National Grid

AMENDMENT REPORT

CUSC Amendment Proposal CAP010

(Mandatory Response Imbalance Exposure)

The purpose of this report is to assist the Authority in their decision of whether to implement Amendment Proposal CAP010

Amendment Ref	CAP010
Issue	1.0
Date of Issue	10 May 2002
Prepared by	National Grid

DOCUMENT CONTROL

Issue	Date	Author	Change Reference
0.1	11/04/02	National Grid	Initial Draft for internal comment
0.2	01/05/02	National Grid	Draft for industry comment
1.0	10/05/02	National Grid	Formal version for submission to the Authority

DOCUMENT LOCATION

National Grid website:

http://www.nationalgridinfo.co.uk/cusc/index.html

DISTRIBUTION

Name	Organisation
The Gas and Electricity Markets Authority	Ofgem
CUSC Parties	Various
Panel Members	Various
National Grid Industry Information Website	

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1.0 SUMMARY AND RECOMMENDATIONS

Summary

1.1 All licensed generators are required to provide the service of mandatory frequency response as set out in CC.8.1 of the Grid Code. Prior to the introduction of NETA it was recognised that generators would incur imbalance charges under the BSC when mandatory frequency response was provided. A mechanism was introduced at NETA Go-live that was intended to compensate generators for this imbalance exposure due to providing response. The mechanism, known as imbalance compensation, included an element to compensate for the cost or avoided cost of energy production. This mechanism was implemented via the NETA Implementation Scheme in the Mandatory Services Agreements (MSA) and codified into the CUSC.

1.2 Following NETA Go-live, a number of providers raised concerns that the imbalance and energy compensation as calculated by the mechanism, did not, in certain circumstances, adequately cover the costs incurred as a result of the provision of frequency response. In order to address these concerns, the arrangements were reviewed by an informal, pre-CUSC Working Group and resulted in the submission of CUSC Amendment Proposal CAP001 by National Grid. However, because no agreement was reached within the Working Group on the price of the energy delivery due to the provision of frequency response, CAP001 only addressed the volume issue and hence the imbalance component of the compensation. CAP001 followed the Urgent Amendment Procedure and was approved by the Authority on 15 November 2001 with an effective implementation date of 21 September 2001.

1.3 Prior to the Authority's approval of CAP001, Innogy plc submitted CUSC Amendment Proposal CAP010. This seeks to modify the element in the payment for mandatory frequency response that compensates the service provider for energy delivery resulting from provision of the service. CAP010 proposes the use of Bid and Offer prices instead of the current method of using a single value reference price derived from the average of SSP and SBP for the previous month.

1.4 The CUSC Amendments Panel, at their meeting on 9 November 2001, actioned the Balancing Services Standing Group (BSSG) to act as a Working Group (in accordance with CUSC 8.17.1) to consider Amendment Proposal CAP010. Terms of Reference were agreed for the BSSG (in respect of CAP010) and further to three meetings and associated debate and correspondence, it was the combined view of the BSSG that the current mechanism for frequency response

imbalance compensation should be modified as per the CAP010 Amendment Proposal.

1.5 In the BSSG debate, it was noted that National Grid objected to the implementation of CAP010 as drafted and in addition some members remained neutral to the proposal, stating that they had sympathy for both viewpoints.

1.6 The Working Group Report was presented to the CUSC Amendments Panel on 22 February 2002. At the meeting, the Amendments Panel endorsed the Working Group Report agreeing that the specific terms of reference for the Group had been met. The Amendments Panel also agreed that the issue should proceed to wider consultation by National Grid (in accordance with CUSC 8.19.1).

1.7 As a result of the above, National Grid circulated a Consultation Document to CUSC Parties and Panel Members (and other interested Parties) on 8 March 2002. Comments were requested by no later than close of business, 12 April 2002. Following the consultation, and in accordance with 8.20.3, a draft of this Amendment Report was circulated for comment on the 1 May 2002. Comments were requested by close of business, 9 May 2002.

1.8 This Amendment Report (Issue 1.0) was submitted to the Authority on 10 May 2002. The purpose of this document is to assist the Authority in their decision of whether to implement Amendment Proposal CAP010.

Recommendations

National Grid Recommendation

1.9 National Grid does not support the CAP010 Amendment Proposal as submitted by Innogy plc. This is on the grounds that the proposal does not better facilitate achievement of the Applicable CUSC Objectives set out in Condition C7F, paragraphs 1a and 1b. With regards paragraph 1a, National Grid is of the view that the costs of frequency response provision would increase under the CAP010 proposal (meaning BSUoS charges would increase) with no perceived improvements or benefits. With regards paragraph 1b, National Grid believes that using the same prices for frequency response as those used for short-term energy balancing would prohibit competition in such Balancing Services by 'blurring' the distinction between such services. Furthermore, such a mechanism would not create any competitive pressure on the costs of providing frequency response.

1.10 With regards to the way forward, National Grid is committed to the development of an implementation plan for a Frequency Response Market (the Balancing Services Standing Group will be considering

this issue in the near future). National Grid believes it is important that the issues raised by CUSC Amendment Proposal CAP010 should be considered in the context of the whole market debate. Whilst CAP010 moves from cost to value based principles, National Grid believes this does not necessarily represent a step in the right direction towards full frequency response market arrangements (that should deliver benefits to the industry as a whole). Implementation of CAP010 would require significant investment in National Grid's IT systems for both Control Room optimisation and Settlement purposes (as outlined in Section 8 of the WG Report). This is in addition to the changes that would be required to the systems of service providers. If, as we suspect, Bid/Offer payment for Frequency Response energy does not form part of enduring frequency response market arrangements, then this significant investment will be wasted.

Working Group Recommendation

1.11 The majority of BSSG members supported CUSC Amendment Proposal CAP010 and felt that it better meets achievement of the Applicable CUSC Objectives set out in Condition C7F, paragraph 1a – the efficient discharge by National Grid of the obligations imposed on it by the Act and the Transmission Licence. This is on the grounds that the Transmission Licence obligates National Grid to purchase ancillary services from the most economical sources available to it having regard to the quantity and nature of the ancillary services. The proposed amendment would better facilitate the efficient discharge of this Licence Obligation by aligning more accurately payments made with costs incurred, producing greater transparency in the relative costs of the service provision. This in turn will ensure that the most economic sources of mandatory response continue to make their full capability available for despatch by National Grid.

2.0 INTRODUCTION

2.1 This Amendment Report has been issued by National Grid under the rules and procedures specified in the Connection and Use of System Code (CUSC) as designated by the Secretary of State. It addresses issues associated with the Mandatory Frequency Response provisions set out in Section 4 of the CUSC.

2.2 Further to the submission of Amendment Proposal CAP010 (see Annex 1), the consideration of the Amendment Proposal by the Balancing Services Standing Group (BSSG), and the subsequent wider industry consultation that was undertaken by National Grid, this document is addressed and furnished to the Gas and Electricity Markets Authority ("the Authority") in order to assist them in their decision whether to implement Amendment Proposal CAP010. Such an amendment would result in changes to Section 4 of the CUSC (as detailed in Annex 2).

2.3 This document outlines the nature of the CUSC changes that are proposed for implementation. It indicates any relevant issues that arose in the BSSG discussions and also incorporates National Grid's and the Amendments Panel's recommendations to the Authority concerning the Amendment. Copies of all representations received in response to the consultation have been included. Furthermore, a 'summary' of the representations received is also provided.

2.4 This Amendment Report has been prepared in accordance with the terms of the CUSC. An electronic copy can be found on the National Grid website, at http://www.nationalgridinfo.co.uk/cusc.

3.0 THE PROPOSED AMENDMENT PROPOSAL

3.1 The current methodology for calculating imbalance compensation payments for the Mandatory Service of Frequency Response compensates service providers for costs incurred under the BSC. These payments are based on the expected volume of energy delivered in a Settlement Period and an estimate of the cost to the service provider of that variation.

3.2 The payment mechanism can be represented simply as follows. When the net response energy delivered in a Settlement Period is positive (low frequency response) the mechanism refunds a Reference Price and subtracts the SSP the generator would have received under the BSC (assuming this was positive).

$$LF_{MWh} \times (\text{Reference Price} - SSP)$$

3.3 When the net response energy delivered in a Settlement Period is negative (high frequency response) the mechanism refunds the SBP

paid by the generator under the BSC and subtracts a Reference Price.

HF_{MWh} x (SBP – Reference Price)

3.4 Since NETA Go-live there have been moves to improve the accuracy with which expected variation in the volume is calculated (CAP001 and CAP009) in order to reflect better the imbalance costs faced by providers. However, it is recognised that the 'Reference Price' remains a source of inaccuracy.

3.5 The reference price in any month is applied to all providers and is calculated as the average of the previous month's SBP and SSP data. To date, this mechanism for calculating the reference price has generated prices that have varied from one month to the next and have generally been considered to be higher than the actual cost of production. It should be noted that where a provider has a symmetrical response characteristic i.e. delivering on average equal volumes of low and high frequency response, the impact of the reference price is cancelled out. However, certain generators who provide on average more high frequency than low frequency response e.g. those operating at or near MEL, will be disadvantaged by a reference price higher than their actual production costs. Conversely, generators who provide on average more low frequency response will clearly gain under the current mechanism.

3.6 A table of reference prices since NETA 'Go-live' is shown in the table below:

Month	£/MWh	Month	£/MWh
Apr-01	25.34	Sep-01	23.10
May-01	36.95	Oct-01	18.54
Jun-01	28.37	Nov-01	16.36
Jul-01	30.86	Dec-01	22.56
Aug-01	21.85	Jan-02	24.06

3.7 The change as proposed by this Amendment seeks to reflect better the generating Units' costs by replacing the 'reference price' currently used with a mechanism that uses Bid prices (for high frequency response energy) and Offer prices (for low frequency response energy). The effect would be to compensate the service provider in such a manner that it would treat the variation in the volume of energy supplied as if that variation had been achieved by way of a series of Bid/Offer Acceptances (each of one minute duration).

