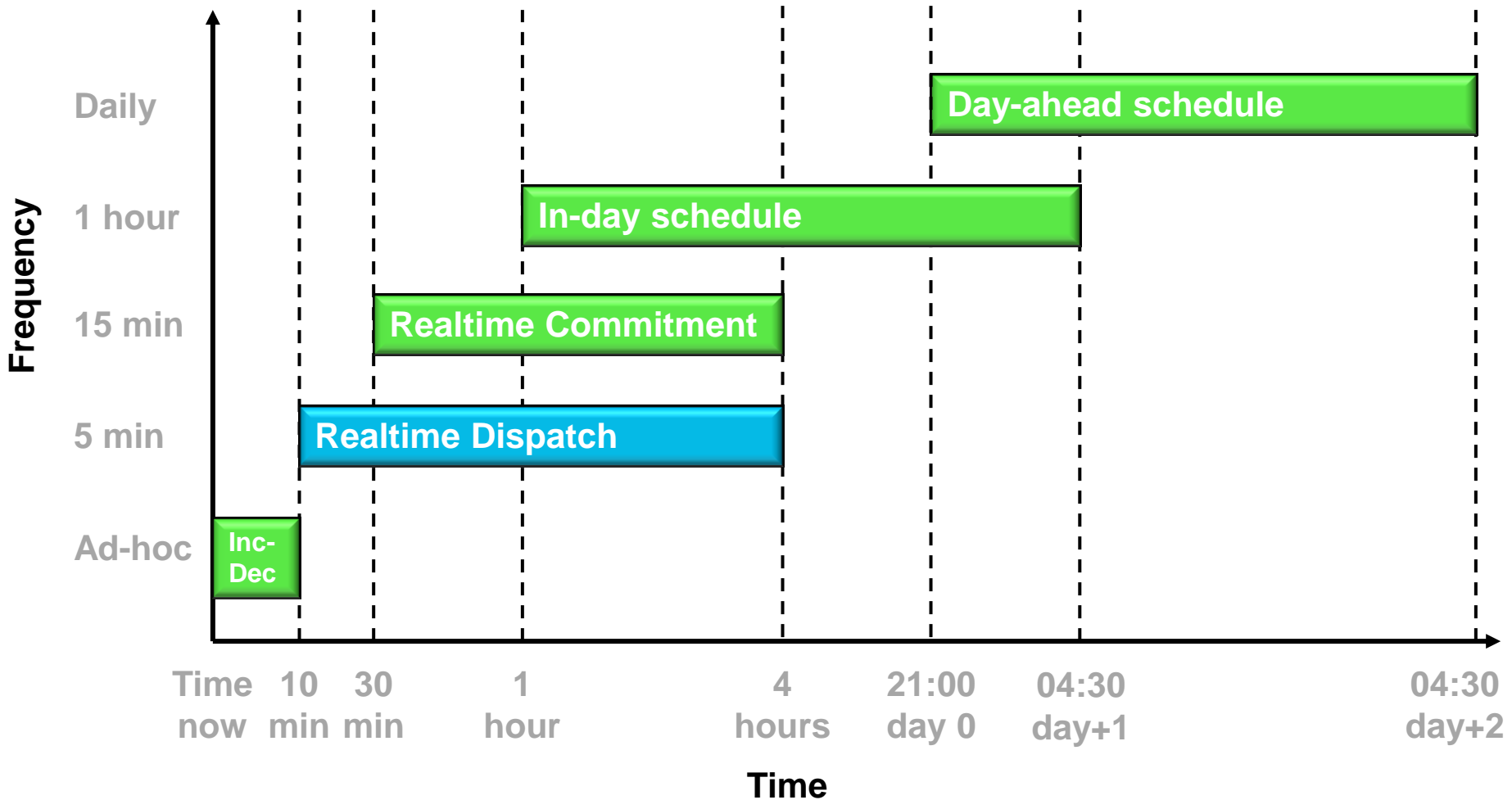
Optimiser decision sequence

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Day Ahead (advice only)

