nationalgrid

Stage 05: Code Administrator Consultation

Connection and Use of System Code (CUSC)

CMP237 ‘Response Energy Payment for Low Fuel Cost Generation’

What stage is this document at?

01	Initial Written Assessment
02	Workgroup Consultation
03	Second Workgroup Consultation
04	Workgroup Report
05	Code Administrator Consultation
06	Draft CUSC Modification Report
07	Final CUSC Modification Report

CMP237 seeks to take into account the different costs of generators with low or zero energy costs through the calculation of the Response Energy Payment.

Published on:	**3rd June 2015**
Length of Consultation	**15 Working days**
Responses by:	**24th June 2015**

Low Impact:
Generators

Contents

About this document

The purpose of this document is to consult on CMP237 with CUSC Parties and other interested industry members. Representations received in response to this consultation document will be included within the Final CUSC Modification Report that will be furnished to the Authority for their decision.

Document Control

Version	Date	Author	Change Reference
0.1	3rd June 2015	Code Administrator	Code Administrator Consultation to Industry

Any Questions?

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1 Summary

1.1 This document describes the Original CMP237 proposal (the Proposal), summarises the deliberations of the Workgroup, responses to two Workgroup consultations, options considered for potential Workgroup Alternative CUSC Modifications (WACMs) and the final WACM agreed.

1.2 CMP237 was proposed by National Grid Electricity Transmission Plc and submitted to the CUSC Modifications Panel (the Panel) for their consideration on 26th September 2014. A copy of the Proposal is provided in Annex 1. The Proposal seeks to take into account the different costs of generators with low or zero energy costs by setting the Response Energy Payment at £0/MWh.

1.3 The Panel sent the Proposal to a Workgroup to be developed and assessed against the CUSC Applicable Objectives. The Workgroup first met on 7th November 2014. A copy of the Workgroup Terms of Reference is provided in Annex 2. The Workgroup have considered the issues raised by the CUSC Modification Proposal and as part of their original discussions, the Workgroup had noted that there were a number of potential solutions to the defect CMP237 seeks to address. These potential options for change are highlighted within the Workgroup Alternatives in Section 5 of this document which gives an overview of Workgroup discussions prior to the first Workgroup Consultation.

1.4 Following the first Workgroup Consultation, the Workgroup considered all responses and the Workgroup Consultation Alternative Request which were received. The Workgroup felt that the Alternative Request could be a practical option and that it highlighted an additional defect which the Workgroup sought to form a solution to as part of CMP237. The discussions following the Workgroup Consultation are captured within Section 5 of this report. The Workgroup held a second Workgroup Consultation to seek views on the second defect identified and proposed solutions. However, following the second Workgroup Consultation and advice from the CUSC Panel, the Workgroup reverted back to the Original CMP237 proposal and agreed that the defect identified by the Alternative Request needed to be progressed separately to CMP237. The discussions around this decision are outlined within Section 6 of this Report. The Workgroup also agreed to progress one Workgroup Alternative CUSC Modification (WACM) to the original CMP237 proposal.

1.5 The first Workgroup Consultation closed on 21st January 2015 and 5 responses (including 1 late response) and a Workgroup Consultation Alternative Request were received. The second Workgroup Consultation closed on 23rd April 2015 and 5 responses (including one late response) were received. A Workgroup Consultation Alternative Request was also received in response to the Consultation.

1.6 The Workgroup unanimously agreed that the Original Proposal better meets the Applicable CUSC Objectives than the CUSC baseline and the majority of the Workgroup felt that the WACM better facilitates the Applicable CUSC Objectives than the CUSC baseline. Half of the Workgroup voted that the WACM better facilitates the Applicable CUSC Objectives than the Original. The Workgroup were split in the vote for the best option, half voted for the Original and half voted for the WACM.

1.7 At the CUSC Modifications Panel meeting on 29th May 2015, the Workgroup Report was presented to the CUSC Panel and the Panel agreed that the Workgroup had met their Terms of Reference and accepted the Workgroup Report. The Panel agreed for CMP237 to progress to Code Administrator Consultation.

1.8 This Code Administrator Consultation has been prepared in accordance with the terms of the CUSC. An electronic copy can be found on the National Grid Website at http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/CUSC/Modifications/CMP237/.

2 Background

2.1 All licensed generators are obliged under the Grid Code to provide the Mandatory Frequency Response service (an automatic change in a generator's Active Power output in response to an increase/decrease in System Frequency from the Target Frequency of 50Hz). Currently, when instructed to provide Frequency Response, a generator is paid an hourly Holding Payment and then either (i) pays or (ii) is paid a Response Energy Payment (REP) for their net delivery per settlement period.

2.2 The Holding Prices vary and are submitted by generators on a monthly basis.

2.3 The REP is defined within the CUSC. Conceptually the REP has been designed to reflect the cost of providing the energy. The REP is made for the expected volume of frequency response delivered. It is intended to compensate generators for the Energy Imbalance exposure under the Balancing and Settlement Code (BSC) due to providing frequency response. The mechanism also includes an element to compensate for the cost or avoided cost of energy production; which includes the associated cost of fuel. The REP is based on the Market Index Price (MIP) with different ratios: -0.75 for High Frequency (reduction in Active Power) and 1.25 for Low Frequency (increase in Active Power). The negative ratio for High Frequency indicates that the REP is paid by the generator as it is anticipated that the generator has saved money by not generating, including using less fuel. The positive ratio for Low Frequency Response indicates that the REP is paid to the generator as it is anticipated that the generator will incur additional costs, including by using more fuel.

2.4 This methodology was agreed during a time when the majority of generators providing frequency response had fuel costs that made up a reasonable proportion of the cost of providing frequency response; although it was recognised that in implementing the methodology there could be more additional frequency response available from a variety of providers such as non-conventional sources of generation which would add to available supply and liquidity in the mandatory frequency response market. Therefore, the current methodology is tailored to these conventional generators and does not consider the different costs of generators with low or zero energy costs.

2.5 An example of this would be a wind farm that has a financial incentive to output at full capacity as they receive ROCs which are paid on a MWh output basis. If this unit were to be instructed to provide High Frequency Response, it would pay REP for any consequent reduction in their energy output, although in this case, the wind farm would have no avoided fuel cost to offset this against. There is a reverse effect for Low Frequency Response; the wind farm would first need to be bid down (its output reduced through acceptance of a bid in the balancing mechanism) in order for it to have the headroom to be able to provide Low Frequency Response. The bid price that the generator submits for this would include their lost ROC revenue, and when the wind farm provides the Low Frequency Response it would also get paid the REP despite having used no additional fuel.

2.6 The costs and benefits for Conventional and Low Fuel Cost plant are illustrated in the table below;

Generator type	Response type	Cost	Benefit
Conventional	High Frequency	MIP* -0.75	Avoided fuel
	Low Frequency	Used fuel reduced output (if required)	MIP*1.25 BOA payment (if required)
Low Fuel Cost	High Frequency	MIP* -0.75	-
	Low Frequency	Reduced output	BOA payment MIP *1.25

Table 1 – Costs and benefits for generators providing Frequency Response

2.7 It should be noted that when a generator has been dispatched for frequency response, they are not subject to imbalance payments (or cashout) as a result of changes in output from their notified position or position post-BOA.

2.8 The current methodology therefore provides a measure of cost mitigation for conventional fuel-stock generators by balancing the avoided/used fuel costs against the REP, but does not appropriately reflect the cost for renewable generators. With the increasing installed capacity of these generators, the Proposer believes the calculation of the REP needs to be re-defined to accommodate a diverse range of frequency response service providers.

3 Modification Proposal

3.1 CMP237 proposes that the REP calculation be retained for conventional generators or generators that have a fuel cost (e.g. fossil fuel or biomass). For all other generators, the REP would be settled at £0/MWh. This will ensure that the REP better reflects the cost of changing a generator's energy output in providing frequency response, whether that change involves a fuel cost or not. The effect of this is illustrated in the following table:

Generator type	Response type	Cost	Benefit
Conventional	High Frequency	MIP* -0.75	Avoided fuel
	Low Frequency	Used fuel reduced output (if required)	MIP*1.25 BOA payment (if required)
Low Carbon	High Frequency	MIP* -0.75	-
	Low Frequency	Reduced output	BOA payment

Table 2 – Costs and benefits for generators providing Frequency Response under Original Proposal

3.2 The Proposer considers this proposal to be a pragmatic step that should be straightforward to implement at minimal cost. By removing the REP from non-conventional generators the proposal removes the financial penalty as a result of assumed fuel costs, whilst ensuring that there would be minimal impact for existing fossil fuel generators.

