# Power Potential webinar

Webinar with Power Potential interested parties

21 September 2017

# Agenda

1. Introductions and objective
2. Project progress
3. Commercial framework
4. Market value
5. Q&A (10 mins)

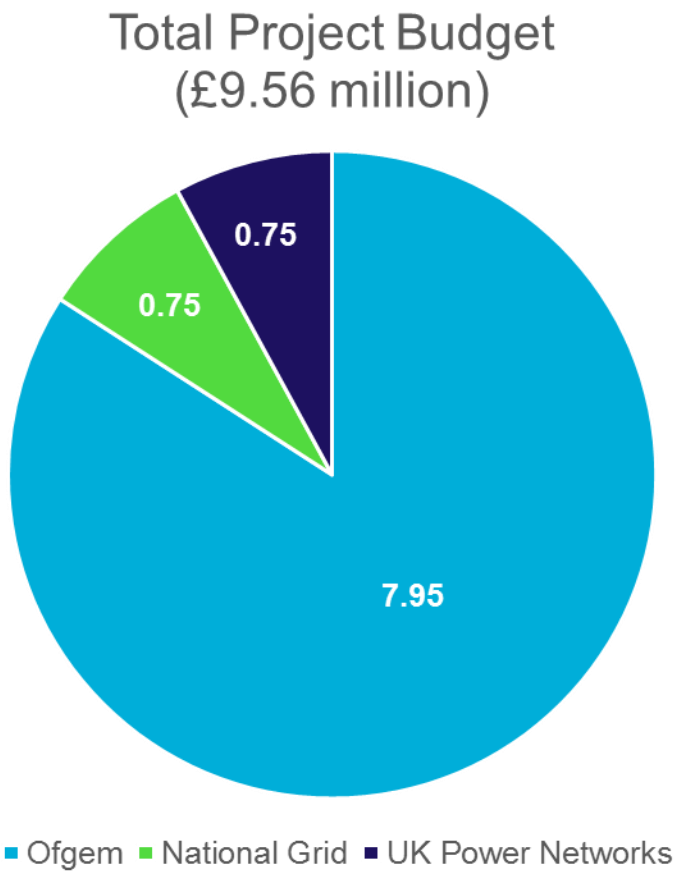
# Power Potential - Key Facts

- Funding mechanism: Ofgem Network Innovation Competition (NIC)
- Project Lead

  nationalgrid

  In partnership with:

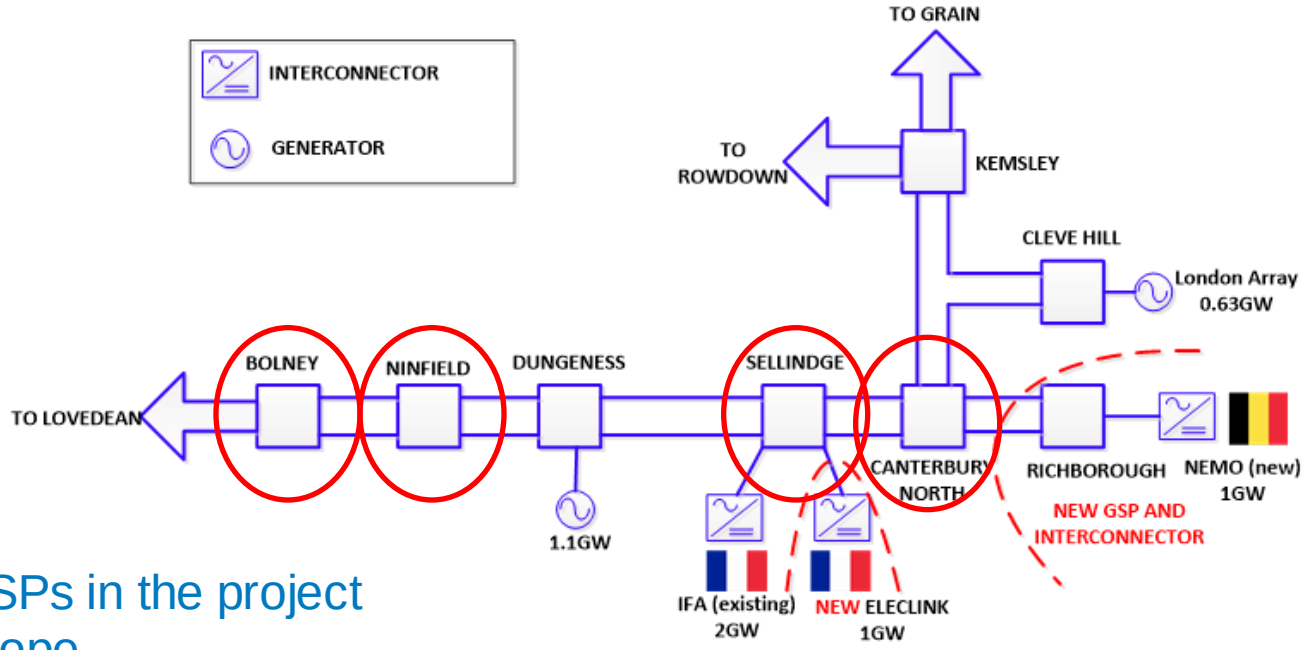
  UK Power Networks Delivering your electricity
- Start Date: Jan 2017
- End Date: Dec 2019



