

Public

BMRS User Group

Meeting 6

26 February 2015



Health & Safety

In case of an emergency

An alarm will sound to alert you. The alarm is tested for fifteen seconds every Wednesday at 9.20am

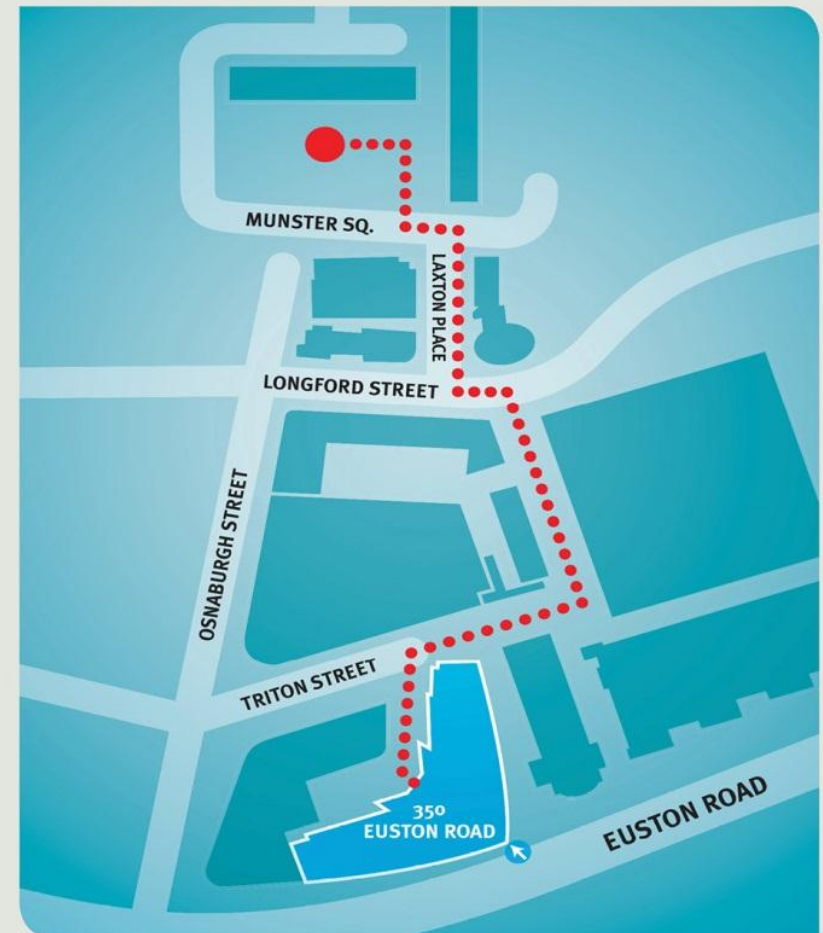
Evacuating 350 Euston Road

- If you discover a fire, operate one of the fire alarms next to the four emergency exits.
- Please do not tackle a fire yourself.
- If you hear the alarm, please leave the building immediately.
- Evacuate by the nearest signposted fire exit and walk to the assembly point.
- Please remain with a member of ELEXON staff and await further instructions from a Fire Warden.
- For visitors unable to use stairs, a Fire Warden will guide you to a refuge point and let the fire brigade know where you are.

When evacuating please remember

- Do not use the lifts.
- Do not re-enter the building until the all clear has been given by the Fire Warden or ground floor security.

Our team on reception is here to help you, if you have any questions, please do ask them.



Content

- Introductions
- Update on project
- Recap from Meeting 6
- BMRS & Transparency Regulation
- Data Push Solution
- Current BMRS Changes/Feedback
- REMIT/ETR Contingency
- AOB
- Lunch (\approx 13:00)

General Update on project

- Phase 1 (P291/295)
 - Delivered P291/295
 - Fixing defects and improvements to solution

- Phase 2 (Parallel load of existing BMRS flows to new platform and data push)
 - Design for data push
 - Completing design for rest of phase 2

- Phase 3 (New BMRS front end, Calculations Engine)
 - Requirements gathering
 - Panel recommending P297 delivery for Nov 2016


Recap From Meeting 5 (Nov 2014)

- Transparency go-live related action completed/obsolete - lessons learnt to be organised

- Action: TIBCO Compression
 - User group responded to approach, wider engagement with Industry
 - Roll-out date to be confirmed

- Action: Users to confirm whether they use current XML download and agree with improvements
 - Users commented changing the XML download on current BMRS data will not have an impact as it's not generally used

- Action: Users to confirm how their TIBCO architecture
 - This was used to validate some of the volumetrics for the Data Push



BMRS & Transparency Regulation

BMRS Transparency Pages

- Data originating from Market Participants
 - E.g. Article 15a – Planned Unavailability of Generation Units

- Data originating from BSCCo
 - E.g. Article 16a (Actual Generation by generation units), 17g (Imbalance Prices), 17h (Imbalance Volumes)

- Data from Transmission company
 - E.g. Everything Else (Article 6, 8, 9, 10, 13, etc)

BMRS Transparency Pages 1 – Market Participant

Planned Unavailability Of Generation Units (B1510)

From Date & Time 2015-02-23

14:00:00

To Date & Time 2015-02-23

14:30:00

VIEW

2) No filtering by BM unit

[XML](#) [CSV](#)