In Day *Long term schedules*

RTC *Response & Short-term schedules*

RTD *BOAs*
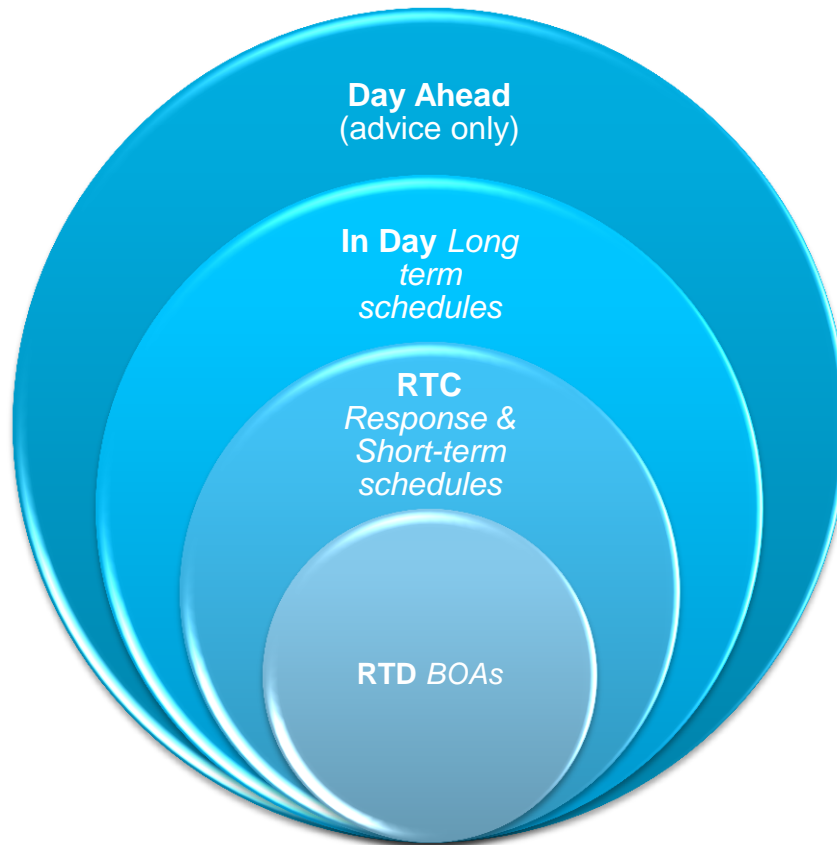
- All optimiser runs use the same formulation

- Runs only take decisions they can see the consequence of

- As runs get closer to real time, longer-term decisions are fixed

  - DAS is only for advice

  - IDS fixes long-term schedules

  - RTC fixes response and short-term schedules

  - RTD fixes balancing

Details of optimiser sequences

	Day-ahead schedule (DAS)	In-day schedule (IDS)	Real-time commitment (RTC)	Real-time dispatch (RTD)
Runs start	Daily at 11:00	Every hour	Every 15 minutes	Every 5 minutes
Study range	21:00 D+0 to 04:30 D+2	T + 1 hour to T + 24 hours	T + 30 min to T + 4 hours	T + 10 min to T + 4 hours
Intervals within study range	30 minutes	30 minutes	5 minutes within gate, 15 minutes afterwards	5 minutes within gate, 15 minutes afterwards
Reserve targets	24h, 18h, 12h, 8h, 4h, 1h, 20m (+ve), 10m (-ve)	18h, 12h, 8h, 4h, 1h, 20m (+ve), 10m (−ve)	1h, 20m (+ve), 10m (−ve)	n/a
Response targets	Yes	Yes	Yes	n/a
Demand target	Yes	Yes	Yes	Yes
Network Constraints	Calculated	Calculated	Calculated	Taken from RTC
Services selected	Margin warnings	Long-term Balancing (including synch - desynch) BMU Warming CMW	Frequency Response SO-SO trades Fast synch (20 minutes)	Short-term Balancing (RR) mFRR

Constraints considered

- National generation requirement

- Generator ramp rate limits

- Generator on-time and off-time limits

- Reserve requirements at different lead times

- Response requirements at several frequency deviations

- Permitted frequency response combinations

- Interactions between power (reserve) and frequency response

- Flow limits (power + response + reserve) across predefined network boundaries

- Individual transmission line thermal ratings (when NSM selected)

EBS Scheduling

Go Live!

- On 20th December we formally achieved EBS Scheduling go live.