# Power Potential – In a nutshell

The project will focus on the creation of a regional market for DER connected to the distribution network to provide the following services to the System Operator:

1. Dynamic Voltage Support (MVAr for low and high volts).
2. Constraint Management (MW).




GSPs in the project scope

# Customers and Stakeholder Benefits

- The project will help enable more customers to connect in the South East and for new and existing customers with the possibility of providing services to National Grid and accessing additional revenue streams
- Services procured from DER will be coordinated such that operation of the distribution and transmission networks are kept within operational limits and constraints are not breached
- Defer network reinforcement needs in the transmission system
- When deployed, Power Potential can deliver:

**3720 MW of additional generation in the area by 2050**

**Savings of £412m for UK consumers by 2050**

# High Level Plan

**Design**
- Jan17 – Dec 17

**Build**
- Jan 18 – Jun 18

**Test**
- Jul 18 – Dec 18

**Trial**
- Jan 19 – Dec 19

DER Trial Requirements

Trial recruitment

Testing of the solution

Commercial arrangements

Trial Participation

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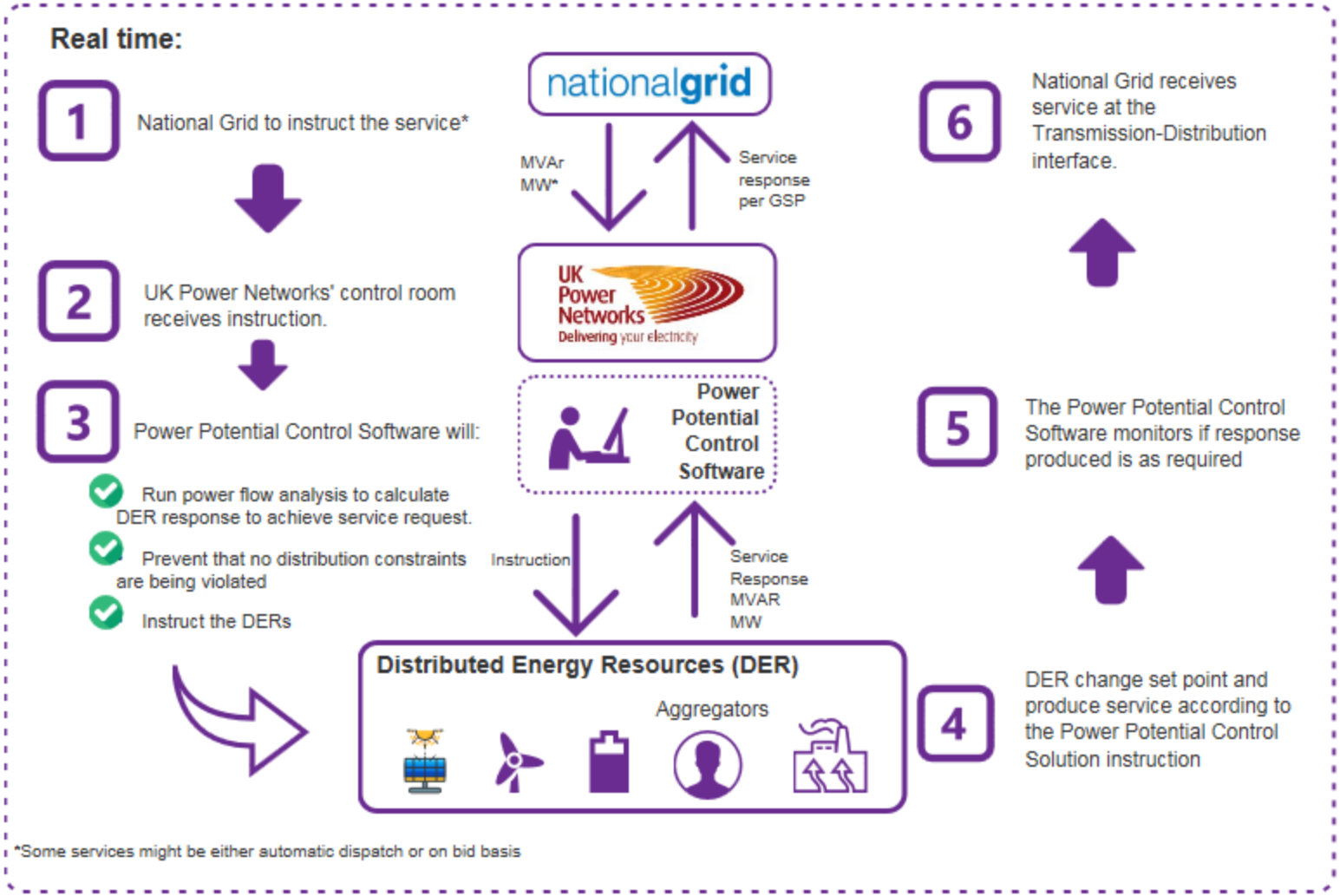
# Technical update