4 Workgroup Discussions prior to first Workgroup Consultation

Presentation of Original Proposal

4.1 At the first Workgroup meeting, the Proposer presented the background and reasons for raising CMP237. The Original Proposal form can be found in Annex 1 and the supporting presentation can be found on the National Grid Website[1].

4.2 The Proposer noted that the System Operator (SO) has a statutory duty to maintain the secure operation of the National Electricity Transmission System (NETS) and does this by managing the frequency of the network. The system is designed to operate at 50Hz and the SO has set an upper and lower operational limit of 50.2Hz and 49.8Hz. The Proposer stated that, in order to remain within these limits, the SO needs to ensure that generation equals demand at all times; if generation is greater than demand, the frequency increases and if generation is less than demand the frequency decreases.

4.3 The Proposer explained that in order to stabilise the frequency to 50Hz, the SO purchases frequency response services from Users. Users must provide prices for Mandatory Frequency Response (which is required from all licenced BMUs in accordance with the Grid Code). Users also have the option of providing Commercial Frequency Response (which is procured through a monthly tender process). One Workgroup member asked whether Generators may be instructed to provide response to a frequency set point higher than 50Hz if there is a significant system loss. The Proposer clarified that Generators were not instructed to do this anymore, but that historically it had happened in order to maintain clock speeds.

4.4 Only Generators that are classed as 'large' generators (as defined within the Grid Code) and therefore have a Mandatory Services Agreement (MSA) are required to be able to provide Mandatory Frequency Response (it should be noted that parties can request to sign an MSA if they so wish). One Workgroup member noted that the definition of the different sizes of generators will change with the introduction of the EU Network Codes. The Proposer also clarified that once a generator is dispatched to provide Frequency Response, they are not exposed to Cash Out charges.

4.5 The Proposer noted that pricing for Mandatory Frequency Response is made up of two payments; the Holding Payment (which covers the cost of being ready to provide response) and the Response Energy Payment (REP) (which covers the cost of changes in energy production). It was noted that this Modification only deals with the Response Energy Payment. There may be a number of effects of changing the REP, one of which being that it may lead to parties amending their Holding Payments.

4.6 The Proposer explained that Holding Payments are posted by individual generators on a monthly basis for Primary, Secondary and High Frequency Response[2], whereas the REP is based on the Market Index Price (MIP) and is calculated as follows;

- For an increase in output, a generator will receive the MIP*1.25
- For a decrease in output, a generator will pay the MIP*0.75

[1] CMP237 Workgroup Information on National Grid website http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/CUSC/Modifications/CMP237/

[2] ϕ Primary and Secondary frequency response: the automatic response to a decrease in system frequency. Primary response must be provided within 10 seconds and be sustainable for at least a further 20 seconds. Secondary response must be provided within 30 seconds and be sustainable for at least a further 30 minutes. High frequency response: the automatic response to an increase in system frequency. High frequency response must be provided within 10 seconds of the frequency change.

4.7 The Proposer explained that the value of these multipliers in the REP (1.25 for low frequency response and 0.75 for high frequency response) were identified from historical analysis undertaken as part of CAP107 'Redefinition of Response Energy Payment (REP) for Mandatory Frequency Response'. They represent the average spread between the System Buy Price (SBP) and System Sell Price (SSP), adjusted to achieve the smallest net monthly REP and were introduced as it was generally agreed at the time that this option would address the degree of risk associated with the exposure of National Grid to the spread between SBP and SSP and generators' exposure to more extreme imbalance prices in any given Settlement Period.

4.8 The Proposer noted that, in their view, the purpose of the REP is to cover changes in fuel costs as a result in changing output to provide frequency response and stated that this is not cost reflective for plant that does not pay to generate, e.g. wind, solar and tidal. For a wind generator providing high frequency response, there is a cost to the generator in reducing their output but no fuel saving to balance this cost. For a wind generator providing low frequency response, the generator will increase its output and get paid for the additional fuel it uses, even though the generator did not incur any costs in obtaining that fuel. The Proposer believes that this is deterring participation in the Frequency Response market by members of a growing market segment.

4.9 One Workgroup member asked whether the System Operator had ever instructed a wind generator to provide Frequency Response. The Proposer clarified that in the past, wind generation have been bid down in the Balancing Mechanism (BM) for energy reasons, and then have been dispatched for Frequency Response as a secondary measure. The Proposer noted that more recently (7th November 2014) several wind plant were placed into Frequency Sensitive mode, however this is the only instance of this happening[3]. Another Workgroup member asked whether it would be possible to determine how many times a wind generator had been given a BOA and then asked to provide Frequency Response. The Proposer noted that it would not be feasible to provide this information as it would require going back through all control room logs and cross-referencing them against every action taken on a wind farm to identify whether there were any secondary actions taken.

4.10 The Proposer presented three graphs which showed that the majority of plant providing primary, secondary and high frequency response are pricing themselves at less than £10/MWh. However, a proportion of these are submitting prices higher than £10/MWh and even higher than £100/MWh, the majority of which were identified as being wind plant. One Workgroup member noted that although there is a large amount of wind generation pricing themselves high, there are other (non wind) generation types providing prices as high as wind. These graphs can be seen in figures 1, 2 and 3.

[3] Data for this can be seen in the 2014-15 Frequency Response Volumes D9 spreadsheet: http://www2.nationalgrid.com/UK/Industry-information/Electricity-transmission-operational-data/Data-explorer/Outcome-Energy-Services/

