

**Ørsted**

# Flexibility options

## A user's guide



# Introduction

As the UK's energy infrastructure evolves, energy flexibility will help to make the energy system more stable, cost effective – and create new revenue for business. With increased innovation in the field, a range of new schemes have been introduced, designed to make it easier for more businesses to get involved.

This quick-fire guide to the flexibility market gives a high-level overview of each scheme, so you can find one that best suits your business.

# Cost reduction

Market Price Optimisation and Non-Energy Cost Reduction solutions are ideal for businesses that are new to flexibility, as they are straightforward to implement and risk-free.

# Market Price Optimisation

## **In brief**

Managing demand within-day to minimise exposure to high half-hourly market prices.

## **Who runs it?**

Market Price Optimisation isn't a 'scheme' as such, but by adjusting consumption when wholesale market prices are higher or lower, businesses can reduce costs or generate revenue. Suppliers can offer different contract structures within a flexible purchasing arrangement that enable customers to capture the total value available.

## **How is revenue generated?**

By shifting consumption and/or production away from peak price periods within the day, businesses can reduce energy costs. Similarly, exporting electricity when wholesale prices are higher provides an opportunity to earn revenue.

## **How do I get involved?**

Firstly, the electricity contract structure should be reviewed with the supplier to ensure that the full export benefit can be realised within the terms. Then, businesses must identify where flexibility exists on-site and shift

consumption/production away from or into peak price periods. Ørsted has developed two software tools that enable businesses to optimise consumption against market prices on a half-hourly basis. Energy Vision and Site Optimisation provide optimised day ahead consumption/production and equipment operating profiles against a prediction of the half-hourly prices, taking into account site requirements and customer flexibility.

## **Are there any restrictions?**

Businesses must have a flexible electricity contract in place that enables them to pass through the day ahead or within day market price value. If not, an appropriate agreement with the supplier should be put in place, enabling the business to capitalise on the value available via Market Price Optimisation.

## **Who is it suitable for?**

Businesses with the ability to adjust consumption or on-site production at different times. Businesses that are willing to be exposed to market prices in order to reduce their energy costs each month.

# Non-energy cost reduction

## In brief

Reducing demand during peak periods, in order to reduce transmission and distribution costs.

## Who runs it?

This isn't a scheme as such, but energy suppliers may be able to support businesses in identifying peak distribution periods and in forecasting the timing of likely Triad periods, which are used to calculate transmission costs.

## How is revenue generated?

Revenue is not generated, but by reducing consumption during peak periods, businesses can reduce transmission and distribution costs, and the savings can be substantial.

## How do I get involved?

Transmission charges are based on business consumption during the three half-hour periods of highest consumption during the winter period, known as Triads. Some suppliers provide 'Triad warnings', helping businesses to anticipate when the peak periods may occur. In March, i.e. after the peak November – February winter

period, National Grid announces the three actual Triad periods and business' transmission charges are calculated accordingly.

Distribution charges vary throughout the day to reflect periods of system stress. Distribution Network Operators (DNOs) publish green, amber, red and sometimes super red bandings for their regions. Consuming electricity within red and super red periods is more expensive than consuming within green periods, therefore by shifting consumption to avoid the most expensive times businesses stand to make substantial savings on their distribution charges. Distribution charges and bandings vary by region, and businesses are able to access the individual charges for their particular site(s) directly from their respective DNO.

## Are there any restrictions?

There are no restrictions.

## Who is it suitable for?

Anyone wishing to try load management to reduce non-energy costs, and without the risk of penalty.



Non-energy cost reduction involves reducing demand during peak periods, in order to reduce transmission and distribution costs.

# Reserve schemes

Reserve schemes comprise individual agreements with businesses that enable volume to be 'called upon' when needed, in order to help balance the electricity system. Each scheme has a different minimum volume requirement, response time and reward. There are several new schemes so it's worth taking a look at the options.

## Renewable Balancing Reserve (RBR)

### **In brief**

A commitment-free scheme, available year-round, where participants are invited to turn down consumption or increase on-site generation to help reduce imbalance costs.

### **Who runs it?**

Ørsted.

### **How is revenue generated?**

Participants select their desired price per MWh via Ørsted's portal. When imbalance costs are high, customers are invited to reduce consumption, or generate on-site to counteract any imbalance costs. Imbalance savings are then shared with the customer, based on actual volume delivered at the customer's chosen price.

### **How do I get involved?**

Once registered, customers receive an alert when there is an opportunity to participate. This will include the exact times and the value available (which is driven by imbalance costs).

Customers notify Ørsted of their desired strike price and the times at which they are able to participate. Where an appropriate opportunity arises, Ørsted notifies the customer to determine whether they wish to take part. If so, the customer proceeds at the times agreed. An e-mail is generated following the activation by way of confirmation. The change in consumption is measured via half-hourly meters and the payment adjustment is made in the customer's invoice for the following month.