# Requirements for participating

## What are the services procured?

- Active power generated
- Reactive power generated or absorbed

## How are the services instructed?

- Instructions for active and reactive power services sent from UKPN to the generator via the Power Potential platform to provide transmission services for National Grid
- Instructed to a voltage droop control for the reactive power service and to an active power MW set-point

## How do I know if my plant is suitable?

- Suitable control system is required to provide voltage droop control at the connection point
- Technical specifications on generator capabilities can be discussed and accommodated to make it part of the trial

## Our 'Guide to the service' will be available online soon

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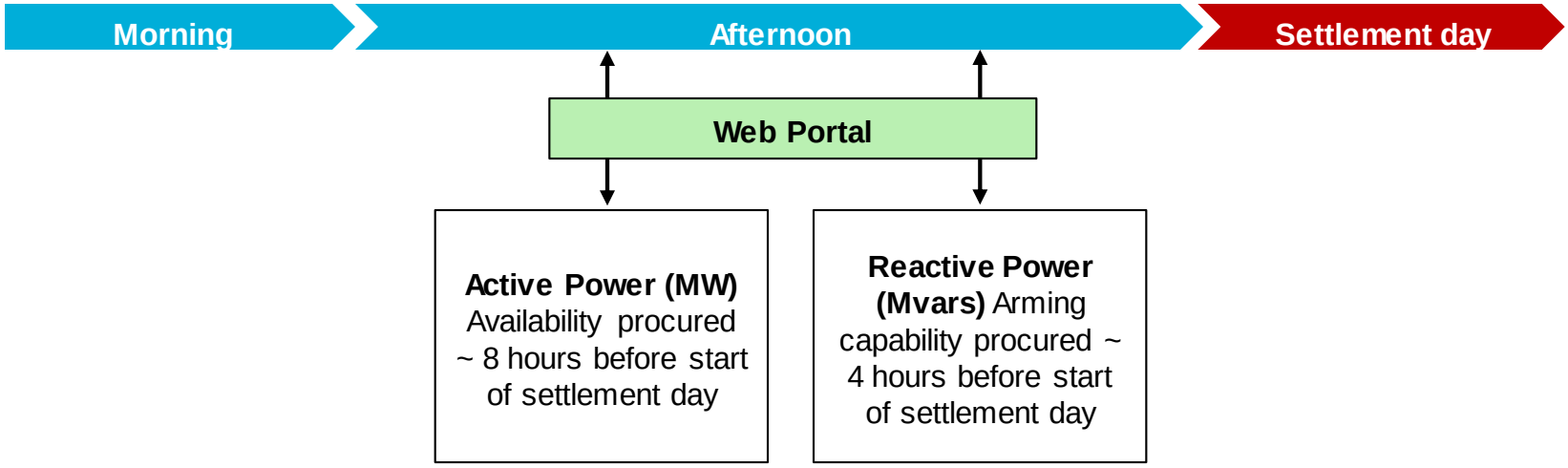
# Current status of the Commercial Framework