- Trialling for EBS Scheduling started back in Aug-16.

- ✓ A lot of interface issues have been overcome.

- ✓ The business processes are working well.

- ✓ EBS Scheduling has been commissioned by CNI.

- ✓ Staff are currently using EBS Scheduling alongside BM.

- ✓ We plan that staff with be fully trained and fully authorised by May-17.

Break

15 minutes

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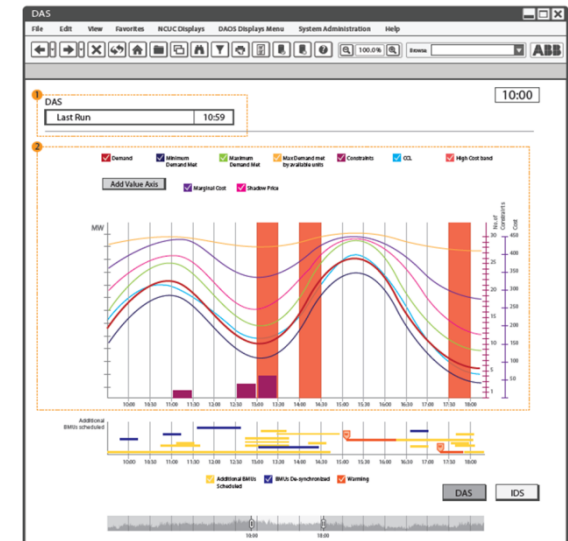
Testing & Transition Update

EBS Test & Transition

- There is **no significant change** to the EBS External Test & Transition Strategy or plan – only the schedule has changed

    o All previously discussed phases for test and transition remain

    o the key driver for the EBS Programme is still **Quality**

- **Separating Scheduling** and **Dispatch** has allowed us to;

    o Achieve early deliveries; infrastructure, key interfaces

    o Continue to achieve other early deliveries

    o Focus on the complex dispatch functionality

- Future functional testing will recognise **EBS production status**

    o Appropriate levels of regression testing

    o Formal Promotion Path

EBS Functional Testing & UAT

- **UAT Cycle 2** has completed on **EBS 1.3.7**

  o final full cycle for scheduling functionality

  o Includes all interfaces in/out critical for scheduling

- The EBS version tested (1.3.7) is ap**propriate for scheduling familiarisation & authorisation** of control room engineers

- EBS Version **1.3.8 will be available for Scheduling Go-Live** (if required) and Dispatch Pre-Trials

- Testing on EBS 1.3.8 will be aimed at verifying defect fixes and Change Request deliveries

- UAT cycles for Dispatch functionality on **EBS post release 1.3.9 are in the planning stage**

EBS Non-Functional Testing

Non-functional testing is divided into three areas:

1. Resilience Testing

✓ Hardware & software failure scenarios completed

✓ Infrastructure fully implemented

2. Performance Testing

✓ Baseline and volume testing   completed for scheduling

▪ Further testing will be required for Dispatch functionality

3. Operational Testing

✓ Testing of IS Operational Procedures completed for scheduling

▪ Minimal additional OAT will be required for Dispatch

External Testing – EDT/EDL

✓ EDT & EDL interfaces have been fully functionally tested

▪ One obscure non-functional issue remains with EDT

  ○ A work-around exists

▪ Replication of submitted data from BM to EBS enables ongoing assurance that EDT/EDL work with operational data

▪ Given the significance of the interfaces, EDT & EDL tests are part of the automated regression test pack

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Type Test Progress

- EDT type tests are **80% complete**

  o One final fix is pending

  o EDT certificates are being issued

- EDL type tests are approximately **30% complete**

  o Remaining formal tests are now being scheduled

  o Alternate EBS production environment will be used to avoid impacting critical path

  o EDL certificates are being issued

National Grid Contact for EBS Type Test: **Sarvesh Kumar** sarvesh.kumar@nationalgrid.com (EBS Ext. Test Lead)

EDT & EDL Access Validation

EDT	EDL

EDT Access Validation Cycle 1:
 	
■ **100% completi**on for Market Participants scheduled in AV1
 	
■ **95% were successful** (with 1 outstanding rerun)
 	
EDT Access Validation Cycle 2:
 	
■ Gathering appropriate contact details to schedule cycle 2
 	
■ EDT Passwords will be issued once tests are scheduled
 	
■ Scheduled dates for EDT AV2 will be confirmed in due course
 	
■ Alternate EBS Production environment will be used to avoid impacting EBS scheduling operation
	A reminder, involves connection of EBS to live Control Points.
	