MP-NGET-PUGU-00001074	2013-03-31	23:00:00	2016-03-31	23:00:00	0.0		48WSTN00000KEAD4	NA	KEAD				48W0000000KEAD-15
NA	2013-03-31	23:00:00	2016-03-31	23:00:00		Shutdown	NA	NA	NA	NA	NA	NA	NA
MP-NGET-PUGU-00000074	2013-03-31	23:00:00	2016-03-31	23:00:00	0.0		48WSTN00000KEAD4	NA	NA				48W0000000KEAD-15
NA	2014-11-05	06:00:00	2015-02-28	20:00:00		Shutdown	NA	NA	NA	NA	NA	NA	NA
MP-NGET-PUGU-00001016	2014-11-05	06:00:00	2015-02-28	20:00:00	780.0		48WSTN00000PEHEU	NA	PEHE				48W0000000PEHE-15
NA	2014-11-05	06:00:00	2015-02-28	20:00:00		Shutdown	NA	NA	NA	NA	NA	NA	NA
MP-NGET-PUGU-00000016	2014-11-05	06:00:00	2015-02-28	20:00:00	780.0		48WSTN00000PEHEU	NA	NA				48W0000000PEHE-15
NA	2015-01-12	00:00:00	2015-07-30	23:00:00		Complementary information	NA	NA	NA	NA	NA	NA	NA
MP-NGET-PUGU-TS-00000000	2015-01-12	00:00:00	2015-07-30	23:00:00	330.0		48WSTN00000HEYM1P	NA	HEYM1				48W0000000HEYM11C
MP-NGET-PUGU-TS-00000000	2015-01-22	00:00:00	2015-05-23	23:00:00	452.0		48WSTN00000HRTL5	NA	HRTL				48W0000000HRTL-16
NA	2015-01-22	00:00:00	2015-03-22	00:00:00		Complementary information	NA	NA	NA	NA	NA	NA	NA

1) Header (document level within XML) not relating to body (time series level)

3) Introduce document number

4) Table header disappears

BMRS Transparency Pages – BSCCo derived

Aggregated Imbalance Volumes (B1780)

* Imbalance Quantity shown here are signed. But those sent by BMRS to EMFIP or published on TIBCO are ABSOLUTE values as specified by EMFIP Implementation guide.

Settlement date

Period

[VIEW](#)

[XML](#) [CSV](#)

Time Series ID	Business Type	Settlement Date	Settlement Period	Imbalance Quantity (MW)*
ELX-EMFIP-AIMBV-TS-1	Balance energy deviation	2015-02-23	30	-282.776
ELX-EMFIP-AIMBV-TS-1	Balance energy deviation	2015-02-23	29	-219.008
ELX-EMFIP-AIMBV-TS-1	Balance energy deviation	2015-02-23	28	-382.613
ELX-EMFIP-AIMBV-TS-1	Balance energy deviation	2015-02-23	27	-384.34
ELX-EMFIP-AIMBV-TS-1	Balance energy deviation	2015-02-23	26	-531.29
ELX-EMFIP-AIMBV-TS-1	Balance energy deviation	2015-02-23	25	-410.929
ELX-EMFIP-AIMBV-TS-1	Balance energy deviation	2015-02-23	24	-569.726
ELX-EMFIP-AIMBV-TS-1	Balance energy deviation	2015-02-23	23	-514.417
ELX-EMFIP-AIMBV-TS-1	Balance energy deviation	2015-02-23	22	-601.498
ELX-EMFIP-AIMBV-TS-1	Balance energy deviation	2015-02-23	21	-561.825
ELX-EMFIP-AIMBV-TS-1	Balance energy deviation	2015-02-23	20	-329.885

BMRS Transparency Pages – Transmission Company

Actual Aggregated Generation Per Type (B1620)

[XML](#) [CSV](#)Settlement date Period [VIEW](#)

Time Series ID	Business Type	PSR Type	Settlement Date	Settlement Period	Quantity (MW)
NGET-EMFIP-AGPT-TS-00013900	Production	"Other"	2015-02-23	31	0.0
NGET-EMFIP-AGPT-TS-00013899	Wind generation	"Wind Onshore"	2015-02-23	31	866.573
NGET-EMFIP-AGPT-TS-00013898	Wind generation	"Wind Offshore"	2015-02-23	31	133.013
NGET-EMFIP-AGPT-TS-00013897	Solar generation	"Solar"	2015-02-23	31	1263.0
NGET-EMFIP-AGPT-TS-00013894	Wind generation	"Wind Offshore"	2015-02-23	30	144.767
NGET-EMFIP-AGPT-TS-00013896	Production	"Other"	2015-02-23	30	0.0
NGET-EMFIP-AGPT-TS-00013895	Wind generation	"Wind Onshore"	2015-02-23	30	876.917
NGET-EMFIP-AGPT-TS-00013893	Solar generation	"Solar"	2015-02-23	30	1166.0
NGET-EMFIP-AGPT-TS-00013889	Solar generation	"Solar"	2015-02-23	29	1280.0
NGET-EMFIP-AGPT-TS-00013891	Wind generation	"Wind Onshore"	2015-02-23	29	865.042



Data Push Solution

Agenda

1. Overview
2. Connectivity
 - a. General Principles
 - b. Single Client
 - c. Broker to Broker
3. Data Content
 - a. Data content.
 - b. How the data is exposed.
4. Provision of Data Push Archive.
5. Participant Testing Timescales

BMRS Data Push: Overview

- What is BMRS Data Push:
 - A data messaging solution to push near real time BMRS data to authenticated participants via HTTP.
 - Will includes ETR, REMIT and existing BMRS data.
 - An implementation of the Java based ApacheMQ Message broker.
- What features does it include:
 - Connectivity as a single client or broker.
 - All data available as a single JMS Topic, filtered using JMS selectors.
 - Message persistence during downtime up to a set period of time.
 - Access to Data Push Archive.
- Drivers behind rollout:
 - A cost effective solution to provide NRT BMRS data.
 - Intention to provide an alternative to scripting and eventually TIBCO.

