Mersey RFI Interactive Guidance Document

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Version Control

Version	Date published	Page No.	Comments
1.0	3/10/18		

How to use this guide

- This document aims to provide current and potential Reactive Power providers with clear, simple and transparent guidance on the service. It pulls together FAQs on the service and provides links to related documents, such as testing guidance and Market Information Reports.
- A menu button on each page allows access back to the main menu, or section menu where required:

 Return to main menu  Return to section 3.2

A toolbar runs along the bottom of every page, allowing for quick navigation to section menus. Coloured icons allow navigation to relevant sections of the document.

1. Market information	2. Reactive overview	3. Technical requirements	4. How to participate	5. Assessment principles	6. Contract Options

- Sections of the guidance are colour coded, for ease of use.

- Please contact commercial.operation@nationalgrid.com if you have any questions or feedback.

Note: icons on this page are for illustration only - links do not work.

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Main Menu

1. Market information

2. Reactive overview

3. Technical requirements

4. How to participate

5. Assessment principles

6. Contract Options

Key Documents

Return to main menu

1. Context and Market Information

1.1 Context

1.2 Wider Activities Impacting Reactive Power

1.3. How information will be used

1.4. Market Information

1.1 Context

Why are we doing this?	■ Voltage management becomes more challenging at demand extremes – both high and low demand ■ There are greater extremes of transmission demand on the system due to the impact of generation connected at lower voltage levels (132kV and below) ■ Cost of managing system voltage within safe levels is increasing ■ One of the Reactive Roadmap commitments is to review service procurement, this is the start of this process
Aim for 19/20 and 20/21	■ Identify any additional providers of reactive power support in the identified area ■ Using feedback on contract structure from this RFI, make procurement decisions on how to manage reactive power requirements for this period
Future Aims	■ As part of the commitments in the Network Development Roadmap, we are also seeking to explore whether we can drive further value for the end consumer by assessing whether commercial solutions can be a cost effective alternative to meet our long term reactive requirements in comparison to regulated network asset build solutions. We expect to send out an information pack in November 2018 detailing the long term requirements and how you can register your interest to provide solutions for 2021 onwards

1.2. Wider Activities Impact Reactive Power

There are a significant number of activities on-going to review the Reactive Power ancillary service. This is part of the System Operator's review of Balancing Services, aiming to create balancing service markets that meet our changing system needs.

The Product Roadmap for reactive power provides detailed information on the developments within the ancillary service. Developments that directly impact the Request for Information are:

- Product Roadmap
- Applying a 'Network Options Assessment' to Voltage
- Power Potential
- Suggested CUSC modification to review ORPS
- Proposed CUSC modification to remove ERPS

Return to main menu

1.3. How information will be used

RFI

- Receive information regarding providers able to deliver requirements
- Receive feedback on proposed contract structures

Tender

- Depending on the feedback from providers a procurement decision will be taken
- If contracting options are decided upon a tender would then be issued reflecting the requirements and feedback from the RFI

Assessment

- The assessment methodology outlined in this pack will be used to assess received tenders
- There is expected to be only one opportunity to tender in for 2019/2020 year
- In the event of a tender for 2020/2021 there may be a second tender opportunity in late 2019

Decision

- All tenders and contracting options for 2019/2020 delivery are expected to be finalised and signed by the end of March 2019 at the latest

1.4 Market information for 2019 and 2020

Procurement options will be considered for 2019/2020 and 2020/2021

- Reactive Capability Requirement exists between 1st April 2019 to 31st March 2020
- Reactive Capability Requirement exists between 1st April 2020 to 31st March 2021
- Requirement 24/7 during some times of the year
- Reactive Lag Requirement: 170MVAr
- Reactive Lead Requirement: -125MVAr
- The Reactive Requirement is measured from the transmission system, and volumes depend on the exact location of the reactive capability required.