3.8 CUSC Amendment Proposal CAP010 proposes that the response energy volume continues to be calculated on a per minute basis (as per CAP001 and CAP009 methodologies). This per-minute volume profile will then be related to the Unit's Bid/Offer data to determine the expected energy variation falling in each Bid/Offer pair submitted for

the Unit. Thus, the volume of energy delivered in each minute to be valued at the Offer or Bid price in each Bid/Offer pair would be calculated. The payment for the delivered Response energy would be the sum of the Offer payments over the Settlement Period less the sum of the Bid payments.

3.9 Finally, the imbalance compensation element of the payment in each Settlement Period would continue to be calculated by reference to SSP or SBP depending on whether the total expected Response energy is positive or negative.

4.0 ASSESSMENT AGAINST APPLICABLE CUSC OBJECTIVES

4.1 The applicable CUSC Objectives are set out in paragraph 1 of Condition C7F of the Transmission Licence. CUSC amendments should better facilitate achievement of the Applicable CUSC Objectives. These can be summarised as follows:

(a) the efficient discharge by NGC of the obligations imposed on it by the Act and the Transmission Licence; and

(b) facilitating effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the sale, distribution and purchase of electricity.

4.2 National Grid does not support the CAP010 Amendment Proposal as submitted by Innogy plc. This is on the grounds that the proposal does not better facilitate achievement of the Applicable CUSC Objectives set out in Condition C7F, paragraphs 1a and 1b. With regards paragraph 1a, National Grid is of the view that the costs of frequency response provision would increase under the CAP010 proposal (meaning BSUoS charges would increase) with no perceived improvements or benefits. With regards paragraph 1b, National Grid believes that using the same prices for frequency response as those used for short-term energy balancing would prohibit competition in such Balancing Services by ‘blurring’ the distinction between such services. Furthermore, such a mechanism would not create any competitive pressure on the costs of providing frequency response.

4.3 With regards to the way forward, National Grid is committed to the development of an implementation plan for a Frequency Response Market (the Balancing Services Standing Group is considering this issue). National Grid believes it is important that the issues raised by CUSC Amendment Proposal CAP010 should be considered in the context of the whole market debate. Whilst CAP010 moves from cost to value based principles, National Grid believes this does not necessarily represent a step in the right direction towards full

frequency response market arrangements (that should deliver benefits to the industry as a whole). Implementation of CAP010 would require significant investment in National Grid's IT systems for both Control Room optimisation and Settlement purposes (as outlined in Section 8 of the WG Report). This is in addition to the changes that would be required to the systems of service providers. If, as we suspect, Bid/Offer payment for Frequency Response energy does not form part of enduring frequency response market arrangements, then this significant investment will be wasted.

5.0 PROPOSED IMPLEMENTATION AND TIME-SCALES

5.1 As outlined in Section 5 of the Working Group Report, if CAP010 were to be approved, it would require corresponding changes to both the Balancing Services Settlement System software and the despatch system algorithm (used in the control room for optimal despatch purposes). In view of this requirement, the BSSG considered how CAP010 would best be implemented.

5.2 On balance, the majority of the BSSG agreed that it would be prudent to make CAP010 implementation dependent on the necessary changes being completed to the despatch system algorithm. Otherwise, if the Amendment were implemented before such changes were carried out, the System Operator would be unable to schedule frequency response in an optimum manner. The Group also agreed, that although changes to the Settlement Systems were required, this should not hold up implementation as payments could be reconciled (in a similar manner to CAP001) upon delivery of modified systems.

5.3 Notwithstanding the above, the proposer suggested the Amendment should be implemented as soon as possible as the despatch algorithm problem could be solved in the short term by using a simple Microsoft Excel based optimisation solution in the Control Room. National Grid pointed out that it would be inappropriate to implement this type of system in a real time operational environment such as the National Grid Control Room.

6.0 IMPACT ON CUSC

6.1 The proposed Amendment Proposal will require the modification of certain clauses within Section 4.1.3 of the CUSC (calculation of payments and payment formulae). The relevant legal drafting is contained in Annex 2 of this Amendment Report.

7.0 IMPACT ON CORE INDUSTRY DOCUMENTS

7.1 It is envisaged that the Amendment Proposal will have no impact on any other key industry documentation.

Changes required & Timescales to be followed to give effect to the Proposed Amendment

7.2 See comments made in Section 5.0 above.

Changes or Developments Required to Central Computer Systems & Timescales Involved

7.3 National Grid has undertaken an initial impact assessment of Amendment Proposal CAP010 on its Balancing Services Settlement Systems and the despatch algorithm used in the Control Room. The impact on the despatch algorithm (which can be considered a potentially crude enhancement) adds a penalty onto the response holding cost for each BMU to represent the probabilistic expectation of the response delivered energy and its cost.

7.4 Significant further analysis would be required in order to develop the dispatch algorithm to fully optimise response holding. A full optimisation would require the development of probabilistic techniques to attempt to forecast the expected response behaviour of each generator relative to the system frequency in real time, and the interaction of this behaviour with its bid/offer ladder.

Estimation of Costs

7.5 The costs and implementation time-scales of the above modification are summarised below:

	Cost	Time
Settlement System	£120k	8 months
Despatch System	£150k	9 months

8.0 IMPACT ON CUSC PARTIES

8.1 If Amendment Proposal CAP010 is implemented, it is envisaged that service providers would need to make changes to their validation systems. This is not considered further in this report.

9.0 ALTERNATIVE AMENDMENTS

Description of Alternative Amendment

9.1 In accordance with the Terms of Reference for the BSSG, the group also considered whether any Alternatives to CAP010 existed. Although the group discussed three possible options, on the basis of majority opinion, the BSSG considered that none of the options presented a viable Alternative to either the CAP010 methodology or the extant methodology. In view of this, no 'formal' Alternative to CAP010 was put forward by the BSSG. In spite of this, the BSSG did recommend the CUSC Amendments Panel to note that the BSSG did consider and discuss some potential Alternative Amendments. Further to this the Amendments Panel also requested that the options that were discussed and debated within the BSSG should be documented in the Consultation Document, thereby providing an opportunity for the Industry to comment on them.

9.2 In view of the above, National Grid included in the consultation document a description of the three possible approaches that were discussed by the BSSG (i.e. a fuel based reference price, a system average bid/offer reference price and a fixed price reference price). However, as none of the options were considered as a formal Alternative to CAP010, they are not considered further in this section of the Amendment Report.

Assessment against Applicable CUSC Objectives

9.3 Not applicable as no formal Alternatives have been offered or considered.

10.0 SUMMARY OF VIEWS AND REPRESENTATIONS

Amendments Panel Members Views

10.1 On the basis of the consultation and assessment undertaken in respect of CUSC Amendment Proposal CAP010, it was the opinion of those CUSC Amendments Panel Members expressing a view, that the CAP010 Amendment Proposal should be implemented to the time-scales as recommended.

Working Group Members

10.2 The majority of BSSG members supported CUSC Amendment Proposal CAP010 and felt that it better meets achievement of the Applicable CUSC Objectives set out in Condition C7F, paragraph 1a – the efficient discharge by National Grid of the obligations imposed on it by the Act and the Transmission Licence. This is on the grounds

that the Transmission Licence obligates National Grid to purchase ancillary services from the most economical sources available to it having regard to the quantity and nature of the ancillary services. The proposed amendment would better facilitate the efficient discharge of this Licence Obligation by aligning more accurately payments made with costs incurred, producing greater transparency in the relative costs of the service provision. This in turn will ensure that the most economic sources of mandatory response continue to make their full capability available for despatch by National Grid.

10.3 National Grid who did not support the Amendment believed that the proposal did not better facilitate achievement of the Applicable CUSC Objectives set out in Condition C7F, paragraphs 1a and 1b. With regards to paragraph 1a, National Grid stated that the costs of frequency response provision would increase under this proposal (and hence BSUoS would increase) with no perceived benefit. With regards to paragraph 1b, National Grid felt that the use of the same prices for frequency response as those used for short-term energy balancing would prohibit competition in such Balancing Services by 'blurring' the distinction between such services. Furthermore, the mechanism would not create competitive pressure on the costs of providing frequency response.

Core Industry Document Owners

10.4 No views have been received from Core Industry Document Owners.

Respondents

10.5 National Grid received a total of 8 responses to the consultation on CUSC Amendment CAP010. In carrying out this exercise, National Grid highlighted three particular areas where views were especially invited. These were:

- Whether CAP010 proposes a more appropriate treatment of the energy delivered when providing frequency response;
- National Grid's arguments against the use of Bids and Offers to value mandatory frequency response energy; and
- The proposed alternatives that were discussed by the BSSG

10.6 Of the 8 responses received:

- 6 of the 8 respondents outlined their support for CAP010 agreeing that the proposed Amendment did provide a more appropriate treatment of the energy delivered when providing frequency response. Of the other 2 respondents, 1 did not support the proposal, the other did not make arguments for or against the proposal;

- 6 of the 8 respondents did not agree with National Grid's arguments against the use of Bid's and Offers as a mechanism to value mandatory frequency response energy. Of the other 2 respondents, 1 suggested there were arguments for and against the use of Bids and Offers, the other made no response regarding this matter; and
- With regards the views on the proposed alternatives, one respondent suggested there could be merit if the Reference Price was based upon using the average of accepted Bid/Offer prices (as discussed in paragraph 4.2.7 of the Consultation Document). However, the respondent did not believe the alternative was better than CAP010.

10.7 The following table provides an overview of the representations received. Copies of the representations are attached as Annex 3.