- The following pages provide an overview of the Power Potential team's commercial framework
- The framework has been designed to:
  - Be **simple**, **transparent**, and **consistent** with the design of other flexibility products
  - **Encourage recruitment of existing and new entrant DERs** into Power Potential
  - Provide the means to **deliver operational efficiency to network operators** over the longer term
- We are constantly reviewing our current thinking as the Power Potential capabilities are designed, so aspects of this commercial framework may change before contracts are drafted – these changes will be shared with DERs ahead of contracting.

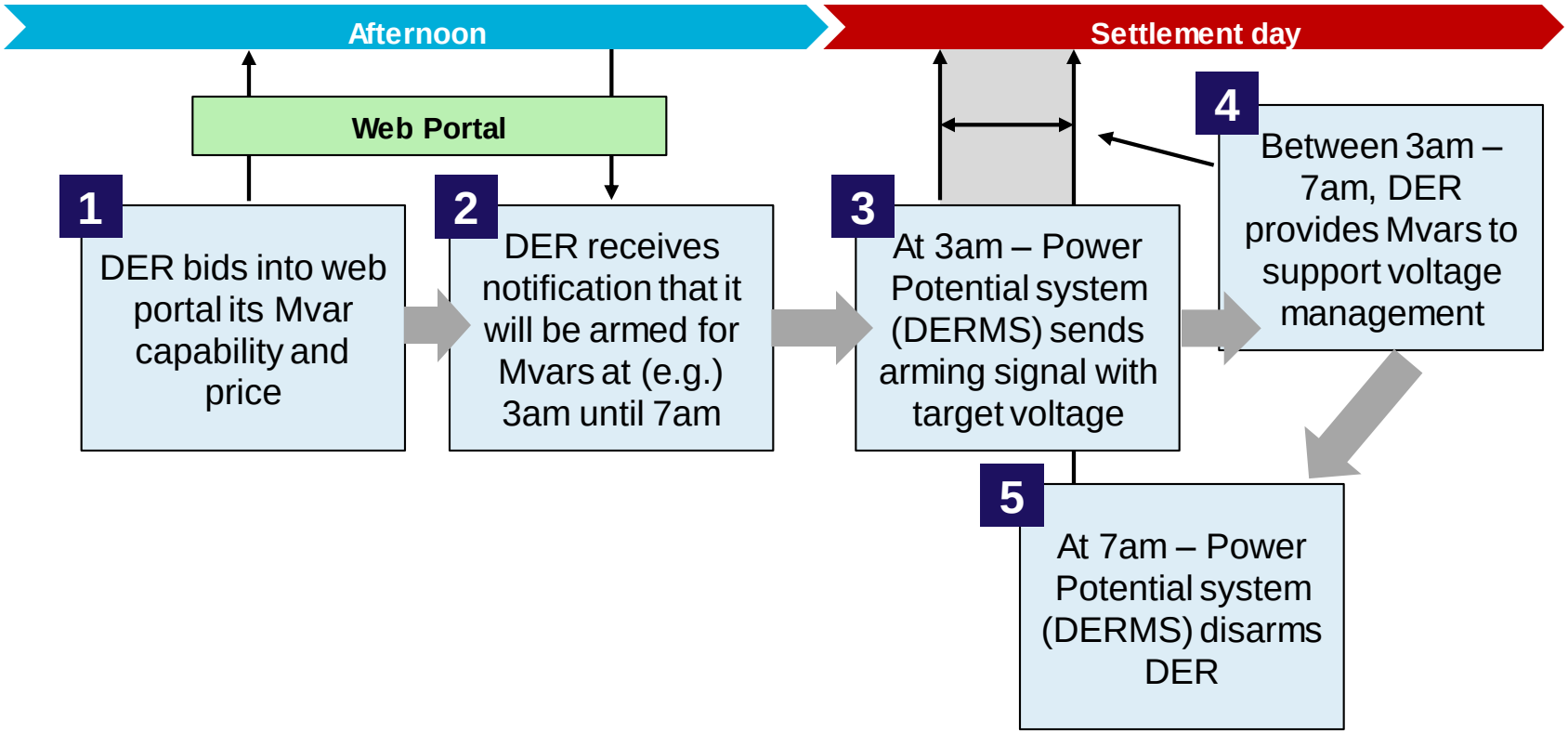
# Procurement timelines

- Procurement of Power Potential reactive and active power services will take place at the day-ahead stage, likely to be the afternoon before the settlement day
- Contracts procured for the settlement day will range from a block of hours (likely to be 4) up to 24 hours in length
- DERs will be provided with access to a web portal bidding platform where they can input their availability for Mvars and MWs, and associated prices for the following day



# Process in practice

- Using Reactive Power as an example



# Contract design

- Both products will contain a form of availability payment, and utilisation payment

| Contract aspect | Reactive Power (Mvars) | Active Power (MWs) |
|---|---|---|
