

**National Grid Electricity Transmission plc**

**Overview of Indexation Principles**

**For**

**Balancing Services**

Issue 2.0: Published July 2010

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## 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.

This document was initially published after 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. This Issue 2.0 reflects the additional indexation principles that have been agreed through bilateral negotiation with service providers as part of their Framework Agreement.

#### 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;
- Outline the principles on the use of indexation for each Balancing Service;
- Publish the detail of indexation methodologies that National Grid are currently 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 principle 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 Balancing Services when submitting longer term tenders for assessment, specifically for utilisation where the provider has limited options to hedge the risk in circumstances where it might be unknown as to how frequently National Grid may utilise a 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 which contains new principles, National Grid will re-publish this document on its website with the updated set of agreed Indexation principles.

### **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 (BM) 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. In this instance, please contact your nominated 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. Where the term of a STOR tender is five years or more, long-term providers have the opportunity to agree within year (seasonal) indexation.

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 term contracted periods – 12 months or greater. The main drivers 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 for all tenders 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. A manual work around has been developed to allow seasonal indexation however, given volumes which can be handled manually, only long-term tenders of five years or more in duration will be considered for seasonal indexation.

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 that a provider will face when opting to tender for longer terms services. Equally a provider could opt for a methodology linked to RPI for Utilisation or a combination of fuel price and RPI.

Please refer to Appendix A where specific indexation methodology terms are referenced in relation to services where indexation has been previously agreed. This Appendix includes a standard indexation methodology and lists optional additions and changes to this methodology which may be relevant for some providers.

## **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 of 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;

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/tsdtables1.asp?vlnk=mm23">http://www.statistics.gov.uk/statbase/tsdtables1.asp?vlnk=mm23</a>
Utilisation	Fuel (Gas Oil)	Historic application	Quarterly energy price tables - "Prices of fuels purchased by manufacturing industry "  Table QEP 3.1.2	<a href="http://www.decc.gov.uk/en/content/cms/statistics/source/prices/prices.aspx">http://www.decc.gov.uk/en/content/cms/statistics/source/prices/prices.aspx</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, Rotterdam or Antwerp) published on a weekly basis by Platts	<a href="http://www.platts.com/Coal/Resources/">http://www.platts.com/Coal/Resources/</a>
Utilisation	Fuel (Oil)	Historic application	Price of oil (US \$/barrel) published daily by ICE on the BWAVE index	<a href="https://www.theice.com">https://www.theice.com</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>
Utilisation	Fuel Duty	Historic application	HM Customs and Revenue Hydrocarbon oil duty for marked Gasoil	<a href="http://customs.hmrc.gov.uk/channelsPortalWebApp/channelPortalWebApp.portal?_nfpb=true&amp;_pageLabel=pageExcise_RatesCodesTools&amp;columns=1&amp;id=EXCISE_OILRATES">http://customs.hmrc.gov.uk/channelsPortalWebApp/channelPortalWebApp.portal?_nfpb=true&amp;_pageLabel=pageExcise_RatesCodesTools&amp;columns=1&amp;id=EXCISE_OILRATES</a>
Utilisation	Climate Change Levy		Climate Change Levy for supply of Gasoil to electricity generating stations	<a href="http://customs.hmrc.gov.uk/channelsPortalWebApp/channelPortalWebApp.portal?_nfpb=true&amp;_pageLabel=pageExcise_InfoGuides&amp;propertyType=document&amp;id=HMCE_CL_001174">http://customs.hmrc.gov.uk/channelsPortalWebApp/channelPortalWebApp.portal?_nfpb=true&amp;_pageLabel=pageExcise_InfoGuides&amp;propertyType=document&amp;id=HMCE_CL_001174</a>

# **APPENDICES**

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

## Appendix A

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

#### Section One – Standard Indexation Methodology

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

##### Availability Price

The **Availability Prices** specified in Schedule [x], Section [x], Part [x] are specified at April [2010] value and will be adjusted annually (commencing on 1st April [2011]) 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 3 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 [2011] to March [2012] by the following factor:-

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

Where

$RPI_2$  is the arithmetic monthly average of RPI for the calendar year [2010]

$RPI_1$  is the arithmetic monthly average of RPI for the calendar year [2009]

The **Availability Price** will then be increased (or reduced as appropriate) for the period April [2012] to March [2013] by the following factor:-

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

Where

$RPI^3$  is the arithmetic monthly average of RPI for the calendar year [2011]

$RPI_1$  is the arithmetic monthly average of RPI for the calendar year [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 calendar year preceding the

period in question and the denominator of the factor being the arithmetic monthly average of RPI for the calendar year [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 2010 rates and will be adjusted annually (commencing on 1st April [2011]) to take account of fuel price inflation. The index used will be the [fuel source to be entered] Index [Please see section 3 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 3 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 [2011] to March [2012] 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 [2009]

The [fuel source to be entered] exercise prices will then be increased (or reduced as appropriate) for the period April [2011] to March [2012] 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 [2009]

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 [2009].

