

NATIONAL GRID COMPANY plc

Response to the Ofgem CAP047 Impact Assessment Document

“Introduction of a competitive process for the provision of mandatory frequency response”

1.0 Summary of National Grid’s Response

1.1 We welcome the opportunity to comment on the Ofgem CAP047 Impact Assessment Document ‘**Introduction of a competitive process for the provision of mandatory frequency response**’.

1.2 National Grid notes Ofgem's view that it is currently minded to approve CAP047 Alternative A. National Grid is concerned that throughout the assessment of CAP047, including within this Impact Assessment, no quantified cost-benefit analysis of this option has been provided by any Party. The only attempt to quantify the impact of CAP047 or alternatives was made by National Grid and whilst a number of parties (including Ofgem) have indicated that they do not agree with our figures, no alternative figures (or assumptions to underpin them) have been provided. We stand by the assumptions we used to conclude that CAP047 Alternative A could increase the costs of provision of frequency response by £45m by the end of the second year (in England and Wales alone), with no obvious benefit being delivered to end consumers. With this in mind, it is difficult to see how CAP047 Alternative A would better facilitate the applicable CUSC objectives.

1.3 In summary, our views on Ofgem’s Impact Assessment with regards to the introduction of a competitive process for the provision of mandatory frequency response, and specifically in relation to CAP047 Alternative A, are as follows:

- **Competitive nature of the service** – National Grid is generally supportive of the introduction of competitive processes for the provision of balancing services where appropriate. However, in the case of mandatory frequency response we believe that the process envisaged by CAP047 Alternative A could result in cost increases due to limited competition, the complex interactions with the over-riding energy market and the inelasticity of demand for the product;
- **Cost Recovery** - It is the case that if providers of this mandatory service are making a financial loss under the current cost reflective charging principles, then existing provisions in the CUSC allow them to increase their prices with agreement from National Grid, if such a loss can be demonstrated. The CUSC process culminates in a referral to arbitration if agreement is not reached;
- **Commercial pricing** - If CAP047 Alternative A was approved, there would be the potential for providers to price themselves uncompetitively, therefore making economic dispatch of frequency response very difficult based on a limited number of economically viable providers. The Grid

Code obliges generating plant to have frequency response capability. This scenario would mean that generators are technically compliant with the Grid Code Condition however the capability could be commercially unavailable. It is our observation that a number of current providers of mandatory frequency response may adopt this approach;

- **Overall costs of response provision** – National Grid believes that if CAP047 Alternative A was approved then the costs of mandatory frequency response would increase in line with analysis provided by National Grid during the assessment of the amendment proposal. National Grid also asserts that the cost of commercial frequency response is directly affected by the cost of the mandatory service and any cost increases associated with mandatory frequency response will be reflected through to the commercial service. This assertion is evidenced by experience gained from our commercial negotiations. Overall the impact of CAP047 Alternative A could raise BSUoS charges by 15% to the industry;
- **Dispatch optimisation** – National Grid believes that the current dispatch optimisation algorithms are appropriate to deal with the existing cost reflective pricing methodology where there is little variability and volatility in prices submitted. If pricing freedom was introduced under CAP047 Alternative A, a more complex system would have to be developed to enable effective optimisation and economic dispatch that could deal with any scenario which could arise under the new arrangements. The development cost of this new system is currently estimated to be in the region of £2m; and
- **Response monitoring** – National Grid currently monitors the provision of frequency response via incident based monitoring technology. This process is used to initiate discussions with generators if under-performance is identified and has proved reasonably effective, given the cost reflective nature of the service. If a value based market with pricing freedom was introduced a more comprehensive monitoring system would need to be developed to measure performance. It is important to note that mandatory frequency response payments are based on capability rather than delivery. A value based system would need to be backed up with a monitoring system able to claw back payments if under-delivery occurs (as per the energy market with imbalance prices and non-delivery charges). No such monitoring system is envisaged by CAP047 Alternative A.

- 1.4 Each of the above points is described in more detail in the subsequent section.
- 1.5 National Grid therefore does not support the implementation of CAP047 Alternative A. In the Amendment Report for CAP047, National Grid's recommendation was to implement CAP047 Alternative B. Alternative B was specifically designed to address a number of the concerns listed above. Alternative B allows pricing freedom for the generators but the inclusion of caps is designed to test whether the market really is competitive over a two year period. The outcome of this test would then serve to aid consideration of response developments going forward.
- 1.6 If Ofgem is of the view that Alternative B is not acceptable, then it is National Grid's position that a 'do-nothing' option is preferable to Alternative A.