BMRS Data Push: Connectivity Principles

■ General Principles

– Authentication

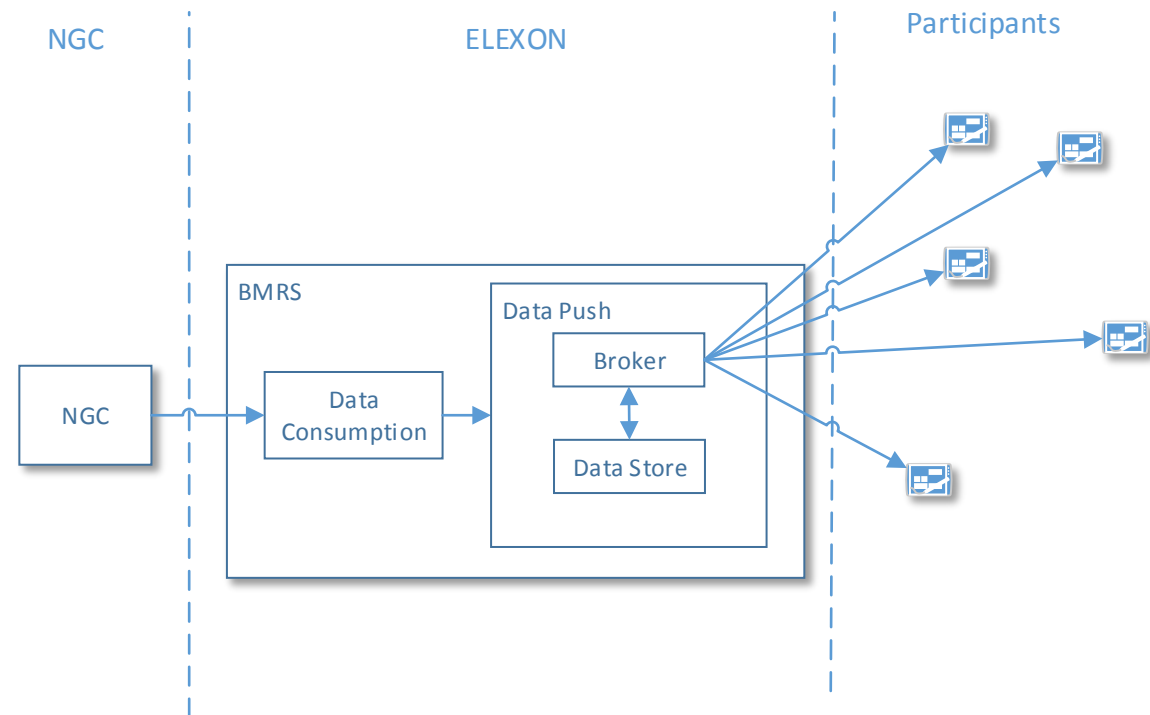
- All connectivity to the BMRS Data Push service will need to be authenticated.
- Uses the same APIKey used for the RESTful API.
- APIKey will be passed as a parameter when establishing a subscription with the service.
- If APIKey is revoked the subscription is terminated.

– Durable Subscription

- If disconnected, messages are persisted per subscription for a fixed period of time. (TTL 16hrs)
- When reconnecting, data not received by the participant is pushed to the subscription (up to TTL value of 16hrs)

