

**National Grid Electricity Transmission plc**

**Overview of Indexation Principles**

**For**

**Balancing Services**

Issue 1.0: Published 24 December 2008

## Contents

### 1. Introduction

1.1 Purpose of Balancing Services Indexation Principles Document.....	2
1.2 Nature of information provided in this report.....	3
1.3 Balancing Services .....	3

### 2. Principles of indexation methodologies agreed for each Balancing Service

2.1 Short Term Operating Reserve (STOR), Fast Reserve (Tendered), Firm Frequency Response, Black Start.....	4
2.2 Constraint Management Service.....	5

### 3. Indices

3.1 List of indices applied.....	5
----------------------------------	---

### APPENDICES – Applicable Indexation Methodologies

<b>Appendix A</b> - Short Term Operating Reserve (STOR), Fast Reserve (Tendered), Firm Frequency Response, Black Start.....	8
<b>Appendix B</b> - Constraint Management Service.....	11

## Indexation Principles Document

### 1. Introduction

National Grid procures Balancing Services to operate the transmission system in an efficient, economic and co-ordinated manner. A number of statements and market reports pertaining to the procurement and use of Balancing Services are already published on our industry information web site.

<http://www.nationalgrid.com/uk/Electricity/Balancing/services/>

National Grid has undertaken to publish this Balancing Services Indexation Principles Document to introduce flexibility and transparency in how National Grid bi-laterally agrees specific indexation methodologies for the payment of Balancing Services.

During several Balancing Services Consultations in 2008, National Grid tabled proposals for the optional application of Indexation to prices for tendered services – industry feedback received was in favour of this option, however, due to the varying characteristics of Balancing Services provision it was difficult to introduce a single methodology that would suit all existing and new service providers.

#### 1.1 Purpose of Balancing Services Indexation Principles Document

The purpose of this Indexation Principles Document is to:

- Outline the purpose of indexation in Balancing Services;
- The principles on the use of indexation for each Balancing Service;
- Publish the detail of indexation methodologies that National Grid are prepared to use.

This document will act as a transparent mechanism through which National Grid will list all indexation methodologies that National Grid has, and is prepared to use, in relation to Balancing Services. This document will be published on the National Grid website and will be in the public domain for all potential providers to observe. Should an interested party wish to choose an existing indexation methodology or propose a new one, they can approach National Grid to enter into discussions. Once an indexation methodology is agreed the indexation methodology will form part of the specific Balancing Services Framework Agreement Special Conditions or Commercial Services Agreement. If the bi-laterally agreed indexation methodology differs in any way from indexation methodologies already published in the Indexation Principles Document it will be added to the existing Indexation Principles Document and the document re-published on the National Grid website to replace the existing document.

The introduction of indexation is designed to remove some of the risks faced by providers of the services when submitting longer term tenders for assessment, specifically for utilisation where the provider has limited options to hedge the risk as it is unknown when National Grid may utilise the service.

Providers would have the option to select indexation or alternatively retain a fixed price tender for assessment. It should be noted that National Grid will assess the risk of any proposed indexation as part of the assessment of a tender.

Indexation may be applied to a single tender price parameter or several price parameters, depending on the service.

### **1.2 Nature of information provided in this report**

The information provided in this report is representative of indexation methodologies currently or previously agreed for the provision of Balancing Services. Each methodology has been amended to remove commercially sensitive information as the intention of this document is to publish the principles that National Grid is accepting for indexation.

This document is designed not to be an exhaustive list but as a document that evolves as providers approach and agree indexation methodologies for the provision of services prior to their tender submissions.

Each time a new or amended methodology is agreed, National Grid will within fifteen business days re-publish this document on its website with the updated set of agreed Indexation Methodologies.

