

The Power Potential project

Heads of Terms – Subject to contract

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1. Introduction

A key component of the commercial framework for the Power Potential trial is the agreements between National Grid, UK Power Networks and Distributed Energy Resources (DER). These provide the terms and conditions under which DER will interface with the Distributed Energy Resource Management System (DERMS), and receive remuneration for providing services.

These services involve the provision of reactive power and/or active power. These services will be procured through DERMS and DER will contract directly with UK Power Networks for participation in the Power Potential trial.

This document is a working draft (i.e. intended to be modified over time). It contains the high level overview of the contractual structure envisaged and the key Heads of Terms that are likely to be required in the different contracts. When the Heads of Terms are finalised, they will be used as the basis to draft the Power Potential contracts.

2. Contractual structure between Distributed Energy Resources, UK Power Networks and National Grid

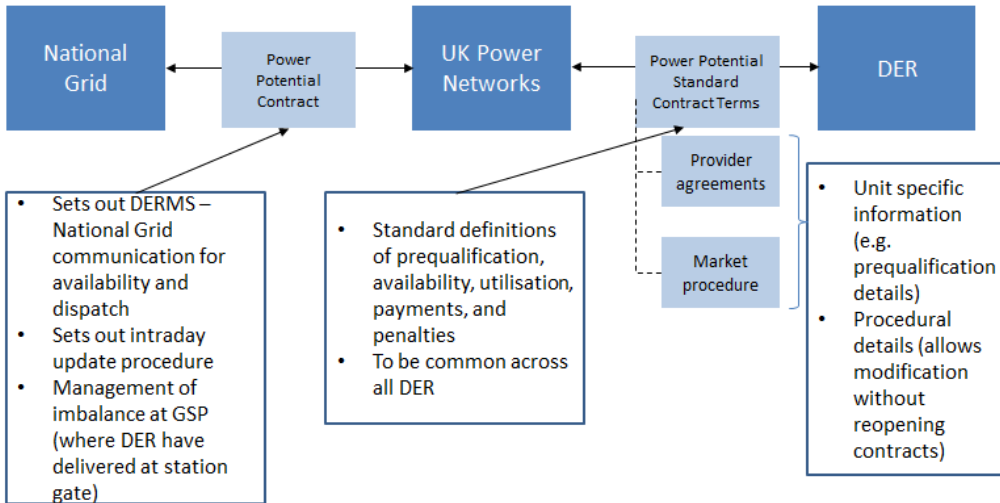
There will be a simple contractual framework underpinning the Power Potential trial including:

- contracts between UK Power Networks and DER governing DER participation in the trial. This will detail, payment structure for service delivery, the nature of service delivery and trial procedures governing participation, such as the market process;
- a contract between UK Power Networks and National Grid. This will cover the processes required for DERMS to work with National Grid’s system management responsibilities and how imbalances between what is delivered by DER and what is reflected at Grid Supply Point (GSP)¹ is managed.

¹ The Power Potential project partners are aware that a potential issue exists whereby DER may deliver what is required under their contract/instruction, but where this delivery is not reflected at the Grid Supply Point (GSP) between National Grid and UK Power Networks. This is likely due to system noise or inaccurate effectiveness measurements. For the purposes of the trial, the project partners have agreed to internalise any costs associated with these imbalances, to address this challenge once more data is available.

The proposed contractual framework is set out in Figure 1 below.

Figure 1 Basic contractual framework underpinning the Trial



Sub-documents to the Standard Contract Terms between UK Power Networks and DER

There is a project need to get DER committed to participating in the trial prior to all of the details of the commercial and technical work being finalised. The most practical framework for contracting DER will be similar to the Firm Frequency Response (FFR) contractual framework, i.e.:

- a set of Standard Contract Terms between UK Power Networks and DER
 - Contains generic terms that will not change by DER
- a provider agreement
 - Contains specific terms relating to the DER and their capabilities
- a Market Procedure
 - Contains the process by which DER can participate in the market interface and to enable the project partners to make occasional changes.

The Heads of Terms for these documents and the contractual arrangements between NG and UKPN aim at facilitating the operational deliverables of the Power Potential project. The Heads of Terms are the focus of the remainder of this document.