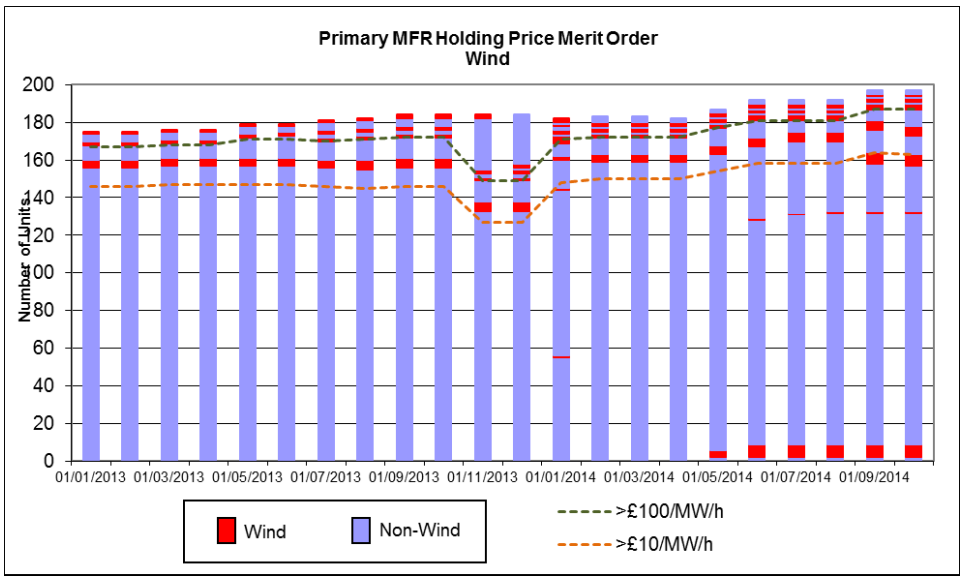

Figure 1 - Wind holding price for Primary frequency response

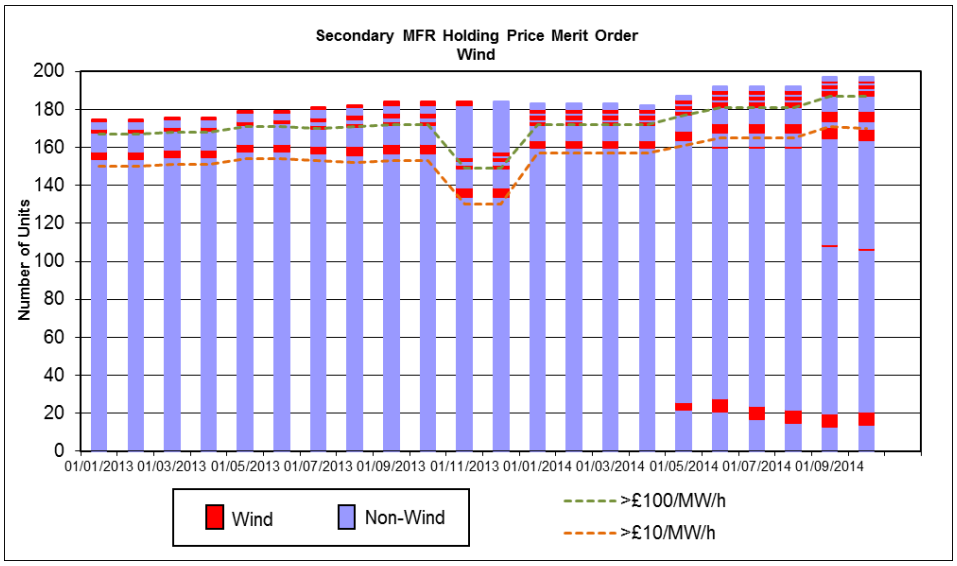

Figure 2 - Wind holding prices for Secondary frequency response

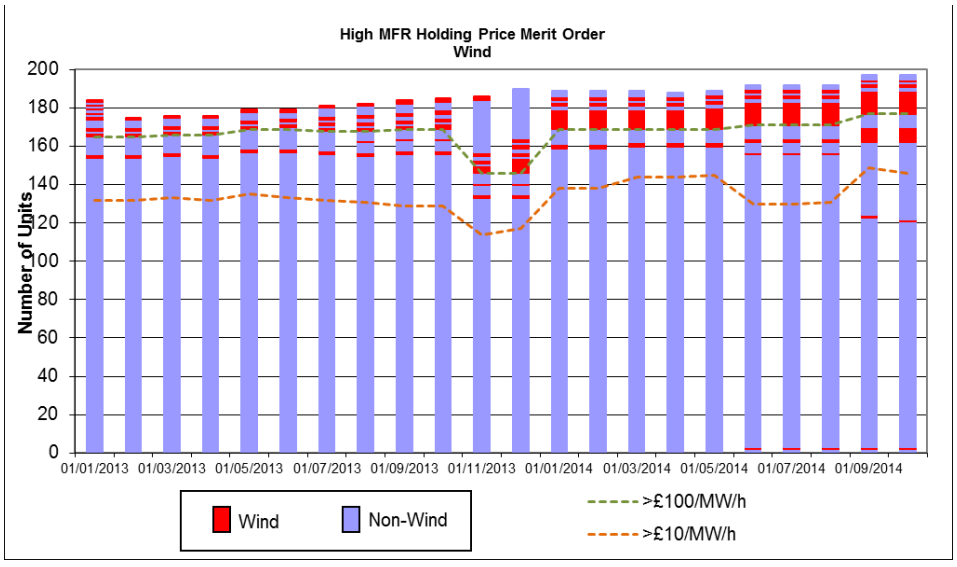

Figure 3 - Wind holding prices for High frequency response

4.11 One Workgroup member noted that on all three graphs presented, there is an anomaly in winter 2013 where a larger proportion of plant submitted prices higher than £100/MWh and asked if there was any reason for this. The Proposer noted that after investigation, no clear reason could be found for the behaviour as the plants involved were CCGT and coal from several different companies in different parts of the country. This is the first year that the behaviour has been exhibited, and therefore it is suspected that the values may have been default inputs into the FRPS system.

4.12 The Proposer also presented a graph (Figure 4 below) which illustrated the submitted holding prices per generator against the estimated BM cost to move the generator to the assumed most responsive point for the 30th September 2014. The size of the bubbles on the graph represents the available response. This graph can be seen below. The proposer noted that the graph was a snapshot, and the data for the whole year had been created as a video. The Workgroup agreed that this should be available alongside the Workgroup Consultation. If you wish to receive this video, please request this from the Code Administrator (contact details on page 2 of this report).

4.13 The proposer noted that the graph was intended to illustrate the total costs associated with instructing wind for response, as they typically have to be bid down in the BM before being instructed to provide response. For consistency, estimated BOA prices have been included for non-wind generation, however care should be taken in comparing wind with non-wind in the chart as instructing non-wind generation does not typically require an associated BOA.

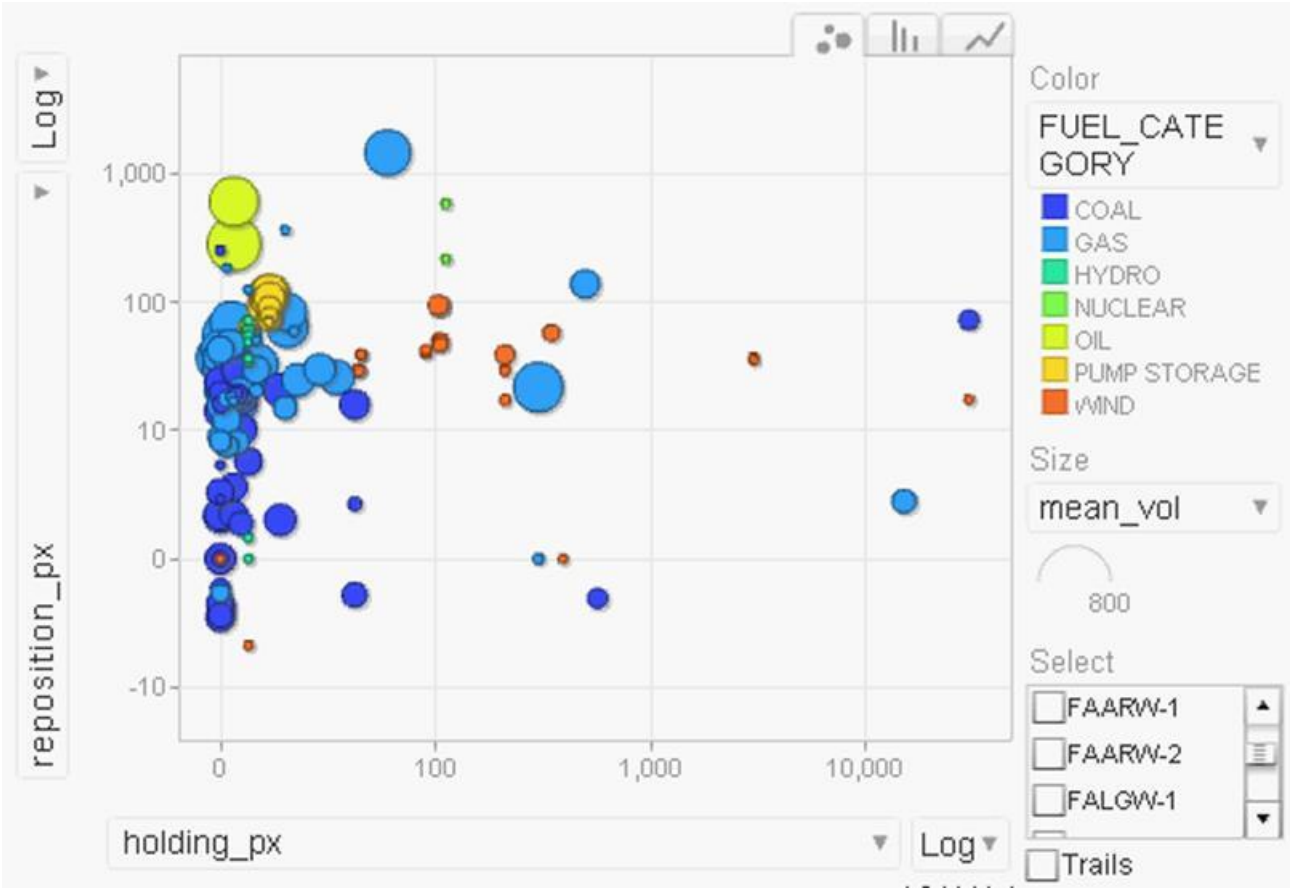

Figure 4 - submitted holding prices per generator against the estimated BM cost to move the generator to the assumed most responsive point for the 30th September 2014

4.14 A Workgroup member suggested that it would be useful to see the difference between high and low wind speeds and how this affects the BOA prices. After investigation it was identified that this would be a significant piece of work as it would require locational wind speed and historical BOA data to be combined per wind farm per settlement period. Whilst

it is technically feasible to do so, the Proposer considers it to be outside the scope of the Workgroup as it is not related to the REP or holding prices (which are submitted on a monthly basis).