### **1.3 Balancing Services**

The Balancing Services National Grid procures, either via market arrangements or bilateral contracts where indexation has been agreed and published as part of this document, are:

- Short Term Operating Reserve (STOR)
- Fast Reserve
- Firm Frequency Response
- Black Start
- Constraint Management Service

It is important to note that Balancing Services are procured from both Balancing Mechanism and Non Balancing Mechanism Parties.

For further information regarding the type of providers of Balancing Services please consult the Procurement guidelines on the National Grid website;

<http://www.nationalgrid.com/uk/Electricity/Balancing/pg/>

Should an interested provider wish to choose an existing indexation methodology or propose amendments or a new methodology they can approach National Grid to enter into discussions based on their indexation preference. Please contact your nominated National Grid Account Manager directly or for new providers please contact the lead Account Manager as published for the respective Balancing Service on our website;

<http://www.nationalgrid.com/uk/Electricity/Balancing/services/>

## **2. Principles of indexation methodologies agreed for each Balancing Service**

In order to provide guidelines for providers proposing indexation methodologies a number of principles need to be taken into consideration. Indexation will generally be applied to contracts of 12 months or more in duration. This principle aligns with feedback received from industry participants during service review workshops. The general view is that short term tendered services enable reasonable analysis and risk can be calculated and incorporated into tender submissions, therefore, there appears little value in introducing indexation for tendered services less than 12 months.

There are certain principles that are based on the practicality of application – generally indexation methodologies can be calculated using daily, quarterly, monthly, yearly price indices or averages of various key points in the index cycle. However there are limitations on where the actual application of indexation occurs. This is due in main to the ability of our operational and settlement systems to account for changing price parameters. Therefore the general principle is to apply price adjustments on an annual basis. There are some instances where this can be agreed otherwise, such as the Constraint Management Service, as the number of participants and nature of the contracts are such to replicate the adjustments in the Balancing Mechanism and as such offline calculations can take place to facilitate a more frequent application. Proposed methodologies can suggest a range of indices for reference however the likelihood of acceptance is based on several factors as to whether or not an index is suitable such as;

- Robustness of index
- Our familiarity and expertise
- Appropriateness of index to assets
- Scope of index

If you are considering proposing an indexation methodology please consult your account manager (details published in relation to each balancing service on our website) in the first instance to discuss the general principles on which the methodology can be based.

## **2.1 Short Term Operating Reserve (STOR), Fast Reserve (Tendered), Firm Frequency Response and Black Start**

The principles of the indexation methodology for the above services are generally set for longer terms contracted periods – 12 months or greater. The main driver behind these principles are the contractual framework and practicality of application, no option for indexation is present for less than 12 months as shorter term tenders can be submitted (seasonal/monthly) for the majority of services and risk can be priced appropriately. Black Start contracts are typically long term in nature and are not subject to seasonal variations or underlying market drivers, therefore annual indexation is appropriate.

In addition, the application of price changes on a monthly or seasonal basis cannot be easily applied and updated through our control room and settlement systems. Application on a more frequent basis would limit our ability to manage the system efficiently and economically as many automated systems would require a manual work around in order to facilitate within year.

The index principle applied to the availability parameter is the Retail Price Index (RPI) – this element is designed to cover costs associated with making these services available, for example labour costs and maintenance. Utilisation costs can vary considerably dependant upon each provider's provision of the service. Typically the largest factor a provider will consider is the cost of fuel or lost opportunity in providing a balancing service. Therefore the general principle for indexation is to apply indexation indices linked to fuel price – this in turn minimises the risks provider face when opting to tender for longer terms services. Equally a provider could opt for a methodology linked to RPI for Utilisation.

Please refer to Appendix A where specific indexation methodology terms are referenced in relation to services where indexation has been previously agreed.

## 2.2 Constraint Management Service

The Constraint Management Service (CMS) is designed to manage BM price risk during constraints. In exchange for an availability payment, BM prices are required to be within set limits. The CMS is targeted at sites within constrained zones, as this is where the cost risk for the System Operator lies. The CMS caters for both import and export constraints and can be provided by generation and demand sites. The indexation methodology applied is based on principles on a provider being a power station and the principles are specifically designed to facilitate this type of provider.