### **Are there any restrictions?**

RBR is only available to Ørsted customers. There are no minimum volume requirements, no risk of penalties for non-participation, and RBR is available all year-round.

### **Who is it suitable for?**

Businesses that consume a large amount of electricity, including those trying Demand Side Response (DSR) for the first time.

# The Capacity Market (CM)

## In brief

The Capacity Market forms part of Electricity Market Reform (EMR), and essentially ensures that there is always sufficient capacity available during peak demand periods. Capacity Market participants are paid per MW on a monthly basis and volume must be available to be 'called upon' by National Grid at any time during the contracted period. Penalties are levied against those with capacity contracts if businesses fail to deliver volume at the times it is required. There are three auctions, each procuring volume for different time horizons. These are known as the T-4 (four years ahead), T-1 (a year ahead) and Transitional Arrangements auctions.

## Who runs it?

National Grid.

## How is revenue generated?

National Grid operates an auction to procure the additional capacity needed in 1 or 4 years' time from the date of the auction. Participants receive an availability fee irrespective of whether they are 'called upon' to deliver capacity.

However, financial penalties will be incurred if their businesses do not deliver when required.

## The three options

- a) T-4 This auction is held annually to secure capacity to be delivered in 4 years' time. Businesses can participate in the main auction, with a minimum volume of 2MW.
- b) T-1 This auction allows National Grid to buy additional capacity if needed, for example to fine tune its capacity position and enable secondary trading.
- c) Transitional Arrangements This is a more immediate auction to secure DSR capacity for the winter periods in 2016/17 and 2017/18. If businesses choose to take part in Transitional Arrangements, they are then precluded from taking part in the main T-4 process until 2021. There will also be an option for DSR providers in transitional arrangements to offer a 'time-banded' service; meaning they will only be called upon during predetermined windows.

## How do I get involved?

Businesses should ensure that equipment meets the qualification requirements set out within the Capacity Market documentation for the auction in which they wish to participate. A tender should then be prepared for the auction containing the organisation's desired price. Businesses can participate either by: 1) turning down demand from the grid, 2) exporting additional electricity to the grid.

## Are there any restrictions?

The minimum volume for the main auction is 2MW (500kW for Transitional Arrangements for 2017/18) and participants are expected to make their volume available throughout the contracted period. DSR contracts are restricted to one year periods.

In addition, there are financial penalties for organisations that don't deliver volume when it is needed. These are calculated on a £/MWh basis and are equivalent to 1/24th of the providers' annual income from the Capacity Market. In the transitional auction businesses must provide bid bonds up front for unproven DSR.

## Who is it suitable for?

The scheme is suitable for a wide range of organisations. This includes small generators (such as CHP and standby diesel), businesses using equipment that can be turned down or off (such as HVAC, refrigeration, pumping and water treatment) and battery storage, to include recharge facilities or electric vehicle charging systems.

# Short Term Operating Reserve (STOR)

## In brief

In operation for over a decade, STOR represents committed reserve in the form of either increased generation or lower demand. National Grid can 'call upon' this reserve if actual demand is higher than expected or actual generation is lower than expected. It is especially useful if there are unplanned outages at power plants.

## Who runs it?

National Grid.

## How is revenue generated?

National Grid pays both an availability fee and utilisation fee to STOR participants, with both payments calculated at a £/MWh rate. Businesses can participate during 'standard' availability windows and there are also 'optional' availability windows. In addition to the standard windows, participants can indicate their availability each day within these 'optional' windows.

This enables National Grid to use that volume at the optional energy utilisation price.

Note that businesses are only paid utilisation fees during the optional windows, availability fees do not apply.

## How do I get involved?

Framework terms must be established with National Grid prior to submitting a tender. If the tender is successful, National Grid will commission and install a bespoke monitoring and despatch system. This is known as STOR despatch (formerly known as Standing Reserve Despatch or SRD). It will be installed at the participant's main office and communicates directly with National Grid's control room, either automatically or through one of the manual options.

## Are there any restrictions?

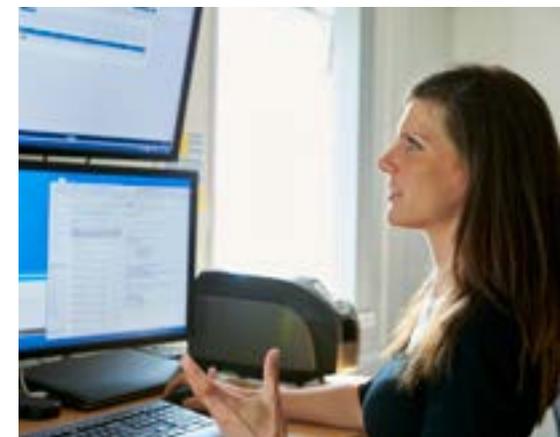
Participants must have a minimum 3MW of generation or steady demand reduction available, (this could be from more than one site and can be aggregated).