4.15 One Workgroup member noted that on fig 4 above, the general trend for generation with a fuel cost tended to follow the Y axis, whereas those without a fuel cost tended to follow the X axis. The Workgroup member stated that as hydro generation clearly following the Y axis like other conventional plant, this supported the view that they should be considered as having a fuel cost for the purpose of this Modification. It was noted, however, that there may be other reasons why a group of generators had similar holding prices; e.g. plant with similar construction may have similar sunk costs to recover, and that this was not direct evidence of the existence of a short-term fuel cost.

Which generators should be classed as low fuel cost generation under CMP237?

4.16 The Proposer had initially categorised all GB generation that are able to provide Frequency Response into two groupings; namely (i) 'Fuel Cost' and (ii) 'No Fuel Cost'; and invited views from the Workgroup on the table 3 below.

Fuel Cost	No Fuel Cost
Gas	Onshore Wind
Coal	Offshore Wind
Oil	Solar
Nuclear	Tidal
Biomass	Wave
Electricity Storage Technologies (inc. pumped storage, batteries)	Hydro

Table 3 – Fuel cost / no fuel cost categorisation

4.17 Battery technology was originally presented to the Workgroup as having no fuel costs, however a Workgroup member noted that a battery is similar to a pumped storage generator in that there is a cost associated with taking the electricity from the system in the first place in order to be able to provide it back under Frequency Response conditions, and therefore this was equivalent to a fuel cost. The Proposer agreed that under the Original Proposal, battery technology would be classed as having a fuel cost. Another Workgroup member suggested that with new types of generation being introduced within Europe, there could be a situation where there is a wind generator (with no fuel cost) and a battery (with a fuel cost) connected behind the same meter. It was therefore agreed to include 'battery' in a new classification in the table above of 'Electricity Storage Technologies' for clarification. This would also include pumped storage, and would be limited to storage that is a separate BMU.

4.18 The chart of submitted holding prices per generator against the estimated BM cost was produced which highlights the No Fuel Cost generators as per the Original Proposal.

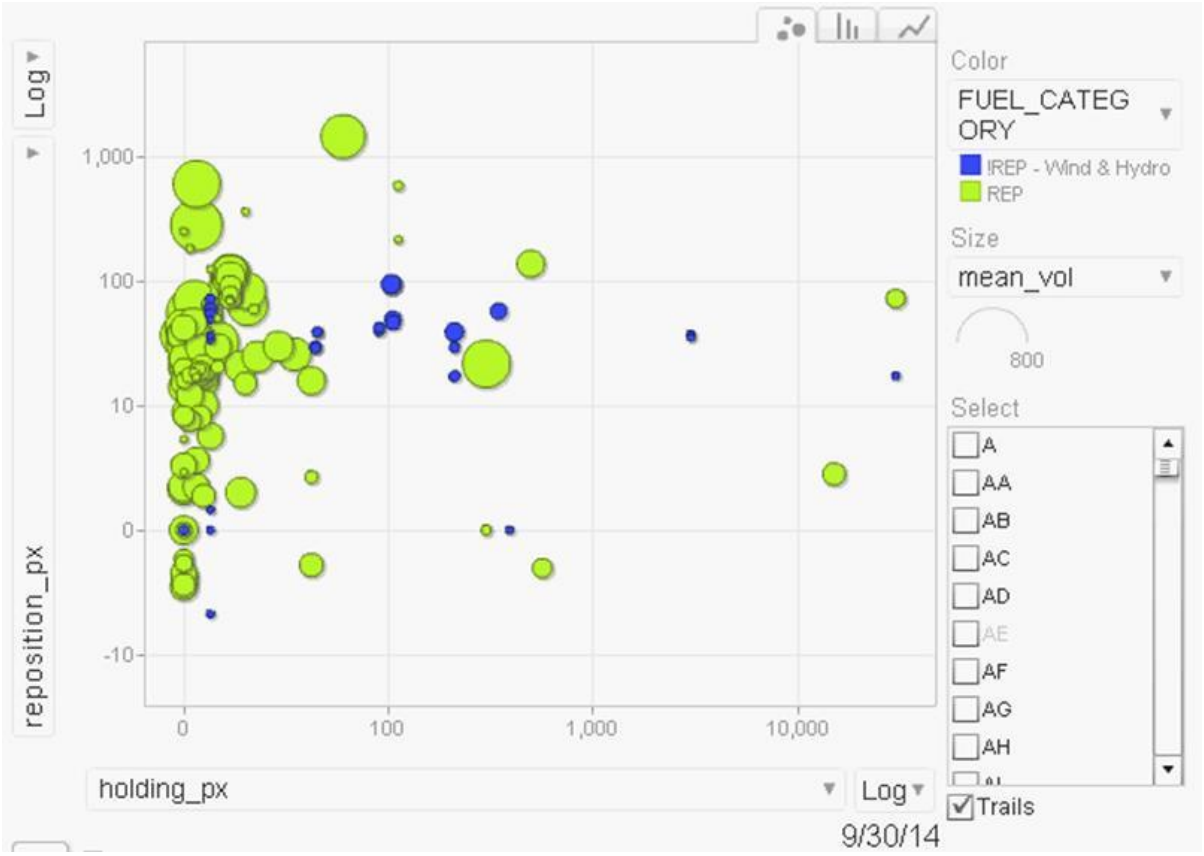

Figure 5 – Submitted holding prices per generator against the estimated BM cost – No fuel cost generators under Original proposal.

4.19 One Workgroup member questioned whether demand should be included within table 3. The Proposer clarified that although there are no demand sites providing mandatory frequency response, they would be included in the no fuel cost group. The Workgroup agreed that there were no other generation types that should be included within the table 3 in paragraph 4.16.

4.20 One Workgroup member suggested that Hydro (storage) generation should be included in the table above as having a fuel cost. The Workgroup member explained that the fuel used to provide Mandatory Frequency Response from a Hydro (storage) unit has both an energy production cost associated with it in terms of its handling and holding as well as a (lost) opportunity cost because if it is not used for providing Mandatory Frequency Response, it can be sold into the energy market at a later date. This is unlike, for example, wind generation where the fuel cannot, per se, be stored. The Proposer agreed that there is a missed opportunity cost with the fuel stored, however this should not be classed as a fuel cost. The Proposer considered that the water collected and stored behind the Hydro station has a value, in that it can be used to generate electricity, but not a cost, in that rain and river water is free to collect.

Potential options for change

4.21 Based on discussions within the first meeting (as set out in paragraph 4.17), one Workgroup member suggested that a potential alternative to the Original Proposal should be to have Hydro (storage) being classed as having a fuel cost (with all other generation types classified as per the Original Proposal) and the Workgroup agreed to consider this as a potential option for change.

4.22 One Workgroup member noted that Table 3 only takes account of current technologies in GB and in order to future proof this Modification, the Workgroup may wish to consider alternative technologies which are being used within Europe but are yet to be used in GB. In order to do this, the Workgroup member suggested a potential option for change which specifically referenced technologies such as tidal barrage and generating plant with batteries as having a fuel cost. Another Workgroup member noted that these technologies are currently being used in France and Germany and could potentially be introduced to GB in coming years. The Workgroup agreed to consult on this potential option for change.

4.23 One Workgroup member also suggested that generators should be allowed to opt-in or opt–out of the REP calculation, therefore deciding themselves whether they have a fuel cost or not. It was clarified that only those generators classified as having no fuel cost in Table 3 would have a choice on how their REP is calculated and that this would be a 'binary' choice of either (i) pay or paid MIP * -0.75/1.25 (the 'status quo') or (ii) pay or paid £ zero (the CMP237 Original approach). The Workgroup agreed that this could be a potential alternative to discuss. The Workgroup noted that this decision, by the categorised no fuel cost generator, could be made either monthly, yearly or on a one off basis. The Ofgem Representative asked whether there would be a consumer benefit from allowing this choice for generators. The Proposer took an action to provide cost benefit analysis on how optionality may impact prices.

4.24 The Workgroup decided to apply this choice to the three options developed and consulted on the six options outlined in Table 4 below:

	No option to choose whether REP is based on MIP or set to £0/MWh	Option to choose what REP is based on MIP or set to £0/MWh.
Original Proposal	X	X
Hydro (storage) has a fuel cost	X	X
Hydro (storage) / Tidal Barrage / any generation with a connected battery has a fuel cost	X	X

Table 4 – Potential options for change

4.25 The Workgroup did not include an option on the possible timing of making the REP choice, but consulted on it being either on a (i) monthly; (ii) annual or (iii) one-off basis.