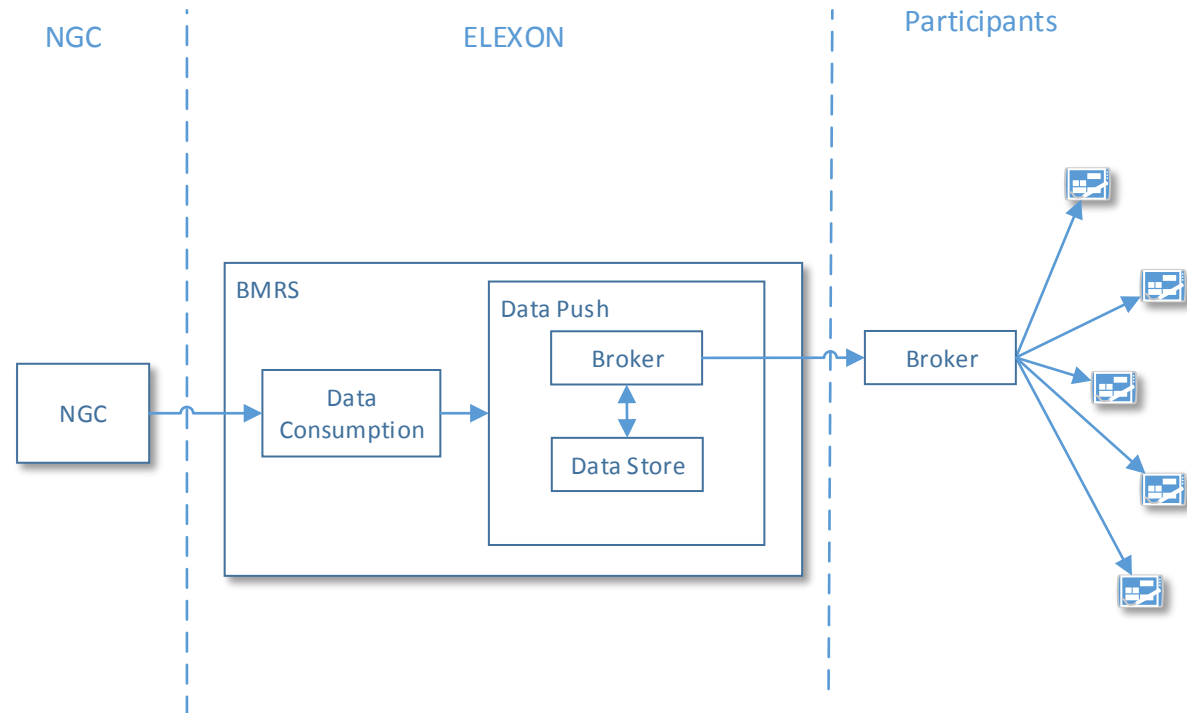
BMRS Data Push: Connectivity Single Client

- As a single Client
 - Participants can connect to the broker using any compatible client
 - Pros:
 - Do not need to configure a separate message broker.
 - Cons:
 - Many individual connections results in increase in message traffic.
 - Large organisations will have to manage multiple APIKeys, one per connection.
 - Prerequisites
 - Valid APIKey
 - JMS compatible OOTB client that implements the supported wire level protocols.
 - Technology support a number of Cross Language Clients.



BMRS Data Push: Connectivity Broker to Broker

- Broker to broker -
 - Can connect to the BMRS message broker with any compatible broker.
 - A single authenticated connection is established between brokers.
 - Participants subscribe to the participant side broker.
 - Only a single connection is required to service all subscriptions within their organisation
 - Only a single APIKey is required to be managed.
 - The following are the wire level protocols we are looking to support.
 - AMQP
 - Openwire
 - MQTT
 - STOMP
 - *Support for the above to be confirmed.*



BMRS Data Push: Connectivity – Establishing a Subscription

- This example uses Apache JMeter

UserSubscription.jmx (D:\Prabhu\BMRS\BMRS_Phase2\Data_Push\apache-jmeter-2.12\bin\UserSubscription.jmx) - Apache JMeter (2.12 r1636949)

File Edit Search Run Options Help

Test Plan
UserSubscription
JMS Subscriber
WorkBench

JMS Subscriber

Name: JMS Subscriber 1

Comments:

☐ Use jndi.properties file

Initial Context Factory org.apache.activemq.jndi.ActiveMQInitialContextFactory

Provider URL Host Server URL:61617

Connection Factory ConnectionFactory

Destination dynamicTopics/BMRS|TopicName'

Durable Subscription ID ParticipantName

Client ID ParticipantID

JMS Selector JMSType='XXX' OR JMSType='YYY'

☒ Use Authorization?