Reference	Company Name	Supportive	Summary of Comments
CAP010-CR-01	Edison Mission Energy	Yes	Believes the amendment provides an appropriate treatment of the energy associated with frequency response and fully supports the proposal. Believes National Grid has not made a case against the use of bids/offers. Appropriate to treat response energy delivery and BOA energy delivery on the same basis.
CAP010-CR-01	Innogy	Yes	CAP010 proposal is the most efficient way for providers to reflect costs incurred when providing response. Also fits with National Grid's proposals in the BSC to treat expected volumes of response energy in the same way as BOA's under the BSC. Not clear what National Grid means about CAP010 moving from cost reflective to value based principles. CAP010 is not value based but uses bid/offer prices as the best available measure of short-run costs. By properly reflecting the cost of response, the efficiency with which the system is despatched will be increased leading to an overall lower cost. None of the alternatives mentioned (nor the current mechanism) meet the criterion of being cost reflective.
CAP010-CR-03	London Electricity Group	Yes	Consider that CAP010 does propose an improved and more appropriate treatment of the energy delivered when providing response. Do not agree with National Grid's arguments against the use of bids and offers. Believe it is justifiable to treat the energy element of frequency response in the same way as any other energy.

			CAP010 will bring perceivable improvements and benefits to the SO in the way that service providers will compete to provide the services. Believe that the alternative where the reference price is based upon the average of accepted Bid/Offer prices has merit however, do not believe it is better than CAP010. Highlights some proposed drafting changes/typos.
CAP010-CR-04	TXU Companies	Yes	Supportive of the Proposal. Do not see any distinction between energy produced or removed as a result of frequency response and energy produced for short term balancing. Do not see CAP010 as moving from a cost reflective basis to a value basis.
CAP010-CR-05	British Energy	No	Does not support CAP010 or any of the indicated alternatives. Believes there is insufficient real competition at present for the CAP010 proposals to be economically successful. There are valid arguments for and against the use of bids and offers to value response energy. Would not support a move to a fuel based reference price approach, a system average offer/bid reference price approach or a fixed price reference price approach.
CAP010-CR-06	British Gas	Yes	Do not believe current arrangements are adequate and support CAP010 as being an improvement over existing regime. The most cost-effective method is to make provision of frequency response attractive to competition through a market mechanism. This would enable discovery of true costs and value of the service. Any other mechanism creates a distortion. The proposal will allow competitive service provision with transparent and cost reflective prices. Would welcome the development of a response market and are disappointed that no progress has been made in its development to date. Believe the proposal, in providing a more appropriate indicator of the cost of service provision will reduce the risk of providers withdrawing response services.
CAP010-CR-07	Elexon	-	A mechanism that calculates the actual cost of production for frequency response

			energy would seem more equitable. The BSC Panel has recommended that P34A and P36A should be made and P71 should not be made. A consistent approach will need to be considered on the implementation of CAP010/P36.
CAP010-CR-08	PowerGen UK	Yes	Strongly supports the proposal. The current mechanism is widely accepted as in need of an overhaul. CAP001 improves the volume calculation however, the payment received for this energy is based upon an arbitrary and inadequate methodology. CAP010 has major advantages over the current methodology; can reflect frequently changing fuel costs, allows the provider to reflect varying costs with change in output and removes perverse incentives to provide one type of response. Do not agree with National Grid's comments re. the use of bids/offers. Placing a more appropriate value on the delivered energy will encourage providers to deliver the service. Do not agree that CAP010 moves away from cost reflective principles without any benefits of a market mechanism. PowerGen does not support any of the alternatives detailed in the consultation document.

National Grid's Views

10.8 National Grid's recommendation regarding this Amendment Proposal is outlined in paragraphs 4.2 and 4.3 above.

10.9 National Grid has reviewed the responses to the consultation on CAP010 and notes the general support from respondents for the use of Bids and Offers to pay for response energy. Whilst National Grid accepts there are deficiencies associated with the current Reference Price approach, National Grid continues to believe that a mechanism that uses bids and offers to value frequency response energy is unacceptable. The reasons for this are outlined in detail in Annex 4 of the Working Group Report, however, in summary, National Grid believes that using bids and offers to value response energy:

- Moves from cost reflective to value based principles without any benefits of a market mechanism;
- Would lead to an increase in the costs of providing frequency response and a subsequent increase in BSUoS charges;

- Provides the potential for service providers to preclude selection by submitting extreme prices;
- Would blur the distinction between short term energy balancing and frequency response and prohibit competition in such services;
- Will make optimal despatch in control time-scales difficult and require development of despatch systems; and
- Does not represent a step in the right direction towards enduring frequency response market arrangements.

10.10 National Grid notes the comments made by some respondents regarding the distinction between short term balancing actions and frequency response. National Grid would like to clearly state that the balancing service of frequency response and short term balancing actions instructed within the Balancing Mechanism are separate and different services. It is therefore entirely appropriate that the energy delivered through both services be treated separately.

Annex 1 – CUSC Amendment Proposal

Amendment Proposal Form

Those wishing to propose an Amendment to the CUSC should do so by filling in this "Amendment Proposal Form" that is based on the provisions contained in Section 8.15 of the CUSC. The form seeks to ascertain details about the Amendment Proposal so that the CUSC Panel can determine more clearly whether the proposal should be considered by a Working Group or go straight to wider National Grid Consultation.

The Panel Secretary will check that the form has been completed, in accordance with the requirements of the CUSC, prior to submitting it to the Panel. If the Panel Secretary accepts the Amendment Proposal form as complete, then he will write back to the Proposer informing him of the reference number for the Amendment Proposal and the date on which the Proposal will be considered by the Panel. If, in the opinion of the Panel Secretary, the form fails to provide the information required in the CUSC, then he may reject the Proposal. The Panel Secretary will inform the Proposer of the rejection and report the matter to the Panel at their next meeting. The Panel can reverse the Panel Secretary's decision and if this happens the Proposer will be informed by the Panel Secretary.

The completed form should be returned to:

Mark Cox
Panel Secretary
Commercial Development
National Grid Company plc
National Grid House
Kirby Corner Road
Coventry, CV4 8JY

Or via e-mail to:

CUSC.Team@uk.ngrid.com

(Participants submitting this form by email will need to send a statement to the effect that the proposer acknowledges that on acceptance of the proposal for consideration by the Amendments Panel, a proposer which is not a CUSC Party shall grant a licence in accordance with Paragraph 8.15.7 of the CUSC. A Proposer which is a CUSC Party shall be deemed to have granted this Licence.)

Proposers Name:
(Name of party making the proposal. An Amendment Proposal may be made by a CUSC Party, a BSC Party or by "energywatch")

Innogy plc

Proposers Representative:
(The name of the person representing the Proposer (and his alternate) for the purposes of the Amendment Process)

David Tolley (Alternate - Raoul Thulin)

Organisations Name and Address:
(Organisation on whose behalf the Amendment is proposed)

Innogy plc
Windmill Hill Business Park
Whitehill Way
Swindon
Wiltshire
SN5 6PB

Capacity in which the Organisation Proposes to make an Amendment:
(i.e. CUSC Party, BSC Party or "energywatch")

CUSC Party

Description of the issue or defect which the proposed Amendment seeks to address:
(This should be in reasonable, but not excessive detail)

Current payments for the Mandatory Service of Frequency Response include an element intended to compensate the service provider for exposure to system prices resulting from the settlement imbalances incurred by the provision of the Service. The calculation of this payment is based on the variation in the expected volume of energy delivered in a Settlement Period and an estimate of the cost to the service provider of that variation. Where the variation in the energy produced is positive, a payment equal to the difference between the estimated cost of production and SSP is made for each MWh of expected energy. Where the variation in the energy produced is negative, the payment is based on the difference between SBP and the estimated cost of production.

Since NETA Go-live there have been moves to improve the accuracy with which expected variation in the volume is calculated (CAP001) in order to reflect better the imbalance costs faced by providers. However, the value that is applied to the imbalance volume (known as the 'reference price') remains a source of significant inaccuracy in estimating the cost of the imbalance. The reference price in any month is applied to all providers and is calculated as the mid-point of the previous month's average SBP and SSP.

The application of a single reference price to all units providing the service - irrespective of fuel type, plant loading or local conditions - results in a cost estimate that does not reflect any generating unit's actual costs. This means that imbalance compensation payments will not reflect the costs of imbalance exposure, with the attendant risk of market failure.

Description of the proposed Amendment and of its nature and purpose:
(This should be in reasonable but not excessive detail)

The change proposed by this Amendment seeks to reflect better the generating Units' costs by replacing the 'reference price' currently used with Bid prices for energy delivered in response to positive frequency deviations and Offer prices for energy delivered in response to negative frequency deviations. The effect will be to compensate the service provider in such a manner that it would treat the variation in the volume of energy supplied as if that variation had been achieved by way of a series of Bid/Offer Acceptances each of a minute's duration. In a competitive environment Bids and Offers should be the best indicators of marginal costs available.

This proposal assumes that the method for calculating expected energy is that promoted in CAP001, although it would also cater for any changes that might be adopted in the future.

The required calculation might be achieved by calculating the expected variation in energy delivered as a result of Response provision in each minute. Under the CAP001 methodology,

this would be by reference to the average System Frequency deviation during the minute and the relevant Response matrix in the applicable Ancillary Services Agreement. Relating this to the Unit's Bid/Offer data determines the expected energy variation falling in each Bid/Offer pair submitted for the Unit. Thus, the volume of energy delivered in each minute to be valued at the Offer or Bid price in each Bid/Offer pair is calculated. The payment for the delivered Response energy is the sum of the Offer payments over the Settlement Period less the sum of the Bid payments.

Finally the compensation payment is calculated as the difference between the payment for the delivered Response energy and the imbalance payment calculated by reference to SSP of SBP depending on whether the total expected Response energy is positive or negative. The direction of the payment would be so as to replace the imbalance payment (which may be a cost or a credit) with a payment for the delivered Response energy as if it were a Bid/Offer acceptance in the BM.