Return to main menu

2. Reactive overview

2.1. Context Setting – Voltage and Reactive

2.2. Voltage Constraint Services

2.3. New Reactive Power Services

2.1. Context setting – Voltage and Reactive

System Operator obligation	■ The System Operator has a statutory obligation to maintain the National Electricity Transmission System Voltage to ±5% of 400kV or -5% and +9% of 275kV.
System Voltage	■ System voltage is continuously changing and is variable across the system ■ There are differing requirements across areas of the system due to this variability ■ System Voltage is managed by a combination of installed regulated assets (capacitors and reactors) and through the use of generation with reactive capability
Reactive Power	■ Voltage constraints contracts have been historically used to procure additional reactive capability paid at the mandatory ORPS rate. Voltage constraints are locational and as such assets have different ability to resolve the operational challenges depending on the point of connection.

Return to main menu

2.2. Voltage Constraint Services

Availability	■ A large portion of Reactive Power requirements have been procured through purchasing Active Power. This has been failictated through Voltage Constraint contracts, Trading and BM Actions ■ Constraint Management contracts, such as the Optional Voltage Contracts have achieved this ■ Availability reported through 'Constraint' part of MBSS
Utilisation	■ After the reactive capability has been procured – through active power payments reactive Power dispatch is paid at ORPS as outlined in the CUSC ■ Reactive Utilisation reported through 'Reactive' part of the MBSS
General	■ Services have typically been limited to BM providers ■ Dispatch of Reactive Power completed through electronic instruction ■ Instruction is either via Reactive Power or Voltage Set point instruction

Key documents for more information

2.2. New Reactive Power service

Availability	■ Availability payment for reactive capability - £/MVAr ■ Procure only Reactive Power – providers are expected to manage any Active Power actions required to achieved the Reactive Power output required.
Utilisation	■ The service is to manage Voltage in the Mersey, so only actions that will impact this area would be considered ■ Reactive Power to be dispatched as required and paid at ORPS – the mandatory payment rate set out in the CUSC
BM and Non-BM providers	■ The service is open to both BM and Non-BM providers. ■ Providers can offer other balancing services in conjunction with Reactive Power services, as long as this does not impact the reactive range available ■ There must be a single point of dispatch or a method by which the total output of the combined loads can be monitored to demonstrate the service is available

Return to main menu

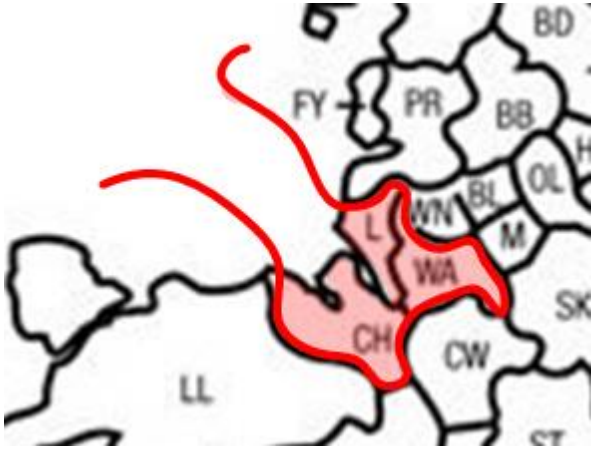
3. Technical Requirements

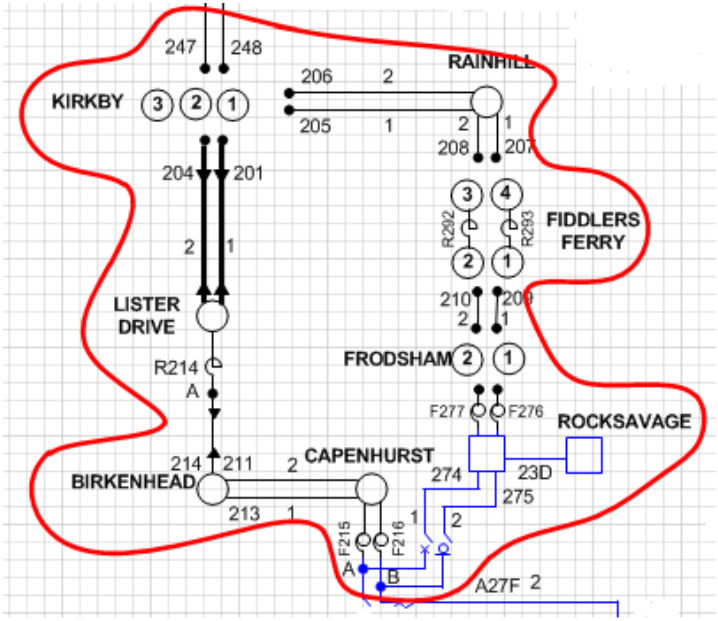
3.1 Location

3.2 Technical Requirements

3.1. Technical requirements - Location

Prospective Reactive Providers must be within the red boundary:





3.2. Technical Requirements

Prospective Reactive Providers must meet the following technical requirements:

Minimum size	• Minimum Reactive Range is 50MVAr if a provider is capable of absorbing and generating reactive. If a provider can only do one of these, the minimum requirement is 25MVAr in one direction. This can be from a single unit or aggregated from several smaller units.
Voltage Control	• Providers of Reactive Power that are synchronous machines must be in Voltage Control mode • Non-synchronous providers must operate in Voltage Droop mode • All technologies should be in the correct control mode for the duration of the contract period and if operating in a different mode, must move to voltage droop without instruction.
Dispatch	• There must be a single point of dispatch, it must be possible to immediately change to voltage droop set point on instruction. • Dispatch should be achieved through existing computer systems
Location	• All providers must be within the location described in slide 17. Where post code and technical drawing differ the technical diagram is seen as the authority.

Return to main menu

4. How to Participate

4.1 Participation Deadline

4.2 How to Participate

4.1. Participation Deadline

Please use the below proforma when responding to the RFI.

Mersey Proforma

The deadline for submission of information is 5th November 2018. NGET will assess the submissions against the selection criteria and contact all parties by 3rd December 2018 with the decision to either tender or review alternative procurement options. Please send your responses via email to commercial.operation@nationalgrid.com no later than 5pm on 5th November 2018.

If you have any questions please contact Emily Campion (emily.campion@nationalgrid.com 07929 058604)

4.2. How to Participate

Provider of Reactive Power in The Mersey in 2019 and 2020

Interested Reactive providers are requested to submit information with an outline of their capability to provide a reactive power service including but not limited to:

- Technical description of the assets
- Reactive Range
- Active Power Range Required to deliver Reactive Range
- Date from which reactive range is valid
- Location of asset and connection point
- Contract Option preferred
- Contract Preference – e.g per month, season, different contracts for weekends and weekdays
- Any other relevant information

Return to main menu

5. Assessment Principals

5.1 General Assessment Information

5.2 Reactive Tender Assessment Process

5.1. General Assessment Principals

The criteria for selection for prequalification include but are not limited to:

- Delivery from a diverse set of service providers is optimal
- The proposed service must meet the minimum technical requirements
- Dispatch capability
- Duration of the service
- Provider Effectiveness
- Active Power Range – the System Operator prefers a lower minimum active power level to deliver the reactive range

5.2. Proposed Reactive Tender Assessment Process

Step 1: Ensure tender compliance

Step 2: Effectiveness Assessment

The first step in the assessment process is to establish through System Studies the effectiveness of each provider. The total effectiveness of the machines will impact the volume of reactive power procured.

Providers in different locations, connected at different voltage levels have a different impact on the transmission system voltage, therefore an effectiveness score needs to be established through technical assessment.

Step 3: Cost Assessment

The assessment team consider how much each tender would cost to procure in the Balancing Mechanism (BM), allowing for cost variabilities in the BM. This includes consideration of how often the market may deliver the reactive capability without intervention from the System Operator.

Each tender is stacked in descending order of its cost benefit, with consideration of the effectiveness of the provider. A tender has to be beneficial against forecasted alternative BM cost for the reactive volume.

Continued...

5.2. Proposed Reactive Tender Assessment Process

Step 4: Comparison against requirements

All tenders are compared against the requirements. Tenders which meet requirements, and result in no over holding are considered for acceptance.

Consideration weighting will be given to solutions that result in reactive capability being delivered from multiple reactive power sources.