Implementation approach

4.26 The Workgroup considered the Implementation approaches for all potential options and the option to decide what REP is based on as being either: (i) a monthly; (ii) annual; or (iii) a one-off choice.

4.27 The Proposer noted that in terms of process changes there would be a relatively low cost to implementation, and therefore CMP237 could be implemented as soon as reasonably practicable for both the stand alone options and the options with a choice. One Workgroup member suggested that other parties may require system changes that should be taken into account when proposing implementation timescales. The Workgroup agreed to ask industry parties for their views on this.

4.28 One Workgroup member noted that there would be a need for a transition period to allow effective communication of the change, if CMP237 were approved and for parties to adjust their prices to reflect those changes. The Workgroup agreed that an appropriate transition

would leave a full clear month in between an Authority decision and the effective implementation of the Modification. The Workgroup agreed that this should be the same for all six potential options for change outlined in Table 4.

4.29 A Workgroup member asked if the option which included a choice on a one off basis (e.g. when signing a MSA) was implemented, whether existing MSAs would be amended. It was also questioned that, if this was the case, whether one full clear month between an Authority Decision and an effective implementation date would allow sufficient time for National Grid and Users to amend existing MSAs.

4.30 The Workgroup noted that there were different stages of a plant lifecycle where an MSA could be changed and that all of these would need to be considered when discussing implementation timescales, these are;

1. New plant – MSA not issued – no offer
2. New plant – MSA not signed – had offer
3. New plant – MSA signed - Not commissioning
4. Existing plant – Commissioning
5. Existing plant – Operational

4.31 It was noted that the first stage would require little to no change, the second stage would require resubmitting (by National Grid, to the User) an amended MSA and the last three stages would require National Grid contacting the User to amend their MSA. The National Grid representative considers that the proposal could be implemented with a side letter to the MSA rather than needing to amend existing MSAs. It is estimated that this process would take a maximum of three months.

4.32 A Workgroup member stated that if the Authority implemented an option which included optionality on a monthly basis, this would require a change to the FRBS which would require a short amount of time to implement.

4.33 One Workgroup member suggested that if an option where non fuel cost generators choose how they are classed (in terms of fuel type) is implemented, this information should be transparent so competitors can see how generators class themselves. It was suggested that this information could be provided within the Transmission Entry Capacity (TEC) Register. Another Workgroup member disagreed with this approach and thought that this information could be commercially confidential to the Generator.

4.34 At the third Workgroup meeting, following the Workgroup Consultation, the Workgroup noted that there was some support in the Consultation responses for the CUSC implementation 10 Working Days following an Authority decision and practical implementation at least one clear month after the decision. One Workgroup member noted that this would probably be done using a side letter and it was questioned how long would be given to parties to sign and return the letter. It was noted that it could take up to three months to return a signed letter. Another Workgroup member advised that this should be long enough as there is an incentive for the generator to sign and return the letter as soon as they can and many would take much less than three months to return.

5 Post first Workgroup Consultation discussions

Workgroup discussion on responses

5.1 The Workgroup met to discuss all responses received to the Workgroup Consultation. One Workgroup member referred to their own response to the Consultation, stating that Ofgem had moved away from cost reflectivity to a more value based approach with the Response Energy Payment, whereas the Original solution to CMP237 seems to be doing the opposite. The Workgroup member also noted that most responses had favoured the potential option to include a choice for generators when it comes to their REP and that in his opinion a monthly choice would be the best for this option as it aligns with the Monthly Holding Payments.

5.2 The Workgroup noted that there was a mixture of views for the frequency of REP choices for generators, with some preferring monthly and some preferring annually. Other Workgroup members noted that although within their responses they had stated a preference for an annual choice, they could also see the benefit of having a monthly choice.

Drax Power CUSC Workgroup Consultation Alternative Request

5.1 A CUSC Workgroup Consultation Alternative Request was also raised by Drax Power, this can be found in Annex 5 of this Consultation. Representatives from Drax Power were invited to the Workgroup meeting to discuss their alternative request. The Drax Power representative noted that since the initial determination of the methodology on which the REP is calculated, the market has become much more diverse and this methodology is no longer appropriate. It was also noted that the Market Index Price can vary considerably within day, which increases financial risk for generators when providing frequency response. The Drax Power representative stated that the Alternative Request included the option for all parties to choose the price of the REP so that they are aware of what prices they face and also clarified that this included negative prices.

5.2 A Workgroup member questioned whether, within the proposed alternate, the REP would be submitted alongside the Holding Price or separately. The Drax representative noted that the process would remain the same as it is currently, however a generator would also have the option to choose their REP payment, so therefore the prices would be submitted separately. A Workgroup member thought that this option sounded more complex than the Original Proposal and the other potential alternatives the Workgroup have discussed previously, as with these options the REP and the Holding Price would be submitted together. It was noted that if these were submitted separately, there would be more room for error for both the generator and National Grid.

5.3 The National Grid representative noted that currently Holding Prices are submitted on the Frequency Response Price Submission (FRPS) website, he assumed that with the proposed options, parties would submit their REP alongside their Holding Prices, which would be simple. However, he also noted that if every generator has their own REP it may prove problematic to identify the most cost efficient generators to provide Frequency Response. This is as a result of the optimisation algorithm, which would require an forecast of the response energy that would be used in the next settlement period in order to include REP prices in the decision process.

5.4 The Workgroup questioned how the optimisation algorithm would include the zero REP for certain generators under the Original Proposal. The National Grid representative clarified the difference between the Original Proposal and the alternate proposal by Drax, stating that there will be an uplift in the Market Index Price for the Original which would not require

the optimisation algorithm to consider the REP, whereas the alternative would require the REP to be built into the optimiser. The National Grid representative agreed to find out how this could be achieved and reported back to the Workgroup in the following meeting (para 5.14).

5.5 The Workgroup welcomed views from a Frequency Response expert from Drax Power who stated that currently the market is hugely distorted and that it is expected that the Market Index Price will reach a value below zero in the near future. The Drax representative stated that currently there seems to be no relationship between the Market Index Price and the incremental costs that Frequency Response providers are subject to. The National Grid representative asked if Drax Power had any analysis to show the variability of the Market Index Price to provide to the Workgroup. The Drax Power representative noted that it was not clear which types of generators provide Frequency Response, however agreed to provide its available data to the Workgroup which National Grid agreed to feed in to.

5.6 The Workgroup discussed whether they thought that the alternative request should be taken forward by the Workgroup as an official WACM. It was agreed that the Workgroup would have a better view of whether they would want to consider this option as a WACM once they have seen the analysis provided by National Grid and Drax. The Workgroup also decided to wait until they had sight of this analysis before agreeing any other WACMs for the Workgroup Report.

5.7 One Workgroup member thought that Drax's proposed alternative, alongside the Original and potential alternatives, provides a range of flexibility, noting that Drax's alternative would be the most flexible option allowing generators to choose any price they wanted for their REP.

5.8 It was noted that if the Workgroup chose to include Drax's alternative request as a formal WACM, they may wish to re-consult on the WACMs as it would have a broader impact on the Industry than the Original Proposal and initial options.

5.9 One Workgroup member advised that under the Drax alternative request there is a possibility that market participants recover all their costs via the REP and that this could be an unintended consequences with the interaction between the REP and the Balancing Mechanism. The National Grid representative took an action to consider the impact of any unintended consequences and whether there would be any consequential code changes as a result of CMP237. Within the next Workgroup meeting, the Proposer noted that there should be no consequential code changes from CMP237 and no impact on the BSC or Balancing Mechanism was identified.

Drax Power analysis

5.10 Within the next Workgroup meeting, the Drax representative presented analysis[4] to support their Workgroup Consultation Alternative Request to the Workgroup, this is included within Annex 5 of this document. The Drax representative noted that the different marginal costs of different generation technologies is wide and that there is a threat that marginal costs will continue to increase bringing volatility. He noted that there are specific examples within the analysis provided to the Workgroup where wholesale prices had moved around quite dramatically within a short period of time. He noted that Drax believe that their paper illustrates that from a frequency response perspective, the Workgroup Consultation Alternative Request better meets the Applicable CUSC Objectives as it facilitates competition and helps National Grid meet its licence requirements.