An indication of those parts of the CUSC which would require amendment in order to give effect to (or would otherwise be affected by) the proposed amendment and an indication of the nature of those amendments or effects.
(This should be given where possible)

Section 4.1.3 – calculation of payments and payment formulae. Amendment required to reflect revised payment for energy delivered when providing Frequency Response as outlined above.

Reasons why the Proposer believes that the proposed Amendment would better facilitate achievement of the Applicable CUSC Objectives as compared with the current version of the CUSC with background information in support thereof.

The Transmission Licence obligates National Grid to purchase ancillary services from the most economical sources available to it having regard to the quantity and nature of the ancillary services.

This proposed amendment would better facilitate the efficient discharge of this licence obligation by aligning more accurately payments made with costs incurred, producing greater transparency in the relative costs of service provision. This in turn will ensure that the most economic sources of mandatory frequency response continue to make their full capability available for despatch by National Grid.

An indication of the impact of the proposed Amendment on Core Industry Documents.
(This should be given where possible)

No impact on core industry documents is foreseen.

An indication of the impact of the proposed Amendment on relevant computer systems and processes used by CUSC Parties.
(This should be given where possible)

The proposed amendment will require modification to the billing system used by National Grid to calculate the Frequency Response payments.

A statement to the effect that the Proposer acknowledges that on acceptance of the proposal for consideration by the Amendments Panel a Proposer shall grant a Licence in accordance with Clause 8.15.7 of the CUSC.
(A signature to this effect must be given by a proposer which is not a CUSC Party)

Annex 2 – Proposed Text to Modify CUSC

LEGAL TEXT TO ACCOMPANY CAP010

4.1.3 Frequency Response

Introduction

4.1.3.1 Each applicable **User** is obliged to provide (for the avoidance of doubt, as determined by any direction in force from time to time and issued by the **Authority** relieving that **User** from the obligation under its **Licence** to comply with such part or parts of the **Grid Code** or any **Distribution Code** or, in the case of **NGC**, the **Transmission Licence**, as may be specified in such direction) the **Mandatory Ancillary Service** of **Frequency Response** referred to in **Grid Code CC** 8.1 by means of **Frequency** sensitive generation in accordance with the terms of this Paragraph 4.1.3 and a **Mandatory Services Agreement** but subject always to and in accordance with the relevant part or parts of the **Grid Code** applicable thereto.

Definitions

4.1.3.2 For the purposes of this Paragraph 4.1.3:

(i) **"Frequency Response Service"** means the **Mandatory Ancillary Service** of **Frequency Response** and any **Commercial Ancillary Service** of **Frequency Response** as may be agreed to be provided by a **User** from time to time;

(ii) the **Mandatory Ancillary Service** of **Frequency Response** shall constitute operation of a **BM Unit** in accordance with **Grid Code CC** 6.3.7 and **BC** 3.5 (with the exception of **BC** 3.5.2), including, without limitation, under normal operating conditions with the speed governor set so that it operates with an overall speed droop of between 3% and 5% so as to provide the applicable levels of **Response** referred to in Paragraph 4.1.3.7;

(iii) the term "instruction" means a communication whether by telephone or automatic logging device or facsimile from **NGC** to the **User** instructing a **User** in accordance with **Grid Code BC** 2.8 and this Paragraph 4.1.3 to provide any **Frequency Response Service**, and derivations of the term shall be construed accordingly;

(iv) the amendment of an existing instruction shall be deemed to be a new instruction;

(v) an instruction will prevail until either it is countermanded by **NGC** or until the **BM Unit** to which the instruction relates is **De-synchronised** (whichever is first to occur).

NGC's *Instructions to provide* ***Mode A Frequency Response***

4.1.3.3 For the purposes of instructions and calculation of payments, the **Mandatory Ancillary Service** of **Frequency Response** as described in this Paragraph 4.1.3 shall be referred to as "**Mode A Frequency Response**".

4.1.3.4 **NGC** may at any time instruct a **User** to operate any one or more **BM Unit(s)** so as to provide the following components of **Mode A Frequency Response**:-

(a) **Primary Response**;

(b) **Secondary Response**;

(c) **High Frequency Response**,

in any of the permissible combinations set out in the relevant table in the **Mandatory Services Agreement**.

4.1.3.5 **NGC** shall not instruct a **User** to provide **Mode A Frequency Response** and any **Commercial Ancillary Service** of **Frequency Response** simultaneously.

4.1.3.6 In the event that any instruction to provide **Frequency Response** does not state whether the instruction is to provide **Mode A Frequency Response** or any **Commercial Ancillary Service** of **Frequency Response**, such instruction shall be deemed to be an instruction to provide **Mode A Frequency Response**.

__User's__ Obligation to Provide __Response__

4.1.3.7 When a **User** is instructed in accordance with Paragraphs 4.1.3.4 and/or 4.1.3.6 to operate a **BM Unit** so as to provide any component(s) of **Mode A Frequency Response**, that **User** shall operate that **BM Unit** so as to provide, for any **Frequency Deviation** and at any level of **De-Load**, at least the amount of **Primary Response** and/or **Secondary Response** and/or **High Frequency Response** set out respectively in the relevant tables in the **Mandatory Services Agreement** (as such tables are to be interpreted in accordance with Paragraph 4.1.3.11).

Calculation of Payments

4.1.3.8 The payments to be made by **NGC** to a **User** hereunder in respect of the provision of any **Mode A Frequency Response** from a **BM Unit** shall be comprised of **Holding Payments** and **Delivery Payments** and shall be determined in accordance with the formulae in, respectively, Paragraphs 4.1.3.9 and 4.1.3.9A and in accordance with Paragraphs 4.1.3.10 to 4.1.3.12 inclusive.

Payment Formulae - Holding Payments

4.1.3.9 The **Holding Payments** for a **BM Unit** to be made by **NGC** to a **User** referred to in Paragraph 4.1.3.8 shall be calculated in accordance with the following formula:-

$$HP_M = P_M + H_M + S_M$$

Where:

HP_M is the **Holding Payment** to be made to the **User** calculated in £ per minute.

P_M is the payment per minute to be made by **NGC** to the **User** for the **Ancillary Service** of **Primary Response** provided by the **User** from the **BM Unit** concerned pursuant to an instruction from **NGC** to provide **Mode A Frequency Response**, and is calculated as follows:-

$$P_M = (P_{PR} \times P_{MW}(1 - SF_P)) \times K_T \times K_{GRC} \times \left[\frac{1}{60}\right]$$

H_M is the payment per minute to be made by **NGC** to the **User** for the **Ancillary Service** of **High Frequency Response** provided by the **User** from the **BM Unit** concerned pursuant to an instruction from **NGC** to provide **Mode A Frequency Response**, and is calculated as follows:-

$$H_M = (H_{PR} \times H_{MW}(1 - SF_H)) \times K_T \times K_{GRC} \times \left[\frac{1}{60}\right]$$

S_M is the payment per minute to be made by **NGC** to the **User** for the **Ancillary Service** of **Secondary Response** provided by the **User** from the **BM Unit** concerned pursuant to an instruction from **NGC** to provide **Mode A Frequency Response**, and is calculated as follows:-

$$S_M = (S_{PR} \times S_{MW}(1 - SF_S)) \times K_T \times K_{GRC} \times \left[\frac{1}{60}\right]$$

In this Paragraph 4.1.3.9, the following terms shall have the following meanings:-

P_{PR} = the appropriate payment rate for **Primary Response** set out in the **Mandatory Services Agreement**;

P_{MW} = the **Primary Response** capability (expressed in MW) for the level of **De-Load** of the **BM Unit** concerned at the end of the minute in which the service is provided;

H_{PR} = the appropriate payment rate for **High Frequency Response** set out in the **Mandatory Services Agreement**;

H_{MW} = the **High Frequency Response** capability (expressed in MW) for the level of **De-Load** of the **BM Unit** concerned at the end of the minute in which the service is provided;

S_{PR} = the appropriate payment rate for **Secondary Response** set out in the **Mandatory Services Agreement**;

S_{MW} = the **Secondary Response** capability (expressed in MW) for the level of **De-Load** of the **BM Unit** concerned at the end of the minute in which the service is provided;

K_T = the ambient temperature adjustment factor. **NGC** and each **User** acknowledge and agree, as between **NGC** and that **User**, that K_T shall be deemed to be 1 for the purposes of calculating payments until such time as they agree upon an appropriate formula and a suitable method of measuring the ambient temperature on a minute by minute basis which shall be set out in the **Mandatory Services Agreement**. In the event that any agreed method of measuring the ambient temperature on a minute by minute basis should fail following its implementation, then **NGC** and each **User** acknowledge and agree, as between **NGC** and that **User**, that K_T shall be deemed to be 1 until the method of measuring the ambient temperature on a minute by minute basis is restored;

K_{GRC} = where the **BM Unit** is a **CCGT Module**, the plant configuration adjustment factor set out in the relevant table in the **Mandatory Services Agreement** for the configuration of the **BM Unit** concerned at the time at which the capability to provide the service is carried, otherwise 1;

SF_P = 0, subject to Paragraph 4.1.3.25 (e);

SF_S = 0, subject to Paragraph 4.1.3.25 (e);

SF_H = 0, subject to Paragraph 4.1.3.25 (e).

*Payment Formulae - **Delivery Payments***

4.1.3.9A (a) The **Delivery Payments** for **BM Unit** i in **Settlement Period** j to be made by **NGC** to a **User** referred to in Paragraph 4.1.3.8 shall be comprised of an **Imbalance Compensation Payment,** a **Non-Delivery Payment** and an **Energy Payment** and shall be calculated in accordance with the following formulae:-

$$DP_{ij} = ICP_{ij} + RNDC_{ij} + EP_{ij}$$

But so that where DP_{ij} is negative such amount shall be paid by the **User** to **NGC**.