User APIKEY

Password

Number of samples to aggregate 1

☒ Read Response

Timeout (ms) 1200000

Client ☒ Use MessageC

JMS Selector: Allows filtering of the messages

Stop between samples? ☐

Authorisation: Provide Username Password using APIKey

Name: Name of the Subscription

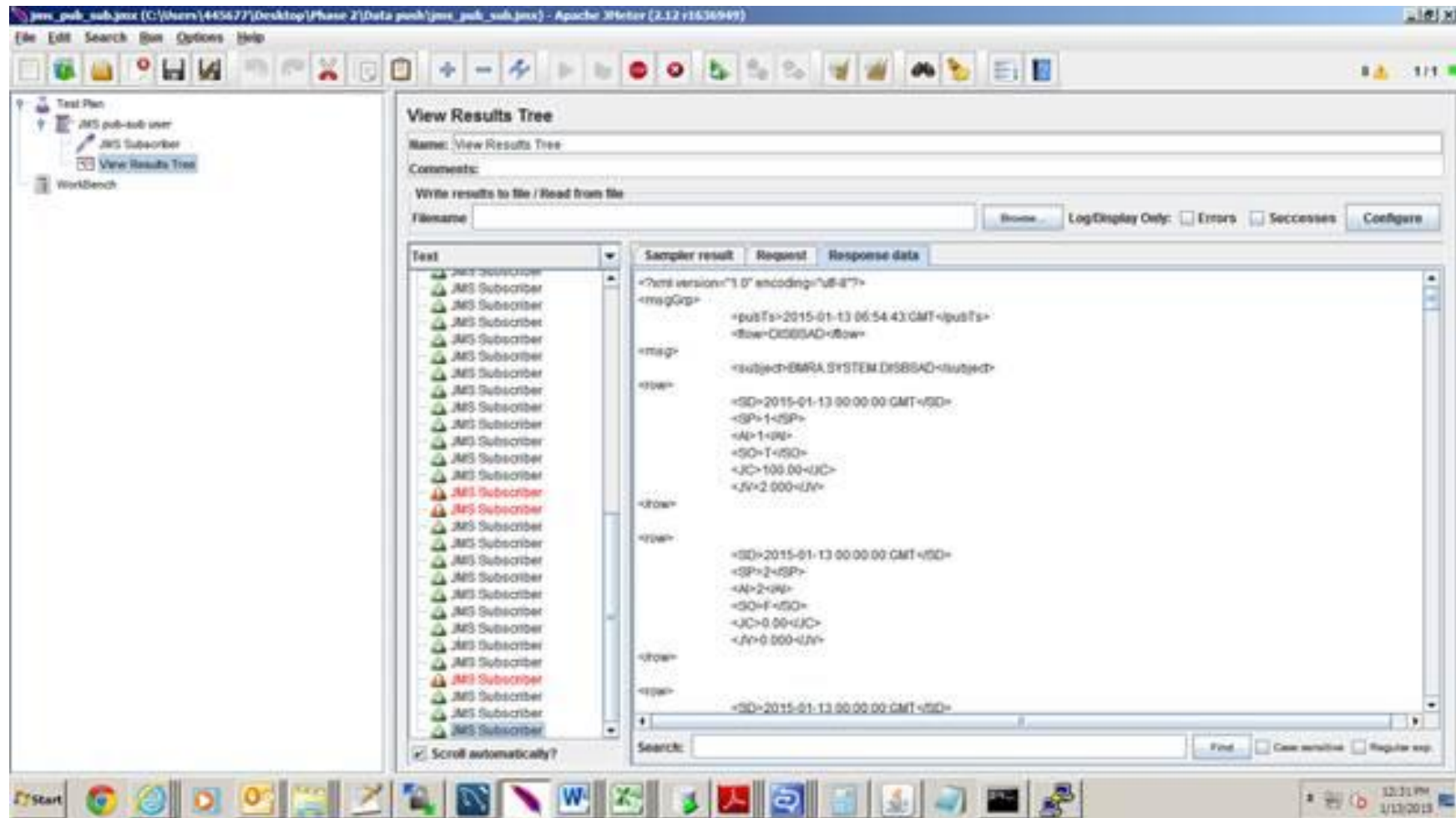
Provider URL: Location of the Data Push Service

Topic: Name of the Topic

16:00 23/02/2015

BMRS Data Push: Connectivity – Receiving Messages

- This example uses Apache JMeter



BMRS Data Push: Data Content - Structure

■ Data content

- What is the data:
 - XML format
 - Derived from current TIBCO format.
 - Introduces a layer of message grouping.
- Example using BOD:

Tibco Format

```
subject=BMRA.BM.E_DEMAND1.BOD.-1,message={SD=2015-02-11  
00:00:00,SP=1,NN=-1,OP=0.00000,BP=0.00000,NP=2,TS=2015-  
02-11 00:00:00,VB=0.000,TS=2015-02-11  
00:30:00,VB=0.000}<EOS>
```

```
subject=BMRA.BM.E_DEMAND1.BOD.1,message={SD=2015-02-11  
00:00:00,SP=1,NN=1,OP=0.00000,BP=0.00000,NP=2,TS=2015-02-  
11 00:00:00,VB=0.000,TS=2015-02-11  
00:30:00,VB=0.000}<EOS>
```

Data Push Format

```
<?xml version="1.0" encoding="utf-8"?>  
<msgGrp>  
  <pubTs>2015-02-24 06:11:13:GMT</pubTs>  
  <flow>BOD</flow>  
  <msg>  
    <subject>BMRA.BM.E_DEMAND1.BOD.-1</subject>  
    <SD>2015-02-11 00:00:00:GMT</SD>  
    <SP>1</SP>  
    <NN>-1</NN>  
    <OP>0.00000</OP>  
    <BP>0.00000</BP>  
    <NP>2</NP>  
    <row>  
      <TS>2015-02-11 00:00:00:GMT</TS>  
      <VB>0.000</VB>  
    </row>  
    <row>  
      <TS>2015-02-11 00:30:00:GMT</TS>  
      <VB>0.000</VB>  
    </row>  
  </msg>  
  <msg>  
    <subject>BMRA.BM.E_DEMAND1.BOD.1</subject>  
    <SD>2015-02-11 00:00:00:GMT</SD>  
    <SP>1</SP>  
    <NN>1</NN>  
    <OP>0.00000</OP>  
    <BP>0.00000</BP>  
    <NP>2</NP>  
    <row>  
      <TS>2015-02-11 00:00:00:GMT</TS>  
      <VB>0.000</VB>  
    </row>  
    <row>  
      <TS>2015-02-11 00:30:00:GMT</TS>  
      <VB>0.000</VB>  
    </row>  
  </msg>  
</msgGrp>
```

BMRS Data Push: Data Content - Provision

- How is the data presented?
 - All the different message types are presented as a single consumable topic.
 - Participants can:
 - Consume all data
 - Filter data using by providing a JMS selector expression when establishing a subscription.
 - Syntax is a subset of the SQL92 conditional expression syntax.
 - Example:
 - `JMSType='BOD' OR JMSType='UOU2T52W'`
 - The above will only return BOD or UOU2T52W files.