| **Arming or availability payments** | Where arming capability is procured from DERs, arming payments will start from the beginning of the contracted block of hours, i.e. £/Mvar capability armed/hour | Where availability is procured from DERs, availability payments will start from the beginning of the contracted block of hours, i.e. £/MW/hour |
| **Utilisation payment** | Payments to be based on £/Mvarh instructed and delivered | Payments to be based on £/MWh instructed and delivered |
| **Penalties** | Our minded-to position is for more lenient penalties/performance factors while the trial is introduced – to be reviewed regularly once market is established | |

# Provision of multiple services

- A common query from potential participants is whether Power Potential products can be co-provided with other services at the same time
- Where possible, we wish to encourage participants to deliver both the reactive and active Power Potential services. Due to potential nullifying actions, it may be necessary to restrict the provision of active power constraint management for Power Potential if a participant is already available to deliver a Balancing Service.

| Other service | Reactive Power (Mvars) | Active Power (MWs) |
|---|---|---|
| **National Grid's Balancing Services (MWs)** | Provision of both services is possible, provided the performance of the existing Balancing Service is not compromised, e.g. by curtailing MW availability to provide Mvars | Provision of both services simultaneously is not possible as the services would counteract each other e.g. increasing MW output to deliver STOR/FFR, whilst curtailing MW output for constraint management |