Where:

DP_{ij} is the **Delivery Payment** for **BM Unit** i, in **Settlement Period** j, to be made to or, as the case may be, by the **User**;

ICP_{ij} is the **Imbalance Compensation Payment** for **BM Unit** i, in **Settlement Period** j, calculated in accordance with Paragraph 4.1.3.9A (b) below;

$RNDC_{ij}$ is the **Non-Delivery Payment** for **BM Unit** i, in **Settlement Period** j, calculated in accordance with Paragraph 4.1.3.9A (c) below; and

EP_{ij} is the **Energy Payment** for **BM Unit** i, in **Settlement Period** j, calculated in accordance with Paragraph 4.1.3.9A (d) below.

(b) The **Imbalance Compensation Payment** (ICP_{ij}) shall be calculated as follows:-

$$ICP_{ij} = LFICP_{ij} + HFICP_{ij}$$

Where:

$LFICP_{ij}$ is the low frequency response imbalance compensation payment for **BM Unit** i, in **Settlement Period** j, and $HFICP_{ij}$ is the high frequency response imbalance compensation payment for **BM Unit** i, in **Settlement Period** j, and are calculated as follows:-

if $RE_{ij} > 0$, then

$$LFICP_{ij} = \left|RE_{ij}\right| * (-SSP_j)$$

and

$$HFICP_{ij} = 0$$

otherwise

$$LFICP_{ij} = 0$$

and

$$HFICP_{ij} = \left|RE_{ij}\right| * (SBP_j)$$

Where RE_{ij} is the expected response energy for **BM Unit** i in **Settlement Period** j calculated as follows:-

$$RE_{ij} = \int_0^{SPD} FR_{ij}(t)dt$$

Where:

$FR_{ij}(t)$ is the expected change in **Active Power** output for **BM Unit** i, at time t (resolved to the nearest integer minute), expressed in MW derived from the relevant table set out in the **Mandatory Services Agreement** (as such table is interpreted in accordance with Paragraph 4.1.3.11) by reference to the level of **De-Load** of the **BM Unit** concerned at the end of the minute and the mean **Frequency Deviation** over that minute when that **BM Unit** is providing **Mode A Frequency Response** and zero at all other times.

For this purpose:-

(i) for a positive **Frequency Deviation** the expected change in **Active Power** output of **BM Unit** i shall be derived from the high frequency response table set out in the **Mandatory Services Agreement** and shall be signed negative; and

(ii) for a negative **Frequency Deviation**, the expected change in **Active Power** output of **BM Unit** i shall be derived from:

A) the Primary Response data in the case of a **BM Unit** being instructed to deliver **Primary Response** without **Secondary Response**; or

B) the mean of the Primary Response and **Secondary Response** data in the case of a **BM Unit** being instructed to deliver **Primary Response** and **Secondary Response**,

in each case shown in the low frequency response tables set out in the **Mandatory Services Agreement** and shall be signed positive.

(c) The **Non-Delivery Payment** ($RNDC_{ij}$) shall be calculated as follows:-

$$RNDC_{ij} = CND_{ij} - CNDR_{ij}$$

Where:

$CNDR_{ij}$ is a quantity referred to in this Paragraph 4.1.3.9A (c) as the **BM Unit Period Non-Delivery Charge (Revised)** determined as follows:-

In respect of each **Settlement Period** j, for each **BM Unit** i, a quantity referred to in this Paragraph 4.1.3.9A (c) as the **Period BM Unit Non-Delivered Offer Volume (Revised)** ($QNDOR_{ij}$) will be determined as follows:-

$$QNDOR_{ij} = \min\left(\max\left(QME_{ij} + RE_{ij} - QM_{ij}, 0\right), \sum_n QAO_{ij}^n\right)$$

where $\sum_n$ represents the sum over all **Bid-Offer Pair Numbers** for the **Accepted Offer Volumes** for the **BM Unit**.

In respect of each **Settlement Period** j, for each **BM Unit** i, a quantity referred to in this Paragraph 4.1.3.9A (c) as the **Period BM Unit Non-Delivered Bid Volume (Revised)** ($QNDBR_{ij}$) will be determined as follows:-

$$QNDBR_{ij} = \max\left(\min\left(QME_{ij} + RE_{ij} - QM_{ij},\ 0\right), \sum_n QAB_{ij}^n\right)$$

where $\sum_n$ represents the sum over all **Bid-Offer Pair Numbers** for the **Accepted Bid Volumes** for the **BM Unit**.

Now, in respect of each **Settlement Period** j, for each **BM Unit** i, if the **Period BM Unit Non-Delivered Offer Volume (Revised)** is greater than zero then to determine values of a quantity referred to in this Paragraph 4.1.3.9A (c) as the **Offer Non-Delivery Volume (Revised)** ($QNDOR^n_{ij}$), the **Period BM Unit Non-Delivered Offer Volume (Revised)** will be apportioned across accepted **Offers**, in the following way:-

In respect of each **Settlement Period** j, for each **BM Unit** i, the set of all accepted **Offers** will be ranked in order of decreasing price. The accepted **Offer** with the highest price will be allocated **Non-Delivery Order Number** 1, the next highest priced accepted **Offer** will be allocated **Non-Delivery Order Number** 2 and so on until all accepted **Offers** for the **Settlement Period** have been allocated a **Non-Delivery Order Number**. The set of accepted **Offers** $\left\{QAO_{ij}^{n_1}, QAO_{ij}^{n_2}, ..., QAO_{ij}^{n_u}, ...\right\}$ is then a ranked set of accepted **Offers**.

The **Offer Non-Delivery Volume (Revised)** will be allocated to the first accepted **Offer** in the list first, then, once the first accepted **Offer** has been wholly accepted, to the second accepted **Offer** and so on until the **Period BM Unit Non-Delivered Offer Volume (Revised)** is fully apportioned.

Then the **Offer Non-Delivery Volume (Revised)** for accepted **Offer** n, is:

$$QNDOR_{ij}^n = \min\left(QAO_{ij}^{n_u}, RQNDOR_{ij}^{u-1}\right)$$

where $RQNDOR^{u-1}_{ij}$ is a quantity referred to in this Paragraph 4.1.3.9A (c) as the **Remaining Period BM Unit Non-Delivered Offer Volume (Revised)** determined as:

$$RQNDOR_{ij}^u = RQNDOR_{ij}^{u-1} - QNDOR_{ij}^{n_u-1}$$

and $RQNDOR_{ij}^0 = QNDOR_{ij}$

and $QNDOR_{ij}^{n_o} = 0$.

Now, in respect of each **Settlement Period** j, for each **BM Unit** i, if the **Period BM Unit Non-Delivered Bid Volume (Revised)** is less than zero then to determine values of a quantity referred to in this Paragraph

4.1.3.9A (c) as the **Bid Non-Delivery Volume (Revised)** ($QNDBR^{n}_{ij}$), the **Period BM Unit Non-Delivered Bid Volume (Revised)** will be apportioned across accepted **Bids**, in the following way:-

In respect of each **Settlement Period** j, for each **BM Unit** i, the set of all accepted **Bids** will be ranked in order of increasing price. The accepted **Bid** with the lowest price is allocated **Non-Delivery Order Number** 1, the next lowest priced accepted **Bid** is allocated **Non-Delivery Order Number** 2 and so on until all accepted **Bids** for the **Settlement Period** have been allocated a **Non-Delivery Order Number**. The set of accepted **Bids** $\{QAB_{ij}^{n_1}, QAB_{ij}^{n_2}, ..., QAB_{ij}^{n_u}, ...\}$ is then a ranked set of accepted **Bids**.

The **Bid Non-Delivery Volume (Revised)** will be allocated to the first accepted **Bid** in the list first, then, once the first accepted **Bid** has been wholly accepted, to the second accepted **Bid** and so on until the **Period BM Unit Non-Delivered Bid Volume (Revised)** is fully apportioned.

Then the **Bid Non-Delivery Volume (Revised)** for accepted **Bid** n, is:

$$QNDBR_{ij}^{n} = \max\left(QAB_{ij}^{n_u}, RQNDBR_{ij}^{u-1}\right)$$

where $RQNDBR^{u-1}_{ij}$ is a quantity referred to in this Paragraph 4.1.3.9A (c) as the **Remaining Period BM Unit Non-Delivered Bid Volume (Revised)** determined as:

$$RQNDBR_{ij}^{u} = RQNDBR_{ij}^{u-1} - QNDBR_{ij}^{n_u-1}$$

and $RQNDBR_{ij}^{0} = QNDBR_{ij}$

and $QNDBR_{ij}^{n_0} = 0$.

In respect of each **Settlement Period** j, for each **BM Unit** i, for each accepted **Offer**, a quantity referred to in this Paragraph 4.1.3.9A (c) as the **Non-Delivered Offer Charge (Revised)** will be determined as follows:-

$$CNDOR_{ij}^{n} = QNDOR_{ij}^{n} \times \max\left(\left(PO_{ij}^{n} - SBP_{j}\right), 0\right) \times TLM_{ij}$$

In respect of each **Settlement Period** j, for each **BM Unit** i, for each accepted **Bid**, a quantity referred to in this Paragraph 4.1.3.9A (c) as the **Non-Delivered Bid Charge (Revised)** will be determined as follows:-

$$CNDBR_{ij}^{n} = QNDBR_{ij}^{n} \times \min\left(\left(PB_{ij}^{n} - SSP_{j}\right), 0\right) \times TLM_{ij}$$

In respect of each **Settlement Period** j, for each **BM Unit** i, the **BM Unit Period Non-Delivery Charge (Revised)** ($CNDR_{ij}$) will be determined as follows:-

$$CNDR_{ij} = \sum_n \left(CDNOR_{ij}^n + CNDBR_{ij}^n \right)$$

where $\sum_n$ represents the sum over all **Bid-Offer Pair Numbers** for the **BM Unit**.