Contract between National Grid and UK Power Networks

Currently, the project is in the process of defining the nature of the contractual relationship between UK Power Networks and the DER. The reason is the project is in the DER recruitment process, where additional details need to be provided on the rights and obligations that Power Potential participants can expect.

There is work on going, in parallel, to finalise the terms of the contract between National Grid and UK Power Networks. The following sections set out a draft set of Heads of Terms to be developed further as part of the commercial aspects of the Power Potential project.

3. Standard Contract Terms (UK Power Networks – DER) – Heads of Terms

The draft Heads of Terms for the Standard Contract Terms (SCTs) between UK Power Networks and DER are listed in Table 1 below. The logic behind the structure and content of these Heads of Terms is largely based on precedents from National Grid’s contracts for Firm Frequency Response (FFR).

Table 1 Proposed position on SCTs between UK Power Networks and DER

Condition	Proposed position
Applicability of sections and Power Potential agreements	
1. Changes to the SCTs	<ul style="list-style-type: none"> UK Power Networks to outline the process it will use to make changes to the SCTs. This process will be based on the existing process that National Grid uses to make changes to the Firm Frequency Response SCTs. Project partners may wish to make modifications to SCTs after the learning gained during the trial year.
2. Power Potential provider agreements	<ul style="list-style-type: none"> To participate in the Power Potential trial, the DER must have a Power Potential Provider Agreement with UK Power Networks, under which they will accede to the terms of the SCTs (i.e. the provider agreements give contractual effect to the SCTs). The Power Potential Provider Agreement is the agreement which is mutually agreed or terminated, in accordance with the terms and conditions of the SCTs.
Market procedures	
1. Prequalification and testing	<ul style="list-style-type: none"> Sets out that the minimum precondition for participating in the reactive and / or active market process will be to meet minimum requirements: <ul style="list-style-type: none"> Minimum size of response is 1 MVAR / 1MW Reactive power capability to automatically deliver changes in reactive power in response to system voltage changes Active power capability with the ability to provide the service for a minimum 30 mins. Providers wishing to sign a Provider Agreement will have to first submit details of their technical capability via the DER Technical Specifications Submissions Spreadsheet. Prior to signing an agreement DER may also be required to undergo a ‘Prequalification Assessment’ with UK Power Networks. UK Power Networks reserves the right to conduct a Repeating Test while provider agreements remain in place.

2. Participating in DERMS web interface	<ul style="list-style-type: none"> • Defines a reactive bid or active bid submitted for one or more settlement periods to be defined in line with operational requirements. In each case, bids will be submitted as a volume/price pair in the next electricity trading day 2300-2300 GMT. • Sets out the bid information that the Distributed Energy Resources provider must submit into the web interface with DERMS in order for a bid to be assessed, e.g.; <ul style="list-style-type: none"> - Identify relevant settlement period (s) in next day - Availability price for the reactive service in £/Mvar/h to apply per settlement period (s); - Volume available in Mvar (lead and lag) or MW (+/-) and associated utilisation price in £/Mvarh or £/MWh (+/-) to apply for settlement period (s). • Sets out the timing for bids to be made every day <ul style="list-style-type: none"> - Bids submitted by 16:00, for availability instructions to be returned by 17:00 each day • Sets out Distributed Energy Resources warranties in the bidding process; <ul style="list-style-type: none"> - That the provider has not colluded on price or volume setting in the formation of its bid; - That the provider is not contracted conflicted from for other Balancing Services during the settlement period (s) within which it has submitted bids into Power Potential active power service
3. Acceptance and rejection of bids	<ul style="list-style-type: none"> • UK Power Networks to assess bids from 16:00 every day • UK Power Networks to reserve the right to query information within a bid where information does not align with information in the Provider Agreement. Where it is not possible to receive clarification on bids within market timescales then these bids may not be included in the assessment process • UK Power Networks to provide acceptance/rejection notification by 17:00 each day through DERMS web interface.
4. Market information	<ul style="list-style-type: none"> • UK Power Networks Market information to be provided through DERMS web interface after 16:00 once DER submissions are fixed for the next day.
Service provision	
1. Service availability (Reactive Power)	<ul style="list-style-type: none"> • At 17:00 each day, DER providers will be provided with a schedule for the next electricity trading day after 23:00. This provides details of the settlement period (s) that they have been accepted for to provide reactive power ('scheduled windows') • Where Distributed Energy Resources are given scheduled windows for availability for reactive power, on and during the delivery day, UKPN, through DERMS, will provide an instruction 2 minutes before the availability window starts. <ul style="list-style-type: none"> - Instructions will comprise a target voltage level/ an instructed change to voltage droop control (non-synchronous DER) or an instructed change to target voltage control (synchronous DER) - These instructions will persist until the earliest of either a) the end of the contracted window passes, or b) UK Power Networks issues an alternative instruction through DERMS. • Distributed Energy Resources must use all reasonable endeavours to provide the availability of the scheduled Mvars during the scheduled windows and to meet the instructions provided by UK Power Networks. • UK Power Networks will monitor availability for each service using metering protocol which will be confirmed at a later date. • In the event that DER Providers become aware of a reduction in availability for active or reactive power capability after the schedule for the delivery day has been delivered, these should be notified to UK Power Network, through