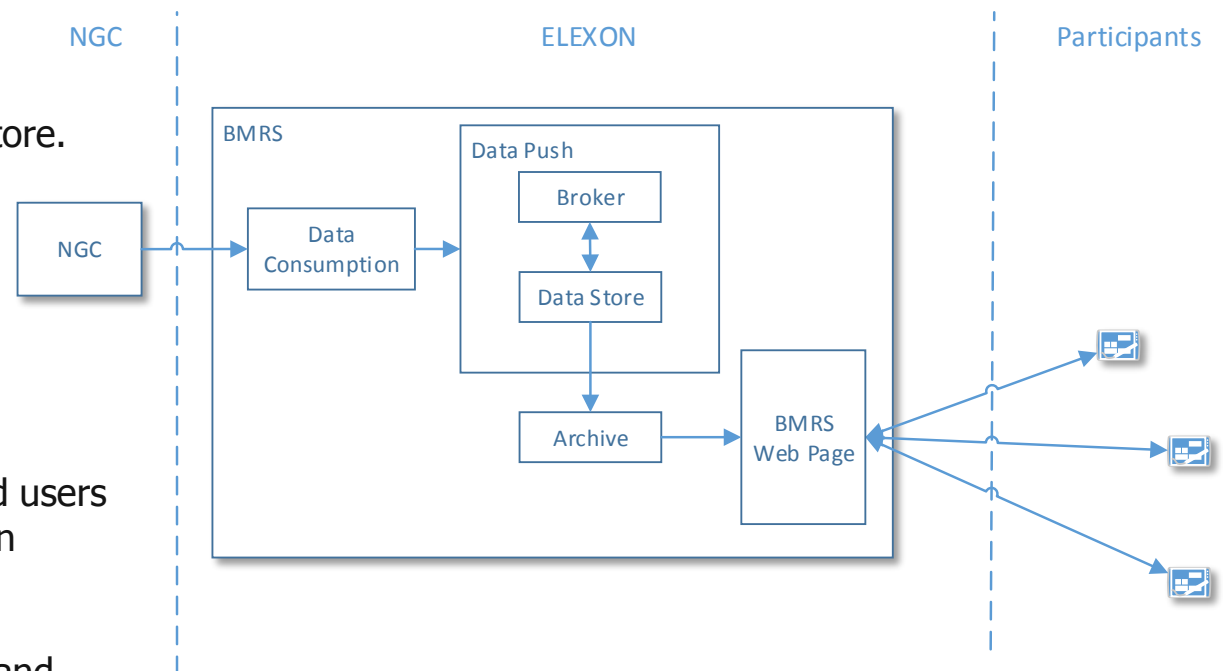
BMRS Data Push – Data Archive - Overview

- Overview:
 - To provide participants with access to an archive of the BMRS Data Push messages beyond the 16hrs TTL.
 - Similar to TIBCO archive available on the ELEXON Portal.
 - The 2 main use cases:
 - Retrieving messages subsequent to an outage
 - New participants requesting an archive of messages.
- Currently in the design phase so approach subject to change
- Require inputs from the user community.

BMRS Data Push – Data Archive - Detail

The following is the current thinking and is subject to change.

1. All access is authenticated using APIKey
2. Data is received from NGC and processed by BMRS.
3. Message is pushed onto the ActiveMQ topic.
4. Message is persisted to underlying JDBC Data Store.
5. A job will be scheduled to zip data (TBC) per:
 - a. Filetype and
 - b. Time period (eg per day/hour)and copy to a storage area.
6. The zipped files will be exposed to authenticated users via a page on the BMRS website where users can browse and download the zipped files.
7. Participants can establish which data is missing and which messages fill those gaps via a message level sequence number.



BMRS Data Push: Participant Testing

- A level of participant testing will be available around 26th March
- Aimed to be available during OAT Dry Run Contingency.
- Full details to follow.

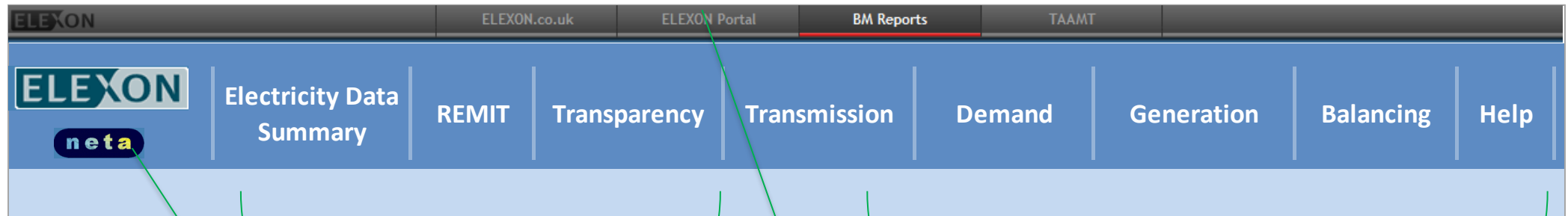


Current BMRS Changes

Current BMRS Changes

- BMRS Phase 3 Re-platform has Web UI presentation in scope
- Improve the overall user experience the new BMRS proposes to relay the data items / published information in a more intuitive way
- We have looked at various platforms how the data could be grouped and accessed
- Our approach for the grouping of items and accessing them is illustrated in the following slides
- The aesthetics and look & feel are still work in progress
- The illustrations in these slides are for soliciting views on the grouping of data and any ideas of further improving it
- General assumption though is that the individual data items and the fields in the new BMRS will not be different from the existing BMRS. The page layout and design for individual data will follow soon

Top Level Menu



'Home' - links
to the
Welcome page

The menu item for EDS,
REMIT and Transparency
directly take to the
corresponding page

These menu items will
expand to list the items at
the sub menu level

As in existing BMRS, links
to other ELEXON websites
will be at the top

Individual data item graph / table
/ xml / csv download etc. for the
item will be in the page for that
data item.