(d) The **Energy Payment** (EP_{ij}) shall be calculated as follows:-

$$EP_{ij} = OEP_{ij} + BEP_{ij}$$

Where:

OEP_{ij} is the **Offer Energy Payment** for **BM Unit** i, in **Settlement Period** j and BEP_{ij} is the **Bid Energy Payment** for **BM Unit** i, in **Settlement Period** j and are determined as follows:-

In respect of each **Settlement Period** j, for each **BM Unit** i and at each time t the **Instantaneous Offer Volume** $FRO_{ij}(t)$ will be determined as follows:-

$$FRO_{ij}(t) = \max\left(FR_{ij}(t), 0 \right)$$

In respect of each **Settlement Period** j, for each **BM Unit** i and at each time t the **Instantaneous Bid Volume** $FRB_{ij}(t)$ will be determined as follows:-

$$FRB_{ij}(t) = \min\left(FR_{ij}(t), 0 \right)$$

In respect of each **Settlement Period** j, for each **BM Unit** i and at each time t the **Instantaneous Bid-Offer Acceptance Volume** $BOA_{ij}(t)$ will be determined as follows:-

$$BOA_{ij}(t) = \sum_k \sum_n \left(qAB_{ij}^{kn}(t) + qAO_{ij}^{kn}(t) \right)$$

Now, in respect of each **Settlement Period** j, for each **BM Unit** i, for **Bid-Offer Pair Number** n and at time t the **Frequency Response Offer Volume** ($FRO^n_{ij}(t)$) is determined as follows:-

For n > 0,

$$FRO_{ij}^n(t) = \max\left(\min\left(BOA_{ij}(t) + FRO_{ij}(t), \sum_{n'=0}^{n} qBO_{ij}^{n'}(t) \right), \sum_{n'=0}^{n-1} qBO_{ij}^{n'}(t) \right)$$
$$- \max\left(\min\left(BOA_{ij}(t), \sum_{n'=0}^{n} qBO_{ij}^{n'}(t) \right), \sum_{n'=0}^{n-1} qBO_{ij}^{n'}(t) \right)$$

For n < 0,

$$FRO_{ij}^{n}(t) = \min\left(\max\left(BOA_{ij}(t) + FRO_{ij}(t), \sum_{n'=n}^{0} qBO_{ij}^{n'}(t) \right), \sum_{n'=n+1}^{0} qBO_{ij}^{n'}(t) \right)$$
$$- \max\left(\min\left(BOA_{ij}(t), \sum_{n'=n}^{0} qBO_{ij}^{n'}(t) \right), \sum_{n'=n+1}^{0} qBO_{ij}^{n'}(t) \right)$$

Now, in respect of each **Settlement Period** j, for each **BM Unit** i, for **Bid-Offer Pair Number** n and at time t the **Frequency Response Bid Volume** ($FRB^{n}_{ij}(t)$) is determined as follows:-

For n > 0,

$$FRB_{ij}^{n}(t) = \max\left(\min\left(BOA_{ij}(t) + FRB_{ij}(t), \sum_{n'=0}^{n} qBO_{ij}^{n'}(t) \right), \sum_{n'=0}^{n-1} qBO_{ij}^{n'}(t) \right)$$
$$- \max\left(\min\left(BOA_{ij}(t), \sum_{n'=0}^{n} qBO_{ij}^{n'}(t) \right), \sum_{n'=0}^{n-1} qBO_{ij}^{n'}(t) \right)$$

For n < 0,

$$FRB_{ij}^{n}(t) = \min\left(\max\left(BOA_{ij}(t) + FRB_{ij}(t), \sum_{n'=n}^{0} qBO_{ij}^{n'}(t) \right), \sum_{n'=n+1}^{0} qBO_{ij}^{n'}(t) \right)$$
$$- \max\left(\min\left(BOA_{ij}(t), \sum_{n'=n}^{0} qBO_{ij}^{n'}(t) \right), \sum_{n'=n+1}^{0} qBO_{ij}^{n'}(t) \right)$$

In respect of each **Settlement Period** j, for each **BM Unit** i, the **Offer Energy Payment** (OEP_{ij}) will be determined as follows:-

$$OEP_{ij} = \sum_{n} \left(PO_{ij}^{n} \times \int_{0}^{SPD} FRO_{ij}^{n}(t) dt \right)$$

In respect of each **Settlement Period** j, for each **BM Unit** i, the **Bid Energy Payment** (BEP_{ij}) will be determined as follows:-

$$BEP_{ij} = \sum_{n} \left(PB_{ij}^{n} \times \int_{0}^{SPD} FRB_{ij}^{n}(t) dt \right)$$

(e) In this Paragraph 4.1.3.9A, the following terms shall have the meanings ascribed to them in the **Balancing and Settlement Code**:-

"Accepted Offer Volumes"
"Accepted Bid Volumes"
"Bid"
"Bid-Offer Pair Numbers"
"BM Unit Period Non-Delivery Charge"
"CND_{ij}"
"Non-Delivery Order No.1"
"Non-Delivery Order No.2"

"Offer"
"PB^{n}_{ij}"
"PO^{n}_{ij}"
"$qAO^{kn}_{ij}(t)$"
"$qAB^{kn}_{ij}(t)$"
"QAB^{n}_{ij}"
"QAO^{n}_{ij}"
"QM_{ij}"
"QME_{ij}"
"SSP_{j}"
"SBP_{j}"
"SPD"

In this Paragraph 4.1.3.9A, $\int_0^{SPD} dt$ is the integral at times t, over the **Settlement Period** duration and time t is resolved to the nearest integer minute.

4.1.3.10 **NGC** and each **User** acknowledge and agree, as between **NGC** and that **User**, that no **Holding Payment** or **Delivery Payment** shall be payable except in relation to periods in respect of which instructions have been issued by **NGC** pursuant to this Paragraph 4.1.3.

Paragraphs 4.1.3.11 to 4.1.3.27 unchanged by this Amendment Proposal.

4.4 CHARGING PRINCIPLES

4.4.1 Application

The provisions of this Paragraph 4.4 shall apply to payments made by **NGC** to a **User** pursuant to **Mandatory Services Agreements** in respect of the provision of the **Mandatory Ancillary Service** of **Frequency Response**, and (if agreed between **NGC** and a **User**) may also be incorporated by reference into any other **Ancillary Services Agreement** as a term thereof so as to apply in respect of payments made by **NGC** to that **User** in respect of the provision of other **Ancillary Services** (but for the avoidance of doubt not so as to thereby create any obligations on **NGC** and that **User** under the **CUSC** in respect thereof).

4.4.2 Charging Principles - General

4.4.2.1 These principles are to be used to establish the basic arrangements but are not intended to stifle innovation in the development of new services or the giving of appropriate economic signals.

4.4.2.2 The charges shall be "cost reflective" ie. based and founded upon the actual or estimated costs directly incurred or to be incurred by the **User** for the purpose of providing the service or capability concerned.

4.4.2.3 Where a capability to provide an **Ancillary Service** is required by the **Grid Code** from all **BM Units** or **CCGT Units** (as opposed to a capability made available by agreement between **NGC** and a **User** from some only of the **User**'s **BM Units** or **CCGT Units**), no **Ancillary Service** capability payment shall be made.

4.4.2.4 The cost of "Grandfathering" **User**'s Equipment (i.e. bringing equipment owned by the **User** on 30th March 1990 to a condition of compliance with the **Grid Code**) shall not be included in **Ancillary Services** payments. Where a **Derogation** is withdrawn or reduced in scope then, except in relation to **Frequency Response**, the **User** shall be entitled to take the cost of meeting the withdrawal or reduction in the scope of the **Derogation** into account in its charges.

4.4.2.5 Subject to the other provisions of this Paragraph 4.4.2, the charges shall take due account of any change in or amendments to the **Grid Code** or any other statutory or regulatory obligation coming into force after 30th March 1990 affecting the provision of **Ancillary Services**.

4.4.2.6 If as a result of any changes to the **Balancing and Settlement Code** the **User** ceases to be entitled to receive payment under the **Balancing and Settlement Code** in respect of any elements of **Ancillary Services** provided by it which are expressed in this Paragraph 4.4 to be paid for under the **Balancing and Settlement Code**, the **User** shall be entitled to charge for such elements under an **Ancillary Services Agreement**. Where, however, such change entitles the **User** to be paid for any elements of **Ancillary Services** which are expressed in this Paragraph 4.4 to be

paid for under an **Ancillary Services Agreement** the **User** shall cease to be entitled to charge for such elements under an **Ancillary Services Agreement**.

4.4.3 Charging Principles – Frequency Response

4.4.3.1 The variable cost of producing **Primary Response**, **Secondary Response**, **High Frequency Response** shall include sums in respect of the additional inefficiency costs incurred in providing these services but shall not include any sums payable in respect of any costs which are the subject of Paragraph 4.4.3.3.

4.4.3.2 Part-loading of a **BM Unit** at a level other than that specified in a **Physical Notification** in order to provide **Frequency Response** will normally be achieved by the issue of a **Bid-Offer Acceptance**.

4.4.3.3 In recognition of the costs likely to be incurred when providing **Frequency Response**, an additional amount based upon an expected delivery of **Frequency Response** energy shall be payable under Paragraph 4.1.3.9A and shall reflect exposure to energy imbalance and non-delivery charges under the **Balancing and Settlement Code** when providing these services and the costs or avoided costs of production in respect of such expected energy delivery.