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.

## Section Two – Additional Options

This section outlines additional principles outside of the standard methodology which have been included in some new service providers' indexation methodologies. The principles behind the indexation of availability payments have remained similar in new agreements, however the indexation of the exercise price has had a number of new options included and these are described below.

### Hybrid Indices

The exercise price may be split into different components. Each component may use a different index. An example of this is provided below:

The **Exercise Prices** forming part of the **Contract Price** are at April [2010] value and will be adjusted annually in the case of the **General Element, Fuel Element** (as defined below) (commencing on 1 April [2011]) to take account of fuel price inflation and the **3rd Element** (as defined below) (commencing on 1 April [2011]) to take account of [ ]. The **Exercise Price** for any year will be calculated as the aggregate of the **Fuel Element** the **General Element** and the **Carbon Element** each adjusted as follows:

1. [ ]% of the **relevant Exercise Price** [(“the **Fuel Element**”)] will be indexed seasonally in accordance with the indexation of the [**Fuel Element**] set out below; and
2. [ ]% of the **relevant Exercise Price** [(“the **General Element**”)] will be indexed annually by RPI, in accordance with the indexation methodology referenced for Availability Prices in Part I above as if Part I applied mutatis mutandis to the [**General Element**] and as if references to **Availability Prices** in Part 1 above were references to the [**General Element**]; and
3. [ ]% of the **relevant Exercise Price** [(“the **3rd Element**”)] will be indexed by a fixed [ ]% annually in annual steps on 1 April each year and compounded annually on that date as more particularly set out in the indexation of the [**3rd Element**] set out below

The fuel element would follow indexation similar to the exercise price in the basic methodology and the general element would follow indexation similar to the availability price in the basic methodology. The 3<sup>rd</sup> Element follows a new methodology an example for this is described below.

### 3rd Element

The relevant [3rd Element] will be adjusted on 1 April each year.

The relevant [3rd Element] of each **Exercise Price** will therefore be increased on 1 April [2011] by a factor of [ ] for the period 1 April [2011] to 31 March [2012]

The relevant [3rd Element] of each **Exercise Price** will then be further increased on 1 April [2012] by applying a further factor of [ ] to the relevant price as so adjusted on 1 April [2011] for the period 1 April [2012] to 31 March [2013]

In subsequent years indexation will continue in accordance with the above so that the relevant [3rd Element] is further increased on 1 April each year by applying a factor of [ ] to the relevant price as so adjusted on the previous 1 April.

### Seasonal Indexing

Where a component of the providers cost is likely to vary significantly within year, seasonal indexation may be appropriate. An example methodology for applying this can be found below.

The index used for the relevant **Exercise Price** will be [ ]

The relevant **Exercise Price** for each **Season** commencing on a date prior to 1 April [2011] shall not be adjusted.

For all **Seasons** commencing at any time on or after 1 April [2011] the **Exercise Price** shall be adjusted on the date which is 42 days before the start of the relevant **Season** (the "**Season Fuel Reference Calculation Date**") by reference to [ ]. On each **Season Fuel Reference Calculation Date**, the **Fuel Element** will be adjusted in accordance with the following formula:

$$A = B \times (C \text{ divided by } D)$$

Where

A = the **Exercise Price** for the relevant **Season**

B = the relevant **Exercise Price** forming part of the relevant **Contract Price**

C = the arithmetic average of daily [ ] Prices for the one year period prior to and including the relevant **Season Fuel Reference Calculation Date** and

D = the arithmetic average of daily [ ] Prices for the period  
[12 December 2009 to 11 June 2010]

### Mitigation of Future Changes

As future indexation methodologies are developed these may include new principles. Some methodologies include the option for new principles to be included in the agreement where they have been included in the agreements of other providers.

In the event that **National Grid** is in a position to bring forward the day by reference to which price adjustments for any **Season** are determined for other **Reserve Providers**, from 42 days before the date of the start of the next **Season** or **STOR Year**, **National Grid** will give consideration (acting reasonably) to applying such dates to this Indexation Methodology.

Furthermore, in the event that **National Grid** allows future prospective **Reserve Providers** to index against charges imposed by **National Grid** such as the TADG or against taxes such as carbon taxes, then **National Grid** will give consideration (acting reasonably) to applying such indexation to this Indexation Methodology

## 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/rdonlyres/FD231DD4-F1F0-47DA-AF5A-87E4551DF30B/28301/CMS\\_Standard\\_Terms\\_v2a1.pdf](http://www.nationalgrid.com/NR/rdonlyres/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<sub>j</sub>** =  $EI_j \times EF \times E (\pounds \text{ to } \pounds)$

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)

$E(\text{€ to } \text{£})$  = 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**