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	DERMS, as soon as practically possible.
2. Utilisation	<ul style="list-style-type: none"> • UK Power Networks will issue utilisation instructions for the active power service either before or during scheduled windows. These will be provided to Distributed Energy Resources through DERMS with at least (2) minutes notice to start delivering the active power service. • Utilisation for the active power service will be calculated in £/MWh. <ul style="list-style-type: none"> - Distributed Energy Resources response will be measured from the beginning of the service start time until the earliest of either a) the end of the contracted window, or b) UK Power Networks issues an alternative instruction through DERMS. - The level of active power will be measured by considering the volume of service delivered against deviation from forecast operating level in line with an active power instruction. • UK Power Networks will issue utilisation instructions for the reactive power service during the scheduled windows. If not instructed, DER will be operating at its expected reactive power level. <ul style="list-style-type: none"> - Providers response will be measured from the point instruction is sent until the earliest of either a) the end of the contracted window, or b) UK POWER Networks issues an alternative instruction through DERMS. - The level of reactive power delivered will be the sum of the Mvarh delivered from the reactive power service start time until reactive power service stop.
3. Payments and invoicing	<ul style="list-style-type: none"> • Sets out that payment will be made on a monthly basis from UK Power Networks to DER. • Active power utilisation to be paid on metered utilisation £/Mwh basis, relative to the expected operating level, across the preceding month. • Reactive power availability to be paid on accepted bids on a £/Mvar/h basis multiplied by the hours accepted and the volume contracted for the availability period across the preceding month. • Reactive power utilisation to be paid on metered utilisation (£/Mvarh) across the preceding month.
4. Events of default and consequences	<ul style="list-style-type: none"> • For active power, default is to be defined as: <ul style="list-style-type: none"> - Delivering a level lower than 80% of active power utilisation in MWh than the level required as calculated in section 3 above. • For reactive power, default is to be defined as: <ul style="list-style-type: none"> - Delivering a level lower than 80% of reactive power utilisation than the level required as calculated in section 3 above. • Instances of default of more than three events in any one month shall

	provide UK Power Networks with the right to terminate Provider Agreements (at its own discretion)
Other – Metering details, communications requirements and circumstances under which contracts can be terminated are to be finalised and will be provided at a later stage.	

The key information that would need to be included in provider agreements with UK Power Networks is likely to include those terms set out in Table 2 below.

Table 2 Proposed position on agreements between UK Power Networks and DER

Condition	Proposed position
Applicability of sections and Power Potential agreements	
1. Counterparty information	<ul style="list-style-type: none"> Company name key contacts and location of the DER provider
2. Commencement and term	<ul style="list-style-type: none"> Commencement date: once prequalification tests have been satisfied and capability tables completed Term up to the end of the trial date or until terminated by one or the other counterparty
3. Placeholder bids	<ul style="list-style-type: none"> Gives the provider the opportunity to submit placeholder bids, to be used when an active bidding strategy is not viable.
4. Provider capability tables	<ul style="list-style-type: none"> This will set out provider technical capability to deliver the service.

4. Market procedures – description of document

The Market Procedures document provides the details on the process of bidding into the market. This provides the project partners with the ability to tweak these during the trial and beyond. This will include the following information:

- detailed market timings;
- pro-forma for submitting bids and making administrative changes to provider agreements;
- the principles that UK Power Networks (DERMS) would use for assessing bids;
- the information that UK Power Networks (DERMS) would make available to the market;
- instructions for using the Web Interface