Note: The aesthetics and look n feel are still work in progress. The illustrations in these slides are for soliciting views on the grouping of data and any ideas of further improving it.

Transmission

System Data	REMIT	Transparency	Transmission	Demand	Generation	Balancing	Head
	MARKET COMMUNICATION System Warnings System Messages	SO-SO TRADING SO-SO Trades SO-SO Trade Prices	INFRASTRUCTURE Expansion and Dismantling Projects (B0910) - 9.1	CONGESTION MANAGEMENT Countertrading(B1320) - 13.1b Costs of Congestion Management (B1330) - 13.1c	UNAVAILABILITY OF TRANSMISSION INFRASTRUCTURE Planned Unavailability In The Transmission Grid (B1010) - 10.1a Changes In Actual Availability In The Transmission Grid (B1020) -10.1b Changes In Actual Availability Of Off-Shore Grid Infrastructure (B1030) - 10.1c		

Menu sub item group. Not clickable

Current / Historic view for SO-SO Trade price will be accessible in same page e.g. as separate tab views

Menu Sub items – clickable
 Blue – from legacy BMRS,
 Grey – from Transparency

Note: The aesthetics and look n feel are still work in progress. The illustrations in these slides are for soliciting views on the grouping of data and any ideas of further improving it.

Demand

REMIT	Transparency	Transmission	Demand	Generation	Balancing
FORECASTS Day and Day Ahead Demand 2-14 Day Ahead 2-52 Week Ahead 2-49 Days Ahead Day and Day Ahead Margin			Day-Ahead Total Load Forecast Per Bidding Zone (B0620) - 6.1b Week-Ahead Total Load Forecast Per Bidding Zone (B0630) - 6.1c Month-Ahead Total Load Forecast Per Bidding Zone (B0640) - 6.1d Year-Ahead Total Load Forecast Per Bidding Zone (B0650) - 6.1e Year-Ahead Forecast Margin (B0810) - 8.1		
ACTUAL DEMAND Initial Demand Out-turn Actual Total Load Per Bidding Zone (B0610) - 6.1a			UNAVAILABILITY OF CONSUMPTION UNITS Planned Unavailability Of Consumption Units (B0710) - 7.1a Changes In Actual Availability Of Consumption Units (B0720) - 7.1b		

Zonal / National view for these forecasts will be accessible in same page e.g. as separate tab views

Note: The aesthetics and look n feel are still work in progress. The illustrations in these slides are for soliciting views on the grouping of data and any ideas of further improving it.

Generation

EMIT	Transparency	Transmission	Demand	Generation	Balancing	He
FORECASTS Day-Ahead Aggregated Generation (B1430) - 14.1c Day-Ahead Generation Forecasts for Wind and Solar (B1440) - 14.1d 2-14 Day Ahead 2-49 Days Ahead 2-52 Week Ahead				CAPACITY AND ACTUAL GENERATION Installed Generation Capacity Aggregated (B1410) - 14.1a Installed Generation Capacity Per Unit (B1420) - 14.1b Actual Generation Output Per Generation Unit (B1610) - 16.1a Actual Aggregated Generation Per Type (B1620) - 16.1b Actual Or Estimated Wind And Solar Power Generation (B1630) - 16.1c		
UNAVAILABILITY OF GENERATION UNITS Planned Unavailability Of Generation Units (B1510) - 15.1a Changes In Actual Availability Of Generation Units (B1520) - 15.1b				UNAVAILABILITY OF PRODUCTION UNITS Planned Unavailability Of Production Units (B1530) - 15.1c Changes In Actual Availability Of Production Units (B1540) - 15.1d		

National/ Zonal view for forecasts will be accessible in same page e.g. as separate tab views

Note: The aesthetics and look n feel are still work in progress. The illustrations in these slides are for soliciting views on the grouping of data and any ideas of further improving it.

Balancing

Transparency	Transmission	Demand	Generation	Balancing
MARKET DATA Market Depth Market Activity Trading Operations Report Large Combustion Plant Directive	SYSTEM PRICES Price Derivation Summary System Buy/Sell Prices Market Index Data Imbalance Prices (B1770)	BALANCING MECHANISM DATA Balancing Services Adjustment Data Non BM Instructed Volumes Amount Of Balancing Reserves Under Contract (B1720) - 17.1b Prices Of Procured Balancing Reserves (B1730) - 17.1c Accepted Aggregated Offers (B1740) - 17.1d Activated Balancing Energy (B1750) - 17.1e Prices Of Activated Balancing Energy (B1760) - 17.1f Aggregated Imbalance Volumes (B1780) - 17.1g Financial Expenses And Income For Balancing (B1790) - 17.1i Rules of Balancing (B1710) - 17.1a		BM UNIT DATA Physical Dynamic Bid-Offer Derived Balancing Services Volumes BM Unit Mappings Search By BM Unit
CROSS BORDER BALANCING DATA Volumes Of Exchanged Bids and Offers (B1810) - 17.1ja Prices (B1820) - 17.1jb Energy Activated (B1830) - 17.1jc				