National Grid's view in more detail

2.0 Competitive nature of the service

- 2.1 Frequency response is an essential service, mainly provided by generators, to ensure the safe and secure operation of the transmission system. The volume of frequency response that needs to be dispatched in real time is a function of the demand for electricity and the largest potential generation loss on the system. Neither of these variables is directly influenced by National Grid.
- 2.2 No economic trade-off is performed when we procure frequency response i.e. there is no point at which we decide not to procure any more because the price is too high. We will always procure response to the levels that are required to ensure we remain operating within statutory limits. As this is the case it is difficult to envisage how a 'two-sided competitive market' can be established for the provision of this service, as the standard attributes of a market are not prevailing.
- 2.3 It is our view that the analysis provided during the assessment of CAP047, and contained within Section 3 of the Impact Assessment, demonstrates that there is limited competition in the provision of the service.
- 2.4 We note Ofgem's view that National Grid has underestimated the amount of response available because:
- i) No account has been taken of non-conventional sources and the demand side;
 - ii) CAP047 would provide incentives to make response capability more accessible to NGC;
 - iii) CAP047 would provide incentives for plant experiencing technical difficulties to return in the short term; and
 - iv) CAP047 would establish a two-sided competitive market for MFR (Mandatory Frequency Response) services between Market Participants and National Grid.

As the sole purchaser of response services, National Grid is best placed to comment on the volumes of the service that is readily available. Taking each of Ofgem's points in turn:

- i) NGC currently procures response via a combination of mandatory frequency response and commercial frequency response. Payment for mandatory frequency response is governed by the CUSC, and it is only these payment mechanisms that CAP047 relates to. Commercial Frequency Response is not governed by the CUSC, and terms are agreed bilaterally between National Grid and the service provider on a case by case basis reflecting the nature of the service being provided. Commercial response is procured when it is more economic than its mandatory equivalent, or where there are technical characteristics that make commercial provision more attractive. As Ofgem indicates, the analysis that was presented on competitiveness only considered

mandatory frequency response. This is because CAP047 only relates to mandatory frequency response, which is the service that licensed generators are obligated to provide. We do not believe it is appropriate to rely on the provision of response from other providers where it is entirely optional to provide the service, and it can be withdrawn at any time, therefore we have not included the volumes in the analysis of competition;

- ii) Whilst we acknowledge that CAP047 does provide more incentives for generators to make response accessible to National Grid, we believe that these incentives exist because it will be possible to extract inappropriate payments for the provision of the service, by offering in high prices;
- iii) Similarly we agree that these incentives would exist, but have concerns about the exact nature of these incentives.
- iv) The Hirschmann-Herfindal Index (HHI) has been used to assess whether a competitive market exists for mandatory frequency response services. National Grid agrees that applying the HHI as a means of analysing a market's competitive framework is a useful tool. The HHI value for mandatory frequency response in financial years 02/03 is 1400 and 03/04 is 1338. When applied to the Office of Fair Trading guidelines a market with a HHI between 1000 and 1800 is considered "concentrated". Whilst National Grid agrees with using HHI to view the potential of competition within a market, this model only provides a high level indicator of potential competition and other factors have to be taken into account to assess whether a true two-sided competitive market exists. In the Impact Assessment Ofgem notes National Grid's analysis on the liquidity of the market for frequency response. The HHI derived by analysing a years worth of data is around 1400 for the past two years. It must be noted that this analysis does not take into account the temporal nature of the market. At different times of the year the plant available to us to provide response varies significantly (e.g. a winter peak period where virtually all plant is running vs summer minimum where most plant running is inflexible). National Grid has not provided a HHI for each half hour of the year as the analysis involved in calculating this is significant, but our result that accessible response is less than 150% of the overall requirement for more than half the year implies that a HHI in accessible response will be greater than 2000, and quite possibly greater than 4000, for many hours of the year.

2.5 We also note Ofgem's view that any instances of manipulation and/or market abuse could be effectively dealt with, if necessary, through the use of Ofgem's powers under the Competition Act. National Grid welcomes this commitment and would request further information as to the criteria that Ofgem would use in assessing whether market abuse and/or manipulation was occurring.