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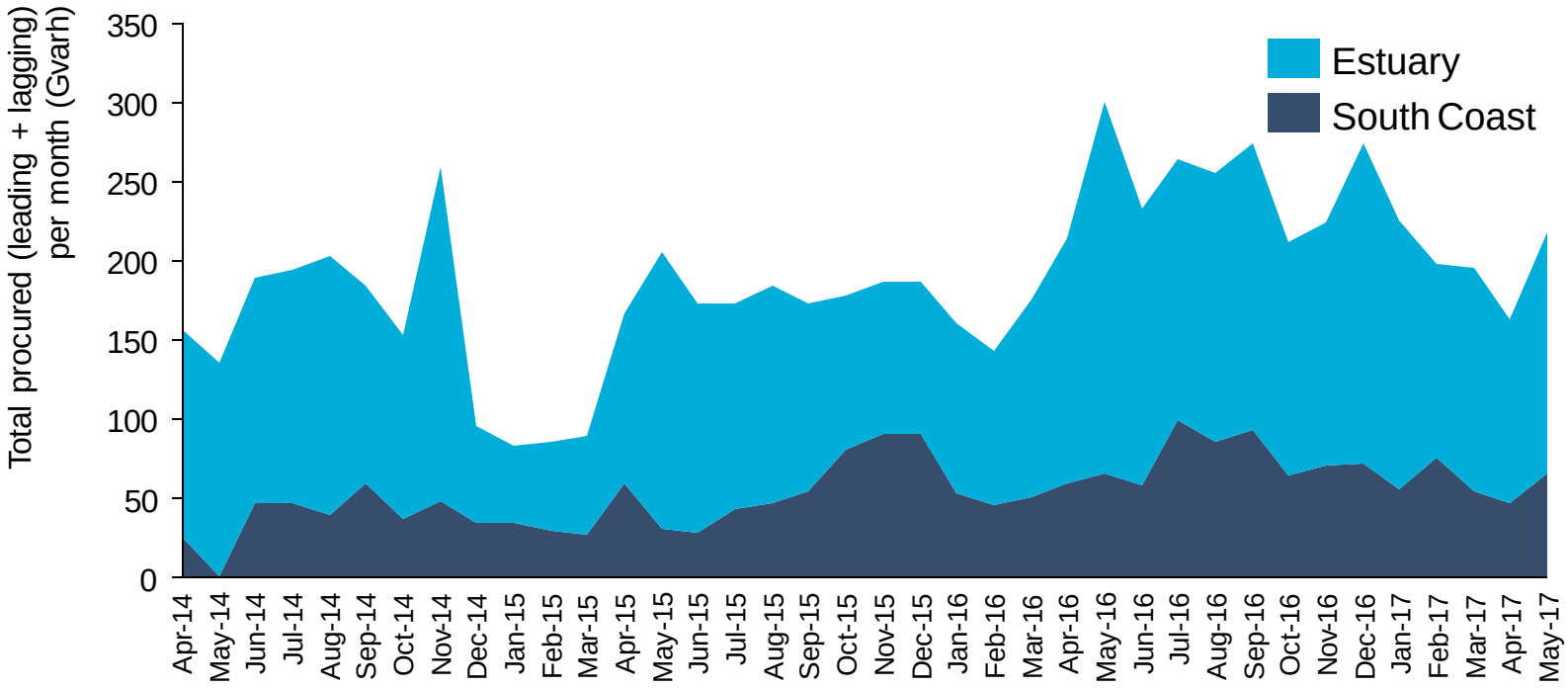
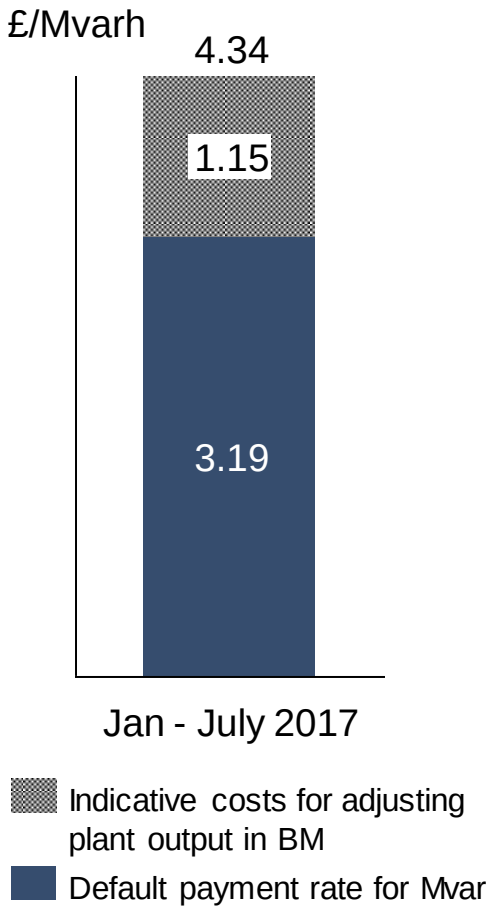
# Historical volumes of reactive power

- Historical volumes of reactive power that National Grid has procured in the region over the past three years have ranged between under 100 to 300Gvarh per month