External links

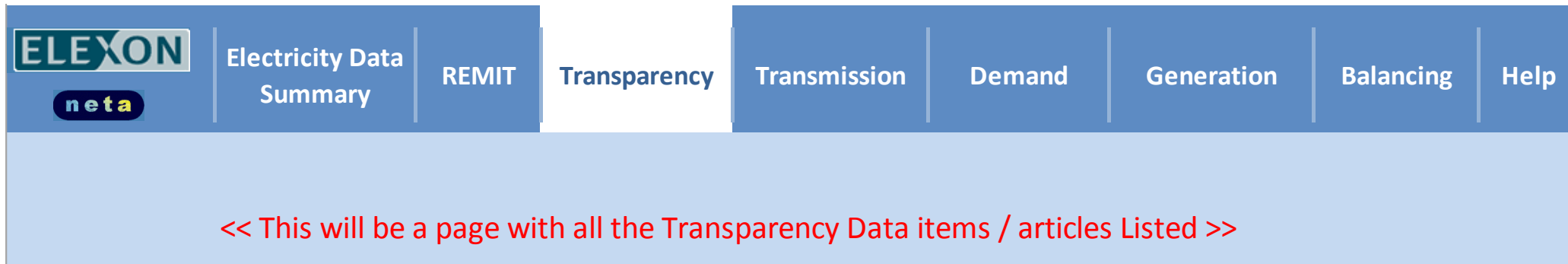
Will contain links for the backing items – phy, bo, bsv, dyn, deriv, accept, detailed system prices, DISBSAD

By default when accessed, the page will load corresponding data item for ALL the BM Units for Current period. Provision will exist to filter for certain date/period and BM Unit as per existing website

Note: The aesthetics and look & feel are still work in progress. The illustrations in these slides are for soliciting views on the grouping of data and any ideas of further improving it.

Transparency, REMIT, Help

TRANSPARENCY



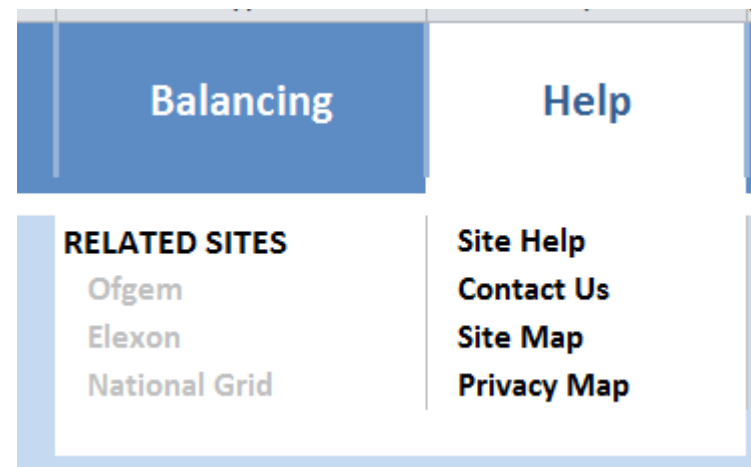
- This page will contain links to all the transparency data items, grouped in categories and with article numbers

REMIT

- This page will directly link to the P291 REMIT page

Note: The aesthetics and look n feel are still work in progress. The illustrations in these slides are for soliciting views on the grouping of data and any ideas of further improving it.

HELP



Electricity Data Summary

- How many of these data items are really required on single summary page (without need to navigate to any other link?)
- We can show the top 5-7 data items from the list in the main tab of summary page and the rest can be show in separate category tabs

Discuss which need to be in the main tab of summary page ?

Any changes required for Categories?

Category TAB if not in main tab	Item of Summary Page	Show on main tab of summary page?
Demand	Peak Demands	
Demand	Indicative Peak Demand Information(using Operational Metering Data)	
Demand	Indicative Triad Demand Information(using Settlement Metering Data)	
Demand	System Demand	
Demand	Rolling System Frequency	
Demand	Rolling System Demands	
Demand	2 - 14 Day Ahead Demand	
Demand	Temperature Data	
Generation	Peak Wind Generation Forecast	
Generation	Wind Forecast Out-turn	
Generation	Generation By Fuel Type	
Generation	Daily Energy Transmitted	
Generation	Average Half Hourly Interconnector Flows	
Generation	2-14 Days Ahead Output Usable By Fuel Type	
Generation	2-52 Weeks Ahead Output Usable By Fuel Type	
Margin/Surplus	Day/Day Ahead Demand & Gen	
Margin/Surplus	2 - 14 Day Ahead Surplus	
Margin/Surplus	Long Term Surplus	
System Prices	Recent System Prices	
Market Messages	System Warnings	
Market Messages	Credit Default Notices	



REMIT/ETR Contingency

REMIT/ETR Contingency

Proposal

- Using ELEXON portal GUI to log the outage manually (as-is)
- Users will have the assets details populated automatically based on permissions
- User to flag the message as ETR/REMIT or both
- System to determine how to process messages

Key Benefits

- Used in a contingency situation where MODIS/other system are down
- Minimal impact on existing arrangements
- No detailed understanding of XSD – system will construct XML
- One value for the available capacity during the event(ENTSO-e DDD)

Next Steps

- ELEXON to work with RWE on proposal
- ISG Paper and Impact assessment
- Industry Consultation (if required)



AOB