3.0 Cost recovery

- 3.1 On a number of occasions in the Impact Assessment Ofgem considers that existing providers of the mandatory service could be making a loss when providing the service. There is no reason why this should be the case.
- 3.2 Section 4.4 of the CUSC sets out the Charging Principles for Balancing Services. The Impact Assessment indicates (however does not quantify or give specific examples) that some service providers are actually making a loss. National Grid supports the cost reflective payment principles associated with this mandatory service and under section 4.1.1.13 of the CUSC are obliged to review a service provider's payments if such a request is made.
- 3.3 The present payment arrangements associated with mandatory response provision are paid in accordance with the prices and tables detailed within the Mandatory Service Agreement (MSA). Under the current arrangements, Users have the right to request that prices relating to "holding" response are amended on a bi-monthly basis. This request takes the form of a bilateral agreement with National Grid with reference to the Cost Reflective Charging Principles. Irrespective of the bi-monthly arrangement, the payments rates are also reviewed on a triennial basis, with the rates being adjusted by such an amount that is consistent with charging principles.
- 3.4 These established mechanisms within the CUSC allow frequency response service providers to increase their prices with agreement from National Grid, if a loss can be demonstrated. The CUSC process culminates in a referral to arbitration if agreement is not reached.
- 3.5 It is worthy of note that along with the cost-based holding payment; the CUSC also provides for a Response Energy Reference Payment which is calculated with reference to the volume of service that is expected to be delivered. The Response Energy Payment is an administered mechanism also using a cost based price.

4.0 Commercial pricing

- 4.1 If CAP047 Alternative A was approved, there would be the potential for providers to price themselves uncompetitively, therefore making economic dispatch of frequency response very difficult based on a limited number of economically viable providers. The Grid Code obliges generating plant to have frequency response capability. This scenario would mean that generators are technically compliant with the Grid Code Condition however the capability could be commercially unavailable. The potential for service providers to effectively price themselves out of the market would have several implications.

Limited economic response

- 4.2 National Grid procures Balancing Services subject to the framework laid down in Special Condition AA4 of the Transmission Licence. This framework obliges National Grid to “operate the transmission system in an efficient, economic and co-ordinated manner”. Under CAP047 Alternative A there is scope for several service providers (at any one point in time) to submit a price at the maximum level that the IT software systems allow (this is common practice in the Balancing Mechanism with ‘sleeper’ bids and offers submitted when a BM Unit does not wish to be moved from his PN level). There is a very real possibility that in formulating the most optimum dispatch solution for frequency response National Grid would be forced to accept some of the very high prices. This would effectively reduce the volume of service that was economically available.

Inefficient dispatch of Frequency Response

- 4.3 A limitation in potential service providers (set out above) could limit National Grid’s responsibility for efficient dispatch of frequency response. A particular service provider with the most efficient frequency response characteristics could potentially be priced unrealistically high for a minimum of a month. During this time the system operator requires frequency response and this particular service provider can provide the most efficient service¹. National Grid may have to utilise this particular provider as no alternative provider can supply the quality and quantity of the response required. Therefore National Grid is a distressed buyer and has incurred high costs. Alternatively actions may lead to inefficient dispatching of frequency response as National Grid could have to dispatch several different service providers to achieve a similar provision in quality and quantity of frequency response as would have been delivered by the more efficient but now uneconomic provider.

Exploitation of a single distressed buyer

- 4.4 Under CAP047 Alternative A market participants obliged under the Grid Code may decide that provision of mandatory frequency response is not a service they want to provide and therefore submit high prices to reflect this strategy. It is our observation (from discussions with providers) that a number of current providers of mandatory frequency response may adopt this approach. National Grid does not believe that this ability is appropriate in relation to a mandatory service. As frequency response is an essential tool utilised to manage the system National Grid must procure sufficient capacity to provide this service in order to meet the system need.

¹ The most efficient service based on quality and quantity of the type of Frequency Response required by the system frequency in real time