[4] Drax analysis for CMP237 is available under 'Workgroup meetings' on the CMP237 page: http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/CUSC/Modifications/CMP237/

5.11 The Workgroup thanked Drax for providing this useful analysis to support their decision on whether or not to accept their Alternative Request as a formal WACM within the Workgroup Report.

5.12 In response to the action taken in the previous meeting, the Proposer noted that he had spoken with the Commercial Optimisation department at National Grid to see if it was possible for parties to choose the price of their REP in line with the Alternative Request. He noted that the current methodology calculated REP payments post-event, i.e. when the volume of response energy used was known. He noted that the Alternative Request would require individual REP prices to be included in the decision of which generators to despatch for response, and this would require forecasting the volume of response energy pre-event. The level of response energy that will be used in a given settlement period is impossible to forecast, however, as it will depend on variables such as the second by second level of NHH demand. Without being able to know this variable, it would not be possible to make a decision on which generator would be the most economic for frequency response. Putting this aside, the Proposer also noted that he had spoken to the IT department who had estimated that any development of the optimisation and despatching algorithm would not be able to start until at least 2017 and could cost £10m to implement, however National Grid would need to spend ~£30k on a feasibility study before any level of confidence could be ascribed to this figure, and this could take a month or more. In summary, the Proposer's view was that the Alternative Request raised by Drax is not a workable solution, and if it were to be attempted it would have major time and cost implications. The Proposer noted that, although he did not think this option was practical, the Drax analysis does highlight that there is an issue with MIP volatility that needs to be addressed.

5.13 The Drax representative questioned how the optimisation of the REP would be more complicated for the Alternative request than it would be for the Original solution which offers two options (REP of zero or based on MIP). The Proposer noted that this is because it would be included within the holding price. One Workgroup member asked if National Grid put in a proxy or would change the holding price to cover the risk. The Proposer took and action to get more clarification on how the Original proposal would have factored costs into the optimisation.

5.14 The Proposer noted that he considered that an additional defect of the negative impact on REP costs as a result of MIP volatility had been highlighted by the Drax analysis and asked the Workgroup if they would want to come up with a solution for this (along with the original defect outlined within the Modification Proposal form) within the CMP237 Workgroup process.

Potential options for change

5.15 It was noted that there were two potential options for the Workgroup in regards to targeting this additional defect, these were;

1. Include the defect within CMP237 and come up with one or more solutions that resolve both the original defect and MIP volatility, or;

2. Focus on the original defect and raise another modification which tackles MIP volatility separately.

5.16 It was noted that if the Workgroup went for option 1, they would need to re-consult with the industry and if they went for option 2, a decision from the Authority on CMP237 may be delayed as a result of having a related modification underway. Therefore whichever option was chosen there would be a delay to the expected CMP237 process.

5.17 The Proposer considered that the additional defect identified in the Drax analysis could be addressed within CMP237 by setting the REP to zero for all parties. This would address

the issue of MIP volatility affecting REP prices as well as the REP calculation not being appropriate for low fuel cost plant. The Proposer stated that this would be the revised Original proposal.

5.18 The Drax representative noted that the revised Original solution targets the issue of MIP volatility but it does not target the issue of uncertainty in response volumes. The Proposer noted that volume uncertainty is about forecasting how much response energy will be used, which would be an issue under any option. He noted that if the REP is set to zero, the generators will have to make an estimate of how much response energy they will use, which should tend to zero over time, and what their costs are and factor this into their holding prices. However if generators are allowed to submit individual REP prices, National Grid would need to make an estimate of the response energy that will be used over the total system and then undertake an optimisation based on this. The Proposer believed that generators are better placed to manage this risk as they can average the estimated energy used over time, as it should net to around zero, whereas the SO has to consider each settlement period in isolation and hence there would be a much greater impact of an inaccurate forecast.

5.19 The Proposer noted that another idea for a solution to the MIP volatility issue would be to settle the REP over a longer period of time (e.g. monthly) as this would average out the effect of MIP volatility in the REP price, however this would not tackle both defects and hence would need to be paired with one of the solutions to the REP calculation defect. He also noted that the Drax solution would address both issues however reiterated that he did not think it was proportionate.

5.20 One Workgroup member noted that if the potential alternative from Drax was not adopted by the Workgroup, it could potentially be raised in the future to make another change which would allow for a transitional change from an option less flexible to the most flexible option.

5.21 A Workgroup member noted that the most efficient way to proceed would be to adopt the secondary defect and come up with a solution which aims to fix both defects within the CMP237 Modification process; however it was noted that this would require another Workgroup consultation. The Workgroup agreed that there should be another Workgroup Consultation on CMP237.

5.22 Another Workgroup member noted that, although the Workgroup now considers there to be an additional defect, after the Workgroup Consultation the Workgroup may still decide not to include this within the CMP237 Modification Report to the CUSC Panel, revert back to the Original solution and options outlined within Section 4 of this report and suggest another Modification should be proposed to target the additional defect.

5.23 The Workgroup considered whether the potential options for change previously consulted on would also address the new defect. The Proposer noted that the new defect could be addressed by including the proposal of settling the REP on a longer period to each option. A Workgroup member questioned whether this would be mandatory. The Proposer thought that this should be mandatory to avoid complication. The Workgroup decided that new options for change should be considered as the ones which have already been consulted on (outlined in para 4.24) did not address both defects effectively.

5.24 The Workgroup felt the Drax Alternative Request should be included within a second Workgroup consultation as a potential option for change alongside the revised Original. A Workgroup member suggested another option which included aspects from both the revised original and the Drax Alternative Request. He noted that as the Drax Alternative Request could not be implemented until at least 2017, phase 1 could be to have the REP set to zero (revised Original solution) and in 2017 introduce the solution of generators choosing their own REP (Drax's Alternative Request). The Workgroup member noted that

this would provide a useful stepping stone to the Drax Alternative Request, rather than waiting until 2017 for this to be implemented.

5.25 The Workgroup agreed that they should re consult on the revised Original solution and the two potential options for change. These are summarised within the table below;

Option	**Description**
Revised Original Solution	Remove REP for everyone
Potential option for change 1 (Drax Alternative Request)	Allow generators to submit their own REP
Potential option for change 2 (Hybrid option)	Remove REP for everyone until it is possible for generators to submit their own REP.

Table 5 - Potential options for change for second Workgroup Consultation

5.26 The Workgroup noted that if the Drax Alternative was preferable by the Industry, then appropriate cost benefit analysis would be done on this option to provide within the Workgroup Report to the CUSC Panel. However, the Workgroup also noted that there would still be the choice to revert back to the original defect, solution and potential options after the second Workgroup Consultation if they chose not to include the second defect with this.

5.27 A Workgroup member noted that it needs to be clear within the Workgroup Consultation the time and cost implications that would be required to understand whether or not the Drax Alternative Request was even achievable. The Proposer reiterated that in his view the Drax alternative could not be implemented for reasons given above, however it was estimated that it would take £30k and 6-8 weeks for National Grid's IT contractor to provide a quote and timescales for any change to the EBS system. The Proposer noted that he did not want to ask for this unless the Workgroup voted for the Drax option to be a formal Workgroup Alternative CUSC Modification Proposal (WACM), as it would delay the EBS implementation work that was currently in progress. For reference, it was noted that any change would not be able to be started until 2017, and changes of this magnitude could cost around £10M.

6 Workgroup conclusions following second Consultation

Workgroup discussion on secondary defect

6.1 At the CUSC Modifications Panel meeting on 24th April 2015, an update was given by the Panel Secretary on the progress of CMP237, stating that the second Workgroup Consultation had closed on 23rd April 2015. Some Panel members raised concerns over whether the issues identified by Drax in their Workgroup Consultation Alternative Request could be considered as a Workgroup Alternative CUSC Modification, given that it highlights a new, secondary defect that was not identified in the original CMP237 proposal. The CUSC Panel reviewed Section 8 of the CUSC for guidance noting the relevance of the following paragraphs:

8.20.23: The Proposer may […] vary his CUSC Modification Proposal on notice (which may be given verbally) to the chairman of the Workgroup provided that such varied CUSC Modification Proposal shall address the same issue or defect originally identified by the Proposer in his CUSC Modification Proposal.