	This is an essential pre-requisite for Dispatch Trials.
	
	■ Previous results;
	
	   ○ 2 Cycles completed with live control points, 80% success
	
	   ○ Some firewall and control point infrastructure issues
	
	■ Remedial action is under way, with some f/w faults fixed
	
	■ **Connectivity issues remain – may need individual testing with Control Points**
	
	■ We may need a third EDL AV cycle before RD Pre-Trials

Interconnector Parties

- Interconnector data required for scheduling is replicated from BM

- Initial Testing completed with all interconnectors

    o A small number of defects identified

- Fixes received and tested internally for some defects

- Final formal test cycle to be scheduled

    o Requires remaining fixes (post release 1.3.8)

    o Dependent on availability of EBS alternate production infrastructure

    o Dependent on availability of I/C Parties

    o Dependent upon some (non-EBS) infrastructure changes

Elexon / BMRS

Functional Testing	End to End Testing	BM Comparison	BOA Volumes
- Several cycles of functional testing completed - Fixes and re-testing required on release post 1.3.8 against BMRS OAT environment	- Testing completed from Production EBS against legacy & new BMRS OAT environment - Files successfully transmitted across the network, processed on BMRS & loaded onto Test Website - E-2-E validation will be repeated for extended periods and as often as possible – subject to availability of BMRS OAT environment	- Direct comparisons have been possible with BM output - Results consistent with expected results & have assisted with data cleansing on EBS	- Comparisons from Dispatch Pre-Trial & EBS issuing BOAs against simulator - No issues were reported from Elexon/CGI - BOA daily volumes up to 5 times BM volumes - Represent a probable 'worst case' as we are looking to reduce the number of BOAs

EDL*/EDT* Milestones

Provisional Schedule

EDL*/EDT* Milestone	Due Date	Status
Data Validation, Defaulting and Consistency Rules document supporting EDL*/EDT*	Q2 2013	Complete
Approve ELEXON P297 (Receipt and Publication of New and Revised Dynamic Data Items)	Q1 2014	Complete
Draft EDL*/EDT* toolkit circulated to IT Suppliers and Market Participants	Q2 2014	Complete
Establish IT Supplier's access (VPN over internet)	Q4 2015	Complete
NG network changes for EBS Proxies and Load Balancer	Q1 2017	Progressing
Functional Test EBS EDL*/EDT*	Q1 2017	Progressing
Perform E2E connectivity test for VPN and Lower Proxy with suppliers	Q1 2017	Not started
Final EDL*/EDT* toolkit circulated to IT Suppliers and Market Participants on Request	Q4 2016	Complete
Support IT Suppliers Development and Unit Test for EDL*/EDT*	Q2 2017 (start)	Not started
Testing EBS P297 Output with Elexon	Q1 2018	Not started
End to end testing; Market Participants to EBS and XML Reporting to BMRS OAT	Q1 2018	Not started
Agree implementation plan for EDL*/EDT*	Q1 2018	Not started
Implement ELEXON P297 (Receipt and Publication of New and Revised Dynamic Data Items)	Q2 2018	Not started
Formal Type Test (including NFT) with IT Suppliers	Q2 2018	Not started
Start changeover of Market Participant's systems to EDL*/EDT*	Q3 2018	Not started

Comms & Feedback

Our Stakeholders

- Over the past two months we've been reviewing our communications and engagement to help ensure you have fit for purpose information.
- Following a stakeholder validation exercise, we now have **190 stakeholders** across **54 companies**.
- Please let us know if there is anyone else you should include in our comms.

Communications

- For the next meeting we are introducing an **EBS forum**. This will immediately follow the EBSIT meeting, but will be **business focused**.

- We will continue with the **Powering Up newsletter**, please let us know if you would like any specific topics covered.

- When we start Dispatch Pre-Trials, there will be more targeted communications.

- At this point, can everyone complete the **evaluation survey** (link for dial in).

Summary & Close Call

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Demo & Lunch