Related Changes to Definitions for CUSC Paragraph 11.3

"Holding Payment"	that component of the payment for **Mode A Frequency Response** calculated in accordance with Paragraph 4.1.3.9;
"Delivery Payment"	that component of the payment for **Mode A Frequency Response** calculated in accordance with Paragraph 4.1.3.9A and comprising an **Imbalance Compensation Payment**, a **Non-Delivery Payment** and an **Energy Payment**;
"Imbalance Compensation Payment"	that component of the **Delivery Payment** calculated in accordance with Paragraph 4.1.3.9A(b);
"Energy Payment"	that component of the **Delivery Payment** calculated in accordance with Paragraph 4.1.3.9A(d);
"Non-Delivery Payment"	that component of the **Delivery Payment** calculated in accordance with Paragraph 4.1.3.9A(c);

Annex 3 – Copies of Representations Received (Consultation Document)

This Annex includes copies of any representations received following circulation of the consultation document (circulated on 8th March 2002 requesting comments by close of business 12th April 2002).

Representations were received from the following parties:

No.	Company	File Number
1	Edison Mission Energy	CAP010-CR-01
2	Innogy plc, npower Limited, Innogy Cogen Trading Limited, npower Direct Limited, npower Northern Limited, npower Yorkshire Limited.	CAP010-CR-02
3	London Electricity Group	CAP010-CR-03
4	All 21 TXU that are CUSC Parties	CAP010-CR-04
5	British Energy plc	CAP010-CR-05
6	British Gas Trading Ltd	CAP010-CR-06
7	Elexon	CAP010-CR-07
8	PowerGen UK, PowerGen Retail Ltd and Cottam Development Centre.	CAP010-CR-08

Reference	**CAP010-CR-01**
Company	**Edison Mission Energy**

-----Original Message-----

From: **Simon Lord [mailto:slord@EdisonMission.Com]**
Sent: 12 March 2002 13:50
To: Friend, David
Cc: Libby Glazebrook; Kevin Dibble
Subject: CAP010 Consultation Response

CAP010 Consultation Response 12th April 2002

Whether CAP010 proposes a more appropriate treatment of the energy delivered when providing frequency response:
We believe that CAP010 provides an appropriate treatment of the energy associated with frequency response. It values the energy on a similar basis as under the Pool i.e as market price for energy. EME fully supports this proposal.

National Grid's arguments against the use of Bids and Offers to value mandatory frequency response energy:
We believe that National Grid has not made a case against the use of bids and offer as the payment mechanism for frequency response energy. The provision of frequency response energy and BOA energy are to a certain extent interchangeable. NGC has the ability to either instruct short duration fast response plant or place a larger proportion of plant in frequency responsive mode, once the minimum system dynamic requirement has been met. It is thus appropriate to treat the energy delivered by both mechanisms on the same basis.

Simon F Lord
Ancillary Services Manager
Short Term Operations, Edison Mission Energy
0870-238-5501 or 07980 793692 Mob

Reference	CAP010-CR-02
Company	Innogy plc, npower Limited, Innogy Cogen Trading Limited, npower Direct Limited, npower Northern Limited, npower Yorkshire Limited

Innogy's comments on CAP010 Consultation document on behalf of Innogy plc, npower Limited, Innogy Cogen Trading Limited, npower Direct Limited, npower Northern Limited, npower Yorkshire Limited

CAP010

1. Innogy promotes CAP010 as being the most efficient way for providers to reflect the costs incurred when providing Frequency Response. So long as an administered price remains, there will be financial incentives on providers not to provide certain types of Response with the consequent risk of market failure.

2. As well as the many costs mentioned in the consultation document that need to be reflected in the price for response energy, emissions limits also create significant and varying marginal costs. Increasingly such limits will place constraints on the annual output from plant. Thus, where a Unit has produced energy as a result of being frequency sensitive, the marginal cost must include an element to reflect the fact that the Unit may then be unable to stay within its annual limits leaving the owner to procure energy from the market rather than generating. This and the other factors mentioned in the consultation document mean that costs vary significantly between units and cannot be reflected in an administered price.

3. As well as being the best available method for reflecting costs, CAP010 also fits with National Grid's proposals in the BSC to treat expected volumes of response energy in the same way as bid/offer acceptances under the BSC. P34 and P71 would result in adjustments to BMU expected output and subject the discrepancy with actual volumes to system prices.

National Grid's arguments against CAP010

4. It is not clear what NGC mean by their statement that CAP010 'moves from cost reflective to value based principles'. It is generally agreed that the current reference price is not reflective of costs and CAP010 has been proposed on the basis that it is reflective of costs. A value based system might be based on system prices or even the marginal bid or offer accepted in a Settlement Period through the BM. CAP010 is not value based but utilises bid/offer prices as the best available measure of short-run costs.

5. If the introduction of a more cost reflective pricing mechanism were to result in increased overall costs of response then this is not an argument against CAP010. Rather, it suggests that the reference price is failing to properly reflect the costs incurred by providers. Furthermore, by properly reflecting the cost of response, the efficiency with which the system is despatched will be increased leading to an overall lower cost.

6. NGC have never revealed the arguments that support their contention that CAP010 'would blur the distinction between short term energy balancing and frequency response and prohibit competition in such services'. It is precisely by pricing frequency response energy on a similar basis to other short term balancing energy that competition would be encouraged.

7. It is not clear how the optimisation of despatch, following implementation of CAP010, would be significantly more complicated than that required for optimisation in the Pool where a Unit's marginal output was individually priced at the incremental price. Neither is it clear how the proposal to use fuel based prices would be simpler to implement. The mere fact that the cost of increasing output on a particular unit is the same as that for decreasing output on that unit does not mean that expected variations in output do not need to be considered in the despatch process.

Proposed alternatives

8. None of the alternatives mentioned in the consultation document (nor the current reference price) meet the criterion of being cost reflective. Factors that give rise to different costs at individual sites can not be reflected through any of the proposed methods of pricing. Further, given the delay in data becoming available and the significant movements in fuel prices, the fuel based option offers none of the benefits of a cost reflective solution whilst adding to the complexity of despatch and administration, and increasing the potential for market failure.

Reference	CAP010-CR-03
Company	London Electricity Group

-----Original Message-----

From: Cecil Dick [mailto:Dick.Cecil@le-group.co.uk]
Sent: 11 April 2002 17:25
To: Friend, David
Subject: Consultation Response -CAP010 Frequency Response Imbalance Exposu re

Consultation Response -CAP010 Frequency Response Imbalance Exposure

This response from London Electricity Group is on behalf of all the groups CUSC Parties.

We are in favour of CAP010. We consider the CUSC Objectives would be better met with the addition of CAP010.

Specific questions consulted upon.

We consider that CAP010 does propose an improved and more appropriate treatment of the energy delivered when providing frequency response.

We do not agree with NGC's arguments against the use of Bids and Offers to value mandatory frequency response energy. This is detailed below

a) NGC in practice has put a number of generating units on freq sensitive mode continuously (23~24 hours per day) since NETA alive. In this way, NGC has effectively used freq response to satisfy the short-term energy balancing on a continuous basis. It is therefore a surprise that NGC has raised the issue of 'blurring the distinction between short-term energy balancing and freq response'. In fact it is justifiable to treat the energy element of freq resp in the same way as any other energy.

b) CAP010 will bring perceivable improvements and benefits to the system operation in the way that service providers will compete to provide the services. They will have improved confidence that their energy will be treated fairly. Where there is competition there is pressure on prices/costs. Furthermore, because the same bid/offer banding system as that used in the existing BM market will be used to deal with the bid/offer relating to freq resp under CAP010, if a service provider submits an inappropriate bid/offer, it will price itself out from the BM market completely. This demonstrates another pressure on prices/costs.

c) We consider NGC's views in para 5.1.1 and 5.1.2 are inconsistent. In 5.1.1, NGC appears to assess CAP010 in respect of whether it better facilitates CUSC Objectives. In 5.1.2 NGC goes beyond this scope and suggests CAP010 should be considered in the context of the whole market debate. In addition to this inconsistency, they also contradict NGC's views expressed in various related working groups' or BSSG meetings LE has attended. his occurred again as recently as yesterdays BSSG meeting.

We consider that the alternative detailed in para 4.2.6 has merit in that it will contain the overall market signal on one hand, it will remove the need for optimal dispatch facility which is one of the concerns NGC has on CAP010. However, we do not consider the alternative is better than CAP010, because CAP010 would bring more intensive competition and greater pressures on the industry to reduce costs. We do not consider the other two alternatives appropriate.

Consultation Document wording

We noticed in the text of the Consultation some wording that we consider should be revised before it is considered by the Authority.

a) a typo in Page 7 Section 4, line 1: CAP009 should be CAP010.
b) in the 'legal text' section, page 32, para 4.4.3.3: para 4.4.3.3 is better ended before 'and shall reflect exposure...', i.e. 'and shall reflect exposure...' may be deleted.
c) if and when CAP009 is approved, the legal text section will, we assume, be revised accordingly

Conclusion

We consider the CUSC Objectives would be better met with the addition of CAP010.

Dick Cecil
London Electricity Group

Reference	**CAP010-CR-04**
Company	**All 21 TXU Companies that are CUSC Parties**

David Friend
National Grid Company plc
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IP9 2AQ

12h April 2002

CAP010 Consultation Response

Dear David

Appropriateness of CAP010

We agree with the majority view of the BSSG that the current mechanism for frequency response imbalance compensation should be modified as per the CAP010 Amendment Proposal.

Use of Bid/Offers

We do not see any distinction between the energy produced or removed as a result of frequency response and energy produced for short term balancing. In terms of setting Imbalance prices, this matter was addressed in the BSC by P18A.

Move from Cost Reflective to Value

The kernel of the division between NGC and the majority of the BSSG appears to be whether the energy which results from the Unit being in Response mode is being priced as any other energy (e.g in the BM) or whether it is part of the madatory service requirement of the Grid Code and therefore the energy has to be provided at "cost". We take the former view, which is why we do not see CAP010 as moving from a cost reflective basis to a value basis.