8.20.1 If the CUSC Modifications Panel has decided not to proceed directly to wider consultation […] a Workgroup will be established […] to assist the CUSC Modifications Panel in evaluating whether a CUSC Modification Proposal better facilitates achieving the Applicable CUSC Objectives and whether a Workgroup Alternative CUSC Modification(s) would, as compared with the CUSC Modification Proposal, better facilitate achieving the Applicable CUSC Objectives in relation to the issue or defect identified in the CUSC Modification Proposal.

6.2 The Panel advised that these paragraphs should have a bearing on how the Workgroup should proceed with CMP237. The Panel noted that if the Workgroup decided not to address the secondary defect, this could be dealt with under the Balancing Services Standing Group (BSSG) or with a new CUSC Modification Proposal. The Workgroup discussed the process of CMP237 so far and considered how to proceed following the CUSC Panel's discussion above.

6.3 During the final Workgroup meeting, the Proposer clarified that the proposed defect was that the current Response Energy Payment methodology creates a barrier to competition for low fuel cost generators and that the Drax Alternative Request does not address this defect alone. Having previously agreed to amend the Original Proposal to reflect the secondary defect, the Proposer noted that he did not have a strong view on whether the defects should be addressed together within CMP237 or whether CMP237 should address the Original defect alone. However, the Proposer noted that as the CUSC Panel had concerns about addressing the secondary defect within CMP237, they should probably be dealt with separately.

6.4 The Chair asked for the Workgroup's view on how to proceed with CMP237. The majority of the Workgroup felt that the two defects (the Original and the additional defect identified by the Drax Alternative Request) are distinct and clearly different and therefore should be dealt with separately. The Workgroup noted that they have recognised the additional defect and thanked the Drax Power representatives for their contributions to the Workgroup meetings, however the Workgroup would like to progress this defect separately to CMP237. It was also noted that if the additional defect was addressed under another CUSC Modification Proposal, there may be other parties interested in joining a Workgroup to develop the Modification.

6.5 The Chair suggested that the Workgroup revisit the Original proposal and consider whether there are any potential alternatives (which address the Original defect only) based on the

previous Workgroup discussions (within Section 4 of this Report) and responses to the first Workgroup Consultation. The Proposer noted that the Original Proposal included a classification of generators (paragraph 4.16 of this report) which separated those with a fuel cost from those without a fuel cost. Within the Original Proposal, those generators classed as not having a fuel cost would have their REP set to £0/MWh.

6.6 During the final Workgroup meeting, an observer from GDF Suez asked whether the Workgroup had considered basing the REP for low fuel cost generators on the Renewable Obligation Certificate (ROC) price rather than setting it to £0/MWh. The observer noted that the gain or loss of ROCs is linked to the provision of low and high frequency response respectively, and therefore would act in the correct direction to ensure cost neutrality of the REP.

6.7 The Proposer stated that this approach had been considered in detail by the BSSG in the development of this proposal, and he would not want to link the REP to renewable obligations for several reasons. Firstly, different types of generators received different levels of subsidies, not all of which were ROCs. Secondly, subsidy regimes can be changed by government which would cause consequential changes to the CUSC. Thirdly, ROCs were being phased out for new generators in favour of a Contract For Difference (CfD) approach. The Proposer considered that the above reasons meant that linking the REP to an external subsidy regime was not an appropriate solution as it would create competitive disadvantages between generators on ROCs and those on other subsidy regimes such as CfD, and would create inefficiency in the governance of the CUSC.

6.8 A Workgroup member noted that if the ROC regime were retained and it was just the amount of ROCs that were changed by government, these would only be self-governance or housekeeping changes to the CUSC, so would not require Workgroups to develop. He also noted that renewable obligations are changed for future generators which are given advance notice of any changes. A Workgroup member questioned whether the Workgroup should outline why the value of £0/MWh had been chosen within the Workgroup Report. Another Workgroup member noted that this would not necessarily need to be provided within the Workgroup report and that the Panel had no queries about this when the Modification Proposal was raised.

6.9 The Proposer noted that based on previous Workgroup discussions and consultation responses, he now thinks that the intention of the REP is not so much about fuel cost and more about lost opportunity cost. Therefore he would like to include hydro generation into the 'fuel cost' classification within Table 3 shown in paragraph 4.16 of this Report. A Workgroup member questioned whether this would include both storage and run of river, the Proposer clarified that it would. A Workgroup member asked the Proposer to provide further clarification on non-dammed hydro, and it was confirmed that there are very few hydro sites which did not have some storage capability, by their very nature these sites are all 100-300kW and did not provide any frequency response services.

6.10 The Proposer confirmed that the any generation that had the ability to manage its output as a result of having connected storage such as a reservoir, battery or capacitor would be included as having a fuel cost as part of the Original Proposal.

6.11 The Workgroup agreed to include all responses (and the alternative request) to the second Workgroup Consultation within the Workgroup Report, however noted that these were not considered within the Workgroup meeting as the Workgroup decided to revert back to the Original option and the second consultation was not based on this.

Potential Alternatives

6.12 The Workgroup considered whether there were any potential alternatives to the Original. It was noted that the Workgroup had previously discussed whether 'no fuel cost' generators should have a choice of whether to have their REP set to £0/MWh or whether to have it

based on the current methodology. A Workgroup member noted that he would support this option to allow the Authority maximum flexibility when making a decision on CMP237, noting that it better facilitates Applicable CUSC Objective (b) by giving parties a choice, therefore better facilitating competition. He noted that parties make investment decisions on the market price and these parties may argue that the Original Proposal places them at a competitive disadvantage. The Ofgem representative noted that it would be useful for the Authority to have supporting evidence on the impact of the REP when making investment decisions and the Workgroup recommended that this be included as a question in the Code Administrator Consultation.

6.13 The Workgroup member noted that the Workgroup had previously discussed whether this choice should be made on a one off, monthly or annual basis. The Workgroup member stated that his preference would be for an annual choice and advised that this could be made by 31st December for the start of the following financial year, allowing three months for any process/system changes required. There was no support for a monthly choice as a potential alternative.

6.14 The Drax representative observed the final Workgroup meeting and questioned whether the Workgroup would consider allowing all generators a choice of whether their REP is set to £0/MWh or the MIP, as in his view it is better than the Original and potential alternative in terms of competition. The Workgroup considered whether this falls within the scope of the Original defect. One Workgroup member felt that it possibly could. The Proposer and another Workgroup member both felt that this potential alternative is addressing another defect and therefore should be kept separate. The Drax representative's view was that the present methodology was designed for a market without wind and that it is now unfair and that the Original and potential alternative potentially tip the balance of unfairness the other way in favour of wind.

6.15 The Chair asked the Workgroup if any members would like to adopt this suggested alternative. Whilst one Workgroup member saw the benefit of including this alternative within CMP237, no Workgroup members supported this option. No other potential alternatives were suggested by the Workgroup.

Implementation

6.16 The Workgroup discussed implementation for both the Original and the potential alternative, and it was noted that the Workgroup had previously discussed a transitional period to allow for any changes that would be required before practical implementation of CMP237. A Workgroup member questioned whether the form used for submitting holding payments could be changed so that parties could confirm that they wanted to take the MIP or have their REP set to £zero (for the potential alternative). By doing this, it was noted that there would be no changes required to the MSA. The same Workgroup member noted that for the WACM, the REP set to £zero should apply to everyone and they would have to opt out.

6.17 The Workgroup noted that there may be an issue if the WACM were approved later than expected and it was agreed that parties should be able to opt out of CMP237 in their next submission, rather than waiting 10-11 months for their next annual choice.

6.18 The Proposer noted that Implementation for the Original would require a month or so notice to have a settlement period and notice period. A Workgroup member noted that more than one month may be required as some parties have systems of their own that would require change. The Proposer agreed that three months would be acceptable, the Workgroup agreed with this approach.

6.19 A Workgroup member suggested having three full months' notice period between Authority decision and practical implementation, which could allow three months and one day or almost four months depending on the date of an Authority decision. The Proposer and the owner of the WACM agreed that this should be the case for both options.

6.20 The Workgroup agreed that both the Original and WACM could be implemented into the CUSC 10 Working Days following an Authority decision; however practical implementation would follow three full calendar months on the 1st day of the following month. For example, if the Authority decision were made on 15th November, the CUSC would be amended on 25th November but would not go live until 1st March 2016. Should the Authority approve the WACM, there would be an opportunity for low fuel cost generators to opt into the REP during the March 2016 FRPS window (5th to 15th business day).