The CMS allows for either fixed price caps/collars or index linked caps/collars for half-hourly Balancing Mechanism prices, which cater for variations in the cost of fuel and CO<sub>2</sub> allowances and feature a tendered 'price margin'. The ability to apply such an index on a monthly basis is specific to this type of short term service and is driven primarily by the limited number of providers that tender for this service and the duration of the service – as such it is possible to facilitate a manual work around to enable price changes to be applied in shorted timescales than for the reserve and frequency response services.

Please refer to Appendix A where specific indexation methodology terms are referenced in relation to the CMS service where indexation has been previously agreed.

## 3. Indices

Below is a non exhaustive list of indices that are acceptable for indexation methodologies published within this document;

### 3.1 List of indices and source of indices

Price Application	Type of indexation	Historic/ Forward	Title of index	Location
Availability	RPI	Historic application	Monthly Office for National Statistics "Focus On Consumer Price Indices"	<a href="http://www.statistics.gov.uk/statbase/Product.asp?vlnk=867">http://www.statistics.gov.uk/statbase/Product.asp?vlnk=867</a>
Utilisation	Fuel (Gas Oil)	Historic application	Quarterly energy price tables - "Prices of fuels purchased by manufacturing industry "	<a href="http://www.berr.gov.uk/whatwedo/energy/statistics/publications/prices/index.html">http://www.berr.gov.uk/whatwedo/energy/statistics/publications/prices/index.html</a>
Utilisation	Fuel (Gas)	Historic application	System Average Price (p/therm) published by APX Gas Limited on the Enex system prevailing at Gate Closure	<a href="http://www.apxgroup.com/index.php?id=61">http://www.apxgroup.com/index.php?id=61</a>
Utilisation	Fuel (Coal)	Historic application	Price of coal (US \$/tonne) inclusive of freight and insurance delivered to the large North West European ports (eg Amsterdam,	<a href="http://www.platts.com/Coal/Resources/">http://www.platts.com/Coal/Resources/</a>

			Rotterdam or Antwerp) published on a weekly basis by Platts	
Utilisation	Fuel (Oil)	Historic application	Price of oil (US \$/barrel) published daily by ICE on the BWAVE index	<a href="https://www.theice.com/oil_indices.html">https://www.theice.com/oil_indices.html</a>
Utilisation	Emissions (Carbon)	Historic application	EXC CFI futures Contract Emissions Index as published on the European Climate Exchange website.	<a href="http://www.europeanclimateexchange.com">www.europeanclimateexchange.com</a>

# **APPENDICES**

**Indexation methodologies that National Grid are prepared to use;**

## Appendix A

### Short Term Operating Reserve (STOR), Fast Reserve (Tendered), Firm Frequency Response and Black Start

The following methodology sets out indexation based on RPI applicable to the Availability Price and a fuel based indexation methodology applicable to the Utilisation Price.

#### Indexation Formulae example ([fuel source to be entered] Index for Utilisation base fuel)

##### Availability Price

The **Availability Prices** specified in Schedule [x], Section [x], Part [x] are specified at April 2008 value and will be adjusted annually (commencing on 1st April 2010) to take account of general price inflation. The index used will be the Retail Prices Index (RPI) with 1987 = 100 base. For the purposes of this Part IV, a financial year shall be a 12 month period ending 31st March.