Enduring Frequency Response Arrangements

Our understanding of this is that this was supposed to address the issue of being able to "buy-out" the obligation to provide the Mandatory Frequency Response service under the Grid Code and was nothing to with the price of energy produced as a result of providing the service.

In view of the above we believe that Cap010 does better facilitate the relevant CUSC Objectives and should be made.

Yours sincerely

Philip Russell
Market Development Manager
For and on behalf of the 21 TXU CUSC Parties

Reference	**CAP010-CR-05**
Company	**British Energy Generation Ltd, Eggborough Power Ltd and British Energy Power and Energy Trading Ltd**

-----Original Message-----
From: **Trott Graham [mailto:graham.trott@british-energy.com]**
Sent: 12 April 2002 10:17
To: Friend, David
Subject: CAP010 Consultation Paper - Mandatory Response Imbalance Exposure

David,

Thank-you for the opportunity to comment on the consultation paper relating to CAP010. British Energy does not support CAP010 or the indicated alternatives.
Our specific comments are as follows:

1. We believe that there is insufficient real competition at present for the CAP010 proposals to be economically successful and as such CAP010 does not better facilitate the applicable CUSC objectives. Furthermore, if the costs of modifications to NGC's and participant's IT systems are indeed significant then this would raise additional concerns over the wisdom of implementing such a scheme which is not intended to be an enduring solution.
2. As discussed at the BSSG there are a number of valid arguments for and against the use of Bids and Offers to value response energy. We agree that IF such a move did result in an increase in the costs of frequency response (which is speculative) then BSUoS charges, by definition, would increase. However, whilst we are not fully convinced that CAP010 does actually present a move from 'cost reflective' to 'value based', we can see that there is potential for service providers to submit very high prices (that may not be cost reflective) which, on economic grounds, could preclude them from being selected to provide the service and would be against the current principles associated with the provision of Mandatory Services.
3. Whilst the BSSG decided not to formally propose alternatives to CAP010, we would like to record that we would not support a move to either a 'Fuel Based Reference Price' approach or a 'System Average Offer / Bid Reference Prices' approach or a 'Fixed Price Reference Price' approach. These approaches all have inherent difficulties and would still not fully resolve all of the present problems. In particular, to differing extents, they would still have difficulty addressing the basic need to accurately reflect the production costs of the many different types of plant providing the service.

Regards,

Graham

For British Energy Generation Ltd
Eggborough Power Ltd
British Energy Power and Energy Trading Ltd

Reference	**CAP010-CR-06**
Company	**British Gas Trading Ltd, Centrica Kings Lynn Ltd and Centrica Peterborough Ltd**

G/transp/elec/cusc

energy management group

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For the Attention of Mr D Friend
- Commercial Development

Our Ref. CAP010
Your Ref.
20 March 2002

Dear David,

CUSC Amendment Proposal 010: Mandatory Response Imbalance Exposure

Thank you for the opportunity to comment on this Amendment proposal. This response is on behalf of British Gas Trading Ltd (BGT), Centrica King's Lynn Ltd and Centrica Peterborough Ltd.

We do not believe the current arrangements for payment for Balancing Services are adequate and support this proposal as an improvement over the existing regime. As provision of frequency response is a mandatory service it is essential that the best methodology for provision and payment of this service is found. The most cost effective method is to make provision of frequency response attractive to competition through a market environment. This would enable discovery of the true costs and value of the service. Any other mechanism is a distortion and mean the costs of service provision are out of line with the value of that service and hence impose limits on the willingness of service providers to provide frequency response.

NGC have argued that the introduction of Bid Offer prices as a payment mechanism for frequency response will provide the potential for service providers to preclude selection by submitting extreme prices. Extreme prices are most likely if a provider does not believe he is being properly compensated for providing the service or there is limited numbers of service providers. Therefore, if the compensation payments truly reflect the cost of providing the service then the Bid Offer prices should not be prohibitive. The proposal will allow competitive service provision, with transparent and cost reflective prices.

Market mechanisms are the most efficient way of revealing the true value of a product or service. We would welcome the development of a Frequency Response market. Price transparency and cost recovery will encourage participants to offer services at a competitive rate. We note NGC's continuing recognition of the requirement for such a market. However, we are disappointed that no progress has been made in its development to date. As such it is

essential that some interim arrangements are in place. We believe this proposal will fulfil that requirement.

Further, we understand that NGC have previously expressed concern that some providers of Frequency Response services have withdrawn their service provision due a lack of full compensation under the current arrangements. We believe the proposal, in providing a more appropriate indicator of the cost of service provision, will reduce the risk of more service providers withdrawing their services and should encourage the return of other parties.

We have sympathy with NGC's concerns that introduction of Bid Offer prices for the payment of Frequency Response may blur the distinction between energy balancing and Frequency Response. However we believe the distinction between energy balancing and Frequency Response is already blurred and some plant is being taken as Frequency Response in a way that may be argued constitutes energy balancing. We do not consider that this concern is sufficient to prevent the development of a market mechanism for the payment of Frequency Response. The development of an effective form of tagging mechanism could be used to overcome this.

Yours sincerely

Danielle Lane
Transportation Analyst

Reference	CAP010-CR-07
Company	Elexon Ltd

Our ref. Comments on CAP010
Your ref. CAP010

12 April 2002

David Friend
Commercial Development
National Grid Company plc
National Grid House
Kirby Corner Road
Coventry CV4 8JY

(By email to: david.friend@uk.ngrid.com)

Dear David Friend,

Comments on Consultation Paper CAP010 'Mandatory Response Imbalance Exposure'

ELEXON acting as the Balancing and Settlement Code Company has reviewed the Consultation Paper CAP010 'Mandatory Response Imbalance Exposure'. ELEXON would like to make the following observations regarding the 'Proposed Amendment' which seeks to replace the Reference Price calculation with a mechanism that uses Bid prices (for high frequency response energy) and Offer prices (for low frequency response energy).

ELEXON does note that the current Reference Price calculation may lead to providers being advantaged or disadvantaged depending on whether they provide predominantly low or high frequency response. Therefore, a mechanism that calculates the actual cost of production for frequency response energy would seem more equitable.

However, there is an interaction between CAP010 and P34 'Transfer of imbalances caused by Balancing Services to the Transmission Company Energy Account', P36 'The generation of Bid-Offer Acceptances relating to energy delivered as a result of providing Applicable Balancing Services', and P71 'Transfer of imbalances caused by Balancing Services of Transmission Company Energy Account'. Most notably is P36 which seeks to introduce a similar mechanism as CAP010 but under the governance of the BSC.

The BSC Panel (meeting on the 14 March 2002) has recommended to the Authority that P34 Alternative and P36 Alternative should be made and that P71 should not be made. Therefore, a consistent approach will need to be considered on the implementation of CAP010/P36.

Yours sincerely

Justin Andrews
ELEXON Trading Department

Reference	CAP010-CR-08
Company	PowerGen UK Plc, PowerGen Retail Ltd and Cottam Development Centre Ltd

Christopher A Price
Strategy & Regulation

David Friend
Commercial Development
National Grid Company plc
National Grid House
Kirby Corner Road
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CV4 8JY

12 April 2002

Reference: CAP010 Mandatory Response Imbalance Exposure - Consultation Response

Dear Mr Friend,

Powergen UK Plc submits this response on behalf of itself and the following CUSC Parties; Powergen Retail Ltd and Cottam Development Centre Ltd.

Powergen strongly supports the original proposal as described within the consultation document.

The current methodology is widely accepted as in need of overhaul. CAP001 improves the calculation of the expected volume that a frequency response provider should have delivered. However, the payment received for this energy is based upon an arbitrary and inadequate methodology.

We support the proposers view that CAP010 would result in a more appropriate methodology for the payment of delivered frequency response energy.
Its major advantages over the current methodology are:

- The ability of the service provider to reflect frequently changing fuel costs. This is a fundamental requirement as the cost of fuel used for any given generating unit can vary within the day depending on the fuel contract(s) in place (including gas purchased from the within day exchanges).
- It allows the service provider to correctly reflect varying costs with change in output.
- It removes the perverse incentives for providers to provide one type of response (high or low) depending on whether they are running at high or low loads.

We do not agree with National Grid's comments regarding the proposed (CAP010) use of Bids/Offers to value mandatory frequency response energy.
The use of Bids/Offers would allow service providers to recover the changing costs associated with fuel source, and also the efficiency costs due to varying output.

In 4.3.2 of the consultation document NGC asserts that the modification will blur the distinction between short term energy balancing and frequency response and also prohibit competition between these services. We do not agree with this statement. In essence these services are intended to keep the system balanced by using one manually despatched (BOAs) and one automatically despatched mechanism (frequency response). They both

result in energy changes which act to restore system balance. The current arrangements should equally value the energy delivered by frequency response, whilst the modification will enable, (as was the case in the Pool), NGC to take account the value of any energy delivery into economically despatching frequency response services. Placing a more appropriate value on the delivered energy will encourage providers to deliver the service and not discourage them as suggested by NGC.

Furthermore, NGC asserts that the modification moves away from cost reflective principles without any benefits of a market mechanism. We disagree with this statement for the following reasons:

- the provision of the service capability is required to be cost reflective. CAP010 has no impact on the value for this service, (ie capability payments)
- As pointed out above, the modification will encourage service providers to compete for the energy delivery part of the service.

The alternative solutions to valuing the energy as detailed in the consultation document are

- Fuel based reference prices
- System average Offer/Bid reference prices
- Fixed price reference price.

Powergen does not support any of the above alternatives. We believe that they all have major shortfalls, as do the present arrangements. They are arbitrary and do not allow the service provider to vary the costs in the short time scales to fully reflect the costs of providing the service.

In summary, we believe that only CAP010 provides the necessary attributes to correctly reward service providers whilst still incentivising the latter to operate in a competitive manner.

If you require further clarification on any of the issues raised please do not hesitate to contact us.

Regards

C A Price
Strategy & Regulation