7 Workgroup Alternatives

7.1 When developing the CMP237 Proposal the Workgroup considered potential options for change. The options included within the first Workgroup Consultation are outlined within paragraphs 4.21- 4.25 of this report.

7.2 Once the first Workgroup Consultation closed, the Workgroup fully considered these options along with the Consultation responses and the Workgroup Consultation Alternative Request. The Workgroup identified an additional defect that they wanted to address as part of CMP237; details of this defect are outlined in paragraph 5.16 of this report. Following the second Workgroup Consultation, the Workgroup decided to progress the options which addressed the additional defect identified by the Drax analysis separately to CMP237. The Workgroup then reverted back to the Original proposal and the potential alternatives outlined within paragraphs 4.21-4.25 of this report. The discussions within the final Workgroup meeting around Workgroup Alternatives are outlined below;

7.3 Within the final Workgroup meeting, the Original was confirmed by the Proposer and a potential alternative was suggested by the SSE Workgroup member. There were no other potential alternatives suggested by the Workgroup. The majority of the Workgroup felt that the potential alternative was better than either the Original or the Baseline in terms of facilitating the applicable CUSC objectives and therefore this was taken forward as a formal WACM. The Original proposal and the WACM are outlined below.

7.4 **Original Proposal**: Provides a classification of generators into two categories outlined in the table below;

Fuel Cost	No Fuel Cost
Gas	Onshore Wind
Coal	Offshore Wind
Oil	Solar
Nuclear	Tidal
Biomass	Wave
Electricity Storage Technologies (inc. pumped storage, batteries)	
Hydro	

7.5 All those within the no fuel cost category will have their REP set to £0/MWh.

7.6 **WACM1**: Uses the same classification of generators as the Original Proposal, however allows all those within the 'no fuel cost' category to choose whether their REP will be set to £0/MWh or will be based on the MIP. This choice will be made on an annual basis.

7.7 The Workgroup voted on the Original and WACM1 and assessed them both against the Applicable CUSC Objectives; details of this vote are outlined within Section 10 of this Report.

8 Impact and Assessment

Impact on the CUSC

8.1 CMP237 will require changes to Section 4 of the CUSC.

Impact on Greenhouse Gas Emissions

8.2 None identified.

Impact on Core Industry Documents

8.3 None identified.

Impact on other Industry Documents

8.4 None identified.

9 Proposed Implementation and Transition

9.1 The Workgroup agreed that CMP237 should be implemented into the CUSC 10 Working Days after an Authority decision, with a transitional period of three full calendar months with practical implementation on the 1st day of the following month. This implementation and transition approach is suggested for both the Original and WACM1.

9.2 An example of how this would work in practice can be found in paragraph 6.20 of this Report.

10 Views

10.1 The Workgroup believes that the Terms of Reference, which can be found in Annex 2, have been fulfilled and that CMP237 has been fully considered. At the final Workgroup meeting on 30th April 2015, the Workgroup voted on the Original and the WACM and assessed them against the Applicable CUSC Objectives. For reference, the Applicable CUSC Objectives are:

(a) The efficient discharge by the Company of the obligations imposed upon it by the Act and the Transmission Licence.

(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.

(c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.

Workgroup vote

10.2 The Workgroup unanimously agreed that the Original Proposal better meets the Applicable CUSC Objectives than the CUSC baseline and the majority of the Workgroup felt that the WACM better facilitates the Applicable CUSC Objectives than the CUSC baseline. Half of the Workgroup voted that the WACM better facilitates the Applicable CUSC Objectives than the Original. The Workgroup were split in the vote for the best option, half voted for the Original and half voted for the WACM. Details on the vote are outlined in the tables below.

Vote 1: Whether each Proposal better facilitates the Applicable CUSC Objectives

Vote 1: Original

Workgroup member	(a)	(b)	(c)	Overall
Guy Phillips	Yes	Yes	Neutral	Yes
Lee Taylor	Neutral	Yes – takes away barrier for generator.	Neutral	Yes
Bjarne Beck	Yes	Yes – takes away barrier for generator	Neutral	Yes
Adam Sims	Yes	Yes – better facilitates competition	Neutral	Yes
Garth Graham	Yes	Yes	Neutral	Yes
Paul Mott	Neutral	Yes – benefits competition	Neutral	Yes

Vote 1: WACM1

Workgroup member	(a)	(b)	(c)	Overall
Guy Phillips	No	No – giving one category choice would be detrimental to competition	Neutral	No
Lee Taylor	Neutral	Yes – builds on the competition in the market.	Neutral	Yes

Bjarne Beck	Yes	Yes – builds on competition in the market	Neutral	Yes
Adam Sims	Neutral	No – any gains in competition are clawed back from allowing people to opt in and out.	Neutral	No
Garth Graham	Yes	Yes – facilitates effective competition.	Neutral	Yes
Paul Mott	Neutral	Yes – but not as much as the Original	Neutral	Yes

Vote 2: Whether each WACM better facilitates the Applicable CUSC Objectives than the Original Modification Proposal

Workgroup member	(a)	(b)	(c)	overall
Guy Phillips	No	No – detrimental to competition, consequently (a) as well. Giving choice for parties to opt out undermines the defect.	Neutral	No
Lee Taylor	Neutral	Yes – will better facilitate competition. Potentially some uncertainty around costs of defined generators, giving them the choice doesn't enforce something that could make them less competitive.	Neutral	Yes
Bjarne Beck	Neutral	Yes – unclear why some generators are within a category. Marginally better than original	Neutral	Yes
Adam Sims	Neutral	No – similar reasons to Guy – allowing certain parties a choice without justifying it negatively impacts competition.	neutral	No
Garth Graham	Yes	Yes – reflects what is in the defect. It also takes into account that financing circumstances change.	Neutral	Yes
Paul Mott	Neutral	No -	Neutral	No

Vote 3: which option is considered the BEST to facilitate achievement of the Applicable CUSC Objectives. For the avoidance of doubt, this vote should include the existing CUSC baseline as an option.

Workgroup member	Best option
Guy Phillips	Original
Lee Taylor	WACM1
Bjarne Beck	WACM1
Adam Sims	Original
Garth Graham	WACM1
Paul Mott	Original

11 Responses to the first Workgroup Consultation

11.1 Five responses (including one late response) were received in response to the first Workgroup Consultation. These are summarised below, the full responses are included within Annex 4.

Respondent	Do you believe that CMP237 Original Proposal or either of the potential options for change better facilitate the Applicable CUSC Objectives?	Do you support the proposed implementation approach?	Do you have any other comments?
DONG Energy	• Yes. Better facilitates objective (a) as current REP calculation does not reflect characteristics of a more diverse generation portfolio. • Better facilitates (b) as it more closely represents the specific characteristics of these generation portfolios. • Also expect overall cost for high frequency response from no-fuel generation will reduce.	• If an approach is chosen where generators have a choice of REP calculation, then there needs to be sufficient time to switch operationally. • We support to lead time of one month.	• We agree with the classification of generators into no-fuel cost and fuel costs as shown in Table 3. • We believe generators that have no-fuel cost should have the option to choose the REP calculation and support the option to switch annually. • Electricity storage connected to no-fuel cost generation should also be given the possibility to choose the REP calculation. • We believe there is no material costs to consumer, and any costs would be outweighed by the benefits.
Drax	• No. Don't think any option addresses the defect. • Any proposal to amend the REP calculation should endeavour to solve the problem of increase volatility risk and costs. • This proposal does not better facilitate ACO (a) as it will not better enable National Grid to procure and utilise Frequency Response more efficiently. • No to (b) as it favours a particular group of generation technologies – those classified as having no fuel cost. • We are proposing an alternative solution - all generators should be allowed to submit their own price to properly reflect their marginal cost.	• Yes.	• We believe all generators regardless of technology should be able to choose their stance on what their REP is based on. • Don't agree with the classification of generators with or without fuel costs as it should reflect marginal costs. • Support the option of monthly choice for generators due to market conditions and prices changing and also coincides with holding fees which are currently being updated monthly. • This modification may bring a benefit to consumers, however it will distort competition which may ultimately increase costs to consumers.
EDF Energy	• Yes. Original proposal slightly better facilitates objective (b) as it would remove a (slight) barrier to competition.	• Do not disagree with one month notice, however think three months' notice to implementation, might be prudent, so that MSA's can (via a side letter) be amended in time, to avoid uncertainty as to what REP regime generators are operating under, so that frequency response market participation can be efficient, and to give time for legal	• We agree with the categorisation in