The source of the RPI index is to be [Please see section 4 of this document for a non exhaustive list of reference indices]

The **Availability Price** will therefore be increased (or reduced as appropriate) for the period April 2010 to March 2011 by the following factor:-

$$\frac{RPI_2}{RPI_1}$$

Where

$RPI_2$  is the arithmetic monthly average of RPI for the financial year 2009/2010

$RPI_1$  is the arithmetic monthly average of RPI for the financial year 2008/2009

The **Availability Price** will then be increased (or reduced as appropriate) for the period April 2011 to March 2012 by the following factor:-

$$\frac{RPI_3}{RPI_1}$$

Where

$RPI^3$  is the arithmetic monthly average of RPI for the financial year 2010/2011

$RPI_1$  is the arithmetic monthly average of RPI for the financial year 2008/2009

In subsequent years indexation will continue in accordance with the above, with always the numerator of the factor representing the arithmetic monthly average of RPI for the financial year preceding the period

in question and the denominator of the factor being the arithmetic monthly average of RPI for the financial year 2008/2009.

In the event that RPI ceases to be published or is not published in respect of any relevant month or it is not practicable to use RPI because of a change in the method of compilation or some other reason, indexation for the purpose of this Part IV shall be calculated by **National Grid** using an index agreed by the **Parties** with a view to determining the relevant price after indexation that would be closest to the relevant price after indexation if RPI had continued to be available.

**Exercise Prices – [fuel source to be entered]**

The [fuel source to be entered] exercise prices being the **Standard Exercise Price** and the prices for **Reserve** ([fuel source to be entered] only) in Schedule [?], Section [?], Part [?] are specified at April 2008 rates and will be adjusted annually (commencing on 1st April 2010) to take account of fuel price inflation. The index used will be the [fuel source to be entered] Index [Please see section 4 of this document for a non exhaustive list of reference indices] (GI).

The Source of the [fuel source to be entered] Index [Please see section 4 of this document for a non exhaustive list of reference indices]

The [fuel source to be entered] exercise prices will therefore be increased (or reduced as appropriate) for the period April 2010 to March 2011 by the following factor:-

$$\frac{GI_2}{GI_1}$$

Where

GI<sub>2</sub> is the arithmetic average of GI for the 4 quarters in the immediately preceding calendar year

GI<sub>1</sub> is the arithmetic average of GI for the 4 quarters in the calendar year 2008

The [fuel source to be entered] exercise prices will then be increased (or reduced as appropriate) for the period April 2010 to March 2011 by the following factor:-

$$\frac{GI_3}{GI_1}$$

Where

GI<sub>3</sub> is the arithmetic average of GI for the 4 quarters in the immediately preceding calendar year

GI<sub>1</sub> is the arithmetic average of GI for the 4 quarters in the calendar year 2008

In subsequent years indexation will continue in accordance with the above, with always the numerator of the factor representing the arithmetic average of GI for the 4 quarters in the immediately preceding calendar year and the denominator of the factor being the arithmetic average of GI for the 4 quarters in the calendar year 2008.

In the event that any changes in [*fuel source to be entered*] costs, directly resulting from a change in taxes, are not fully reflected in the [Please see section 4 of this document for a non exhaustive list of reference indices] index, the **Parties** shall agree an appropriate adjustment to the [*fuel source to be entered*] exercise prices (such agreement not to be unreasonably withheld or delayed).

In the event that GI ceases to be published or is not published in respect of any relevant quarter or it is not practicable to use GI because of a change in the method or compilation or some other reason, indexation for the purpose of this Part IV shall be calculated by **National Grid** using an index agreed between the **Parties** with a view to determining the relevant prices after indexation that would be closest to the relevant prices after indexation if GI had continued to be available.