5.0 Overall costs of response provision

- 5.1 During the assessment of CAP047, National Grid undertook some analysis that resulted in a forecast that the implementation of CAP047 (Original or Alternative A) would result in an increase of balancing costs by £45m by the end of the second year. This result was underpinned by a number of assumptions relating to how generators may behave and how National Grid will manage the situation. These assumptions are contained within the assessment report for CAP047 and the Impact Assessment.
- 5.2 No other party has attempted to quantify the impact of CAP047 and whilst a number of parties (including Ofgem) have indicated that they do not agree with our figures, no alternative figures (or indeed assumptions to underpin them) have been provided.
- 5.3 An unquantified argument that has been provided is that benefit will be derived because PN positions or BM prices may be adjusted due to the additional ability to vary their response holding price. It is worthwhile to consider a quantification of this argument:
- To effect a significant difference in expectation of movement in the BM we would expect to see a movement in bid/offer price of the order of £10/MWh;
 - A typical generator will only deliver 1 MW of response for 10 MW of energy (as per Grid Code obligations);
 - Therefore to achieve an equal impact of a £10/MWh change in BM energy price a generator would have to change his response holding price by £100/MWh (at a ratio of 10:1); and
 - Currently response prices are of the order of £5/MWh, so the required increase would be 2000%.
- 5.4 Whilst National Grid acknowledge that this argument is somewhat extreme, it puts into context the assumptions that were made in our analysis (i.e. 50% or 100% pricing changes), and provides them with considerable credibility.
- 5.5 We note Ofgem's view that the price of commercial services are not likely to increase as a result of implementation. Clearly this conclusion is drawn by Ofgem's view on the likely impact of CAP047 Alternative A on mandatory response costs – a view with which National Grid does not concur. Commercial frequency response is contracted on a bilateral basis with service providers and commercial frequency response is used by National Grid as an additional tool in managing system frequency needs based on economic and technical characteristics. Many of commercial providers may attempt to increase prices of their commercial service to reflect the payment increases associated with the mandatory service. This assertion is evidenced by experience through our commercial negotiations and experience of progression of other balancing services into a competitive market.
- 5.6 Costs of the provision of response (both mandatory and commercial) are recovered via the Balancing Services Use of System (BSUoS) charges (subject

to the prevailing incentive arrangements). It is our view that the overall the impact of CAP047 Alternative A could raise BSUoS charges by 15%.

6.0 Dispatch optimisation

- 6.1 National Grid believes that the current dispatch optimisation algorithms are appropriate to deal with the existing cost reflective pricing methodology where there is little variability and volatility in prices submitted. If pricing freedom was introduced under CAP047 Alternative A a more complex system would have to be developed to enable effective optimisation and economic dispatch that could deal with any scenario which could arise under the new arrangements.
- 6.2 Under CAP047 Alternative A the dispatch algorithm in the control room would have to be developed to enable optimisation of both energy balancing and frequency response holding costs at the same time. The current optimisation technique has been designed with the current relative levels of BM prices and response holding prices in mind (i.e. the BM prices dominating the response holding prices). The current optimisation tool is not designed to cope with the increased variability and volatility of holding prices that CAP047 Alternative A introduces.
- 6.3 National Grid believes significant work would be required to develop the current algorithm to ensure that it fully optimised costs in a CAP047 Alternative A world. In National Grid's view the development of the dispatch tools has to be designed to accommodate any potential scenario to ensure that (regardless of the overall level of costs) we are operating the system in an economic and efficient manner.
- 6.4 As stated in the Impact Assessment, our current view is that development costs of around £2m will be incurred to support implementation of Alternative A. We note that Ofgem expects that the costs are likely to be less than our estimate, but we do not understand how this conclusion has been drawn based on the complexity of the optimisation solution.

7.0 Response monitoring

- 7.1 If a value based market with pricing freedom was introduced a more comprehensive monitoring system would need to be developed to measure performance. It is important to note that mandatory frequency response payments are based on capability rather than delivery, so there needs to be an incentive to deliver. CAP047 Alternative A contains no provisions for this. The CUSC currently recognises the intention to implement a continuous monitoring system with the ability to affect holding payments, but National Grid notes that CAP047 Alternative A does not include provisions for this.
- 7.2 At present, while the provision of response is monitored against pre-agreed levels, incentivisation to meet these levels is more of an implicit nature, which has been deemed appropriate given the cost reflective nature of the service. I.e. There is currently no financial implication of under delivery.

- 7.3 A value based system would need to be backed up with a monitoring system able to claw back payments if under-delivery occurs. In the energy market, where we have value based delivery, incentives to deliver bids and offers are provided by the imbalance pricing mechanism and the non-delivery rules.
- 7.4 National Grid currently monitors the provision of frequency response via incident based monitoring technology. This process is used to initiate discussions with generators if under-performance is identified and has proved reasonably effective, given the cost reflective nature of the service.
- 7.5 By moving to a situation under CAP047 Alternative A which allows response providers to submit prices that reflect their perceived value as opposed to the costs incurred, the issue of delivery according to contract becomes even more pertinent. National Grid believes that any move towards a more value based charging mechanism should be accompanied by the appropriate mechanisms for monitoring and incentivising delivery of the service as pre agreed. Clearly the benefits of monitoring to the generators are to increase the visibility of good performance.
- 7.6 Should such complimentary arrangements not be implemented as part, or alongside CAP47 Alternative A, there is a strong likelihood that situations could occur where commercial rates are being paid for a service which is not being delivered in part or in full.
- 7.7 National Grid recognises that careful consideration must be exercised upon developing this commercial framework to allow appropriate incentives on service providers.

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