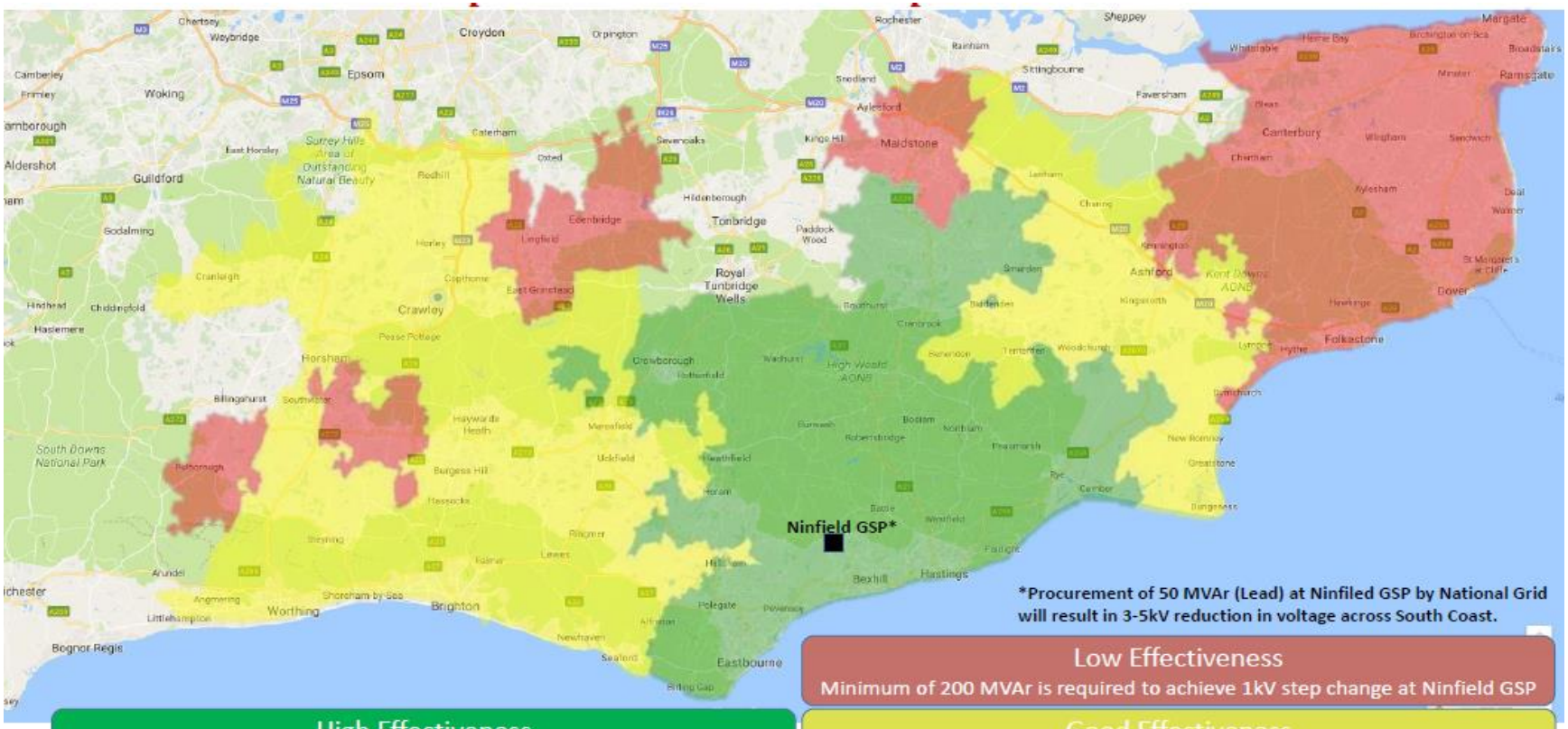
# Historic value of reactive power

- The current cost to National Grid of procuring reactive power, comprises:
  - The default payment rate (i.e. £/Mvarh)
  - Costs incurred in the Balancing Mechanism in order to access Mvars, including
    - Positioning cost (i.e. £/MWh)
    - Negative reserve creation cost (i.e. £/MWh)
- The default payment rate usually represents the minimum cost to National Grid, while the other costs are additional and sometimes incurred
- Note that this is intended to give an indicative range of the current value of 1 Mvarh. Power Potential will be a competitive procurement mechanism where achieved prices could differ from this value.



# Reactive Power Heatmaps

- Heatmaps will be published to indicate how effective certain sites will be at meeting Reactive Power requirements in different areas
- The value function used to create these heatmaps will also be used in the assessment of DERs' bids



# Next steps

- Once you're comfortable with the services:
  - In conjunction with your relevant colleagues, determine the capability and changes (if any) you would need to make to your generation plant
  - Decide which service(s) you would be able to offer
  - In conjunction with your commercial team, assess if taking part in the trial will be cost effective
  - If you have decided you want to participate or have any questions, please contact us to discuss
- Next steps for the project:
  - Continue to engage with interested parties – one-to-one, webinars, electronic updates
  - Further development the DER Management System
  - Develop and refine commercial arrangements – contracting, prequalification/testing, settlement methodology

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# Thank you for listening

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