Return to main menu

5. Contract Options

5.1. Contract Option 1

5.2. Contract Option 2

5.1. Contract Option 1

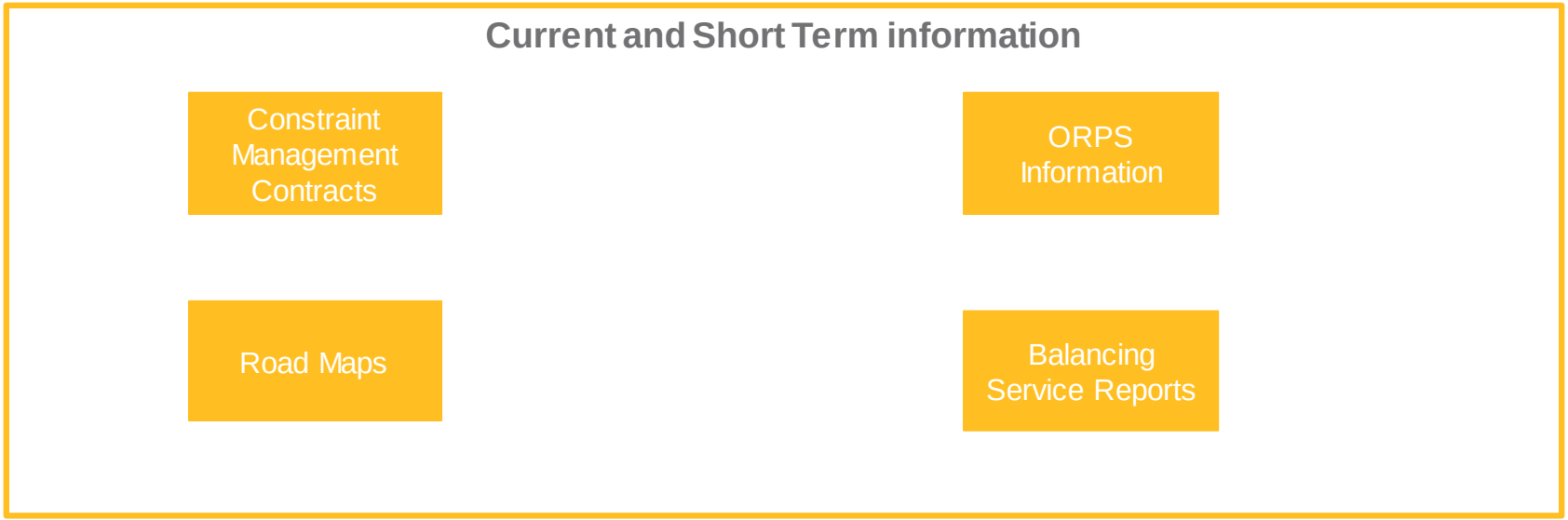
Payment Structure	■ Provider expected Reactive capability available for the duration of the contract period ■ Provider Paid a fixed amount to be available for the whole period ■ Utilisation paid at ORPS
Contract Structure	■ Availability payment is a £/MVArh against an agreed Reactive volume ■ Utilisation paid at ORPS, at £/MVArh ■ For sites with multiple generators units reactive range can be delivered from any unit, as long as the contracted reactive range is maintained ■ Reactive Range must be always be delivered from the agreed contract location
Feedback On	■ Suggested Options: Week day and Weekends ■ Suggested Options: EFA blocks15 – 46 and EFA blocks 47 -14 ■ Suggested Options: Monthly tenders and a tender covering June – August

5.2. Contract Option 2

Payment Structure	■ Contract enacted before 10:00 am at day ahead ■ Availability payment made at 10:00am ■ Delivery between 23:00 – 07:00 ■ Utilisation paid at ORPS
Contract Structure	■ Availability is a £/MVArh using agreed reactive capability ■ Utilisation paid at ORPS at £/MVArh ■ Different generating units at the same site can be used at the time of enact, but which unit it is must be declared.
Feedback On	■ Suggested Options: Monthly tenders and a tender covering June – August ■ As an optional contract tenders can cover a period of generation outages ■ Combinations of providers on this and Option 1 would be required to meet the requirement.

Return to main menu

Key documents



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