The full MW requirement must be delivered within 240 minutes or less from the point of National Grid's

instruction, and the full volume requirements must be delivered for a continuous period of no less than 2 hours once instructed. In the event that the aggregate availability within any financial year is less than 85%, a proportion of the Availability Payments paid by National Grid over the contracted term becomes repayable. For every percent below 85%, 1% is reconciled. For example, if availability was 80%, 5% would be payable to National Grid.

## Who is it suitable for?

Businesses with sizeable load that can be turned on or off quickly, and with 100% confidence.



# Fast Reserve

## In brief

A way for National Grid to procure large chunks of reserve energy that can be delivered quickly.

## Who runs it?

National Grid.

## How is revenue generated?

Fast Reserve pays both an availability and utilisation fee.

## How do I get involved?

Organisations must undertake technical Pre-Qualification Assessments to ensure they can reliably participate before being invited to tender. Where a technical failure means that a company doesn't deliver its volume when required, National Grid is

able to terminate the arrangement, meaning that participants will no longer be able to earn revenue.

## Are there any restrictions?

A minimum 50MW volume requirement makes this scheme prohibitive for most, although the volume can be aggregated.

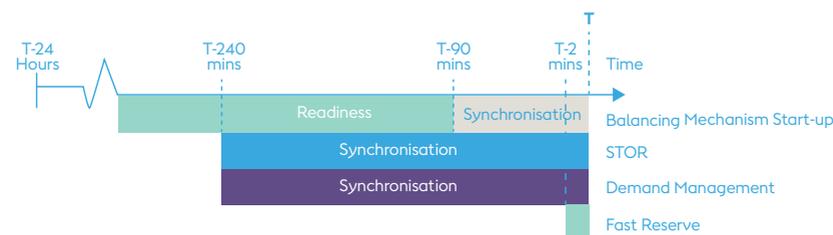
Participants must be able to start delivering volume within two minutes of instruction, and reach the minimum 50MW threshold within four minutes of instruction.

## Who is it suitable for?

Businesses that can dispatch large volumes of capacity quickly through processes or technologies that already have the technical capability in place.

# Demand Turn Up

## A typical reserve scheme process



## In brief

Introduced in 2016, Demand Turn Up offers a route to market for businesses with the flexibility to turn up (rather than turn down) demand, or reduce their embedded generation.

## Who runs it?

National Grid.

## How is revenue generated?

Demand Turn Up pays both an availability fee and utilisation fee.

## How do I get involved?

Volume will be 'called upon' at particular times.

During June, July and August 2016, this will comprise overnight (23:30 – 09:00) and 13:00 – 16:00 on weekends and bank holidays. During May and September 2016, this will comprise overnight (23:30 – 08:30) and 13:00 – 16:00 on weekends and bank holidays. Response time must be within 5 minutes of instruction and remain active for at least 30 minutes.

## Are there any restrictions?

There is a minimum volume requirement of 1MW and businesses must be able to respond within 5 minutes.

## Who is it suitable for?

Businesses with the flexibility to turn up demand outside of normal working hours.

# Frequency balancing

National Grid also uses the flexibility in business consumption to maintain the correct frequency in the electricity system. These schemes require fast response times (within a couple of seconds), meaning that action is automated to ensure sufficient speed of response.

Frequency (Hz)



Frequency varies on a constant basis and must be balanced accordingly. The chart shows a typical hour.

## Firm Frequency Response (FFR)

### In brief

Frequently operated via aggregators, this service is tendered electronically each month as a balancing service.

### Who runs it?

National Grid.

### How is revenue generated?

National Grid pays availability fees to 'hold' the agreed volume, and utilisation fees, which are paid when volume is 'called upon'.

### How do I get involved?

FFR is a service that requires immediacy, so is best suited to demand that can be switched up and down remotely, often linking to Building Management Systems. Participants must be able to either provide volume within 10 seconds of a frequency event and sustain it for 20 seconds, or respond within 30 seconds and sustain for 30 minutes.

Prior to participation, assets must be tested and framework terms agreed with National Grid. Once this has taken place, a tender can be submitted. If the tender is accepted, service provision can start.

### Are there any restrictions?

There is a minimum volume commitment of 10MW, which must be provided within 30 seconds of a frequency event. This volume can be aggregated. Participants must fit frequency response equipment to enable the service to respond quickly and meet immediate balancing needs.

### Who is it suitable for?

Businesses with volume that can be automatically switched down for short periods of time, very quickly.

## **Get in touch**

0800 056 8123

[energyservices@orsted.co.uk](mailto:energyservices@orsted.co.uk)

[orstedbusiness.co.uk](http://orstedbusiness.co.uk)

Registered office: Orsted Sales (UK) Limited, 5 Howick Place, London, SW1P 1WG  
Registered in England number: 2405635 VAT registration number: 129909382

© Orsted Sales (UK) Limited. 2017. All rights reserved. No parts of this publication may be reproduced by any means without prior written permission from Orsted Sales (UK) Limited. All graphics in this document are for illustrative purposes. Dates and figures are based on available information and are subject to change.