## Appendix B

### Constraint Management Service

Below is an extract from the Standard Contract Constraint Management Service Terms which details the payment methodology, please refer to the following document for the full set of terms;

[http://www.nationalgrid.com/NR/ronlyres/FD231DD4-F1F0-47DA-AF5A-87E4551DF30B/28301/CMS\\_Standard\\_Terms\\_v2a1.pdf](http://www.nationalgrid.com/NR/ronlyres/FD231DD4-F1F0-47DA-AF5A-87E4551DF30B/28301/CMS_Standard_Terms_v2a1.pdf)

#### Part I

#### Capped Offer Price

Where Sub-Clause 8.7.2(ii) applies, the **Capped Offer Price** ( $COP_{ij}$ ) for each **Constraint Management Settlement Period** shall be calculated in accordance with the following formula (using notation as defined in Part VI of this Schedule J, Section 2):-

$$COP_{ij} = \left[ \frac{FP_{ij}}{FE_i} \right] + CP_j + OC$$

#### Part II

#### Collared Bid Price

Where Sub-Clause 8.7.2(ii) applies, the **Collared Bid Price** ( $CBP_{ij}$ ) for each **Constraint Management Settlement Period** shall be calculated in accordance with the following formula (using notation as defined in Part VI of this Schedule J, Section 2):-

$$CBP_{ij} = \left[ \frac{FP_{ij}}{FE_i} \right] + CP_j - BC$$

#### Part VI

#### Notation

In Parts I to V inclusive of this Schedule J, Section 2:-

**For gas plant insert:-**

$[FP_{ij}] =$  the fuel price for **Constraint Management BM Unit  $i$** , in **Constraint Management Settlement Period  $j$** , which shall be determined as follows:-

$$FP_{ij} = \left( \frac{SAP}{29.3071} \right) \times 10$$

*SAP* = the System Average Price (p/therm) published by APX Gas Limited on the Enex system prevailing at **Gate Closure** in respect of **Constraint Management Settlement Period *j***

**For coal plant insert:-**

*[FP<sub>ij</sub>* = the fuel price for **Constraint Management BM Unit *i***, in **Constraint Management Settlement Period *j***, which shall be determined as follows:-

$$FP_{ij} = \left( \frac{cifARA}{6.67} \right) \times E (\$ \text{ to } \pounds)$$

*cifARA* = is the price of coal (US \$/tonne) inclusive of freight and insurance delivered to the large North West European ports (eg Amsterdam, Rotterdam or Antwerp) published on a weekly basis by Platts applicable during **Constraint Management Settlement Period *j***

*E* (\$ to £) = the daily US \$ to £ interbank exchange rate published on [www.oanda.com/](http://www.oanda.com/)

**For oil plant insert:-**

*[FP<sub>ij</sub>* = the fuel price for **Contracted BM Unit *i***, in **Constraint Management Settlement Period *j***, which shall be determined as follows:-

$$FP_{ij} = \left( \frac{ICEBrent}{1.70} \right) \times E (\$ \text{ to } \pounds)$$

*ICEBrent* = is the price of oil (US \$/barrel) published daily by ICE on the BWAVE index applicable during **Constraint Management Settlement Period *j***

*E* (\$ to £) = daily US \$ to £ interbank exchange rate published on [www.oanda.com/](http://www.oanda.com/)

*FE<sub>ij</sub>* = the **Fuel Efficiency Factor** for **Contracted BM Unit *i***, in **Constraint Management Settlement Period *j***

$$CP_j = EI_j \times EF \times E (\pounds \text{ to } \pounds)$$

where:

*EI<sub>j</sub>* = the daily EXC CFI futures Contract Emissions Index in **Constraint Management Settlement Period *j***, as published on the European Climate Exchange website, [www.europeanclimateexchange.com](http://www.europeanclimateexchange.com)

$E(\text{€ to £})$  = daily € to £ interbank exchange rate published on [www.oanda.com](http://www.oanda.com)

$EF$  = the emissions factor for the **Fuel Type** of **Contracted BM Unit  $i$** , determined as follows:-

Gas: 0.19 tonne CO<sup>2</sup>/kWh

Coal: 0.30 tonne CO<sup>2</sup>/kWh

Heavy Fuel Oil: 0.26 tonne CO<sup>2</sup>/kWh

Gasoil: 0.25 tonne CO<sup>2</sup>/kWh

$OC$  = the **Offer Index Margin**

$BC$  = the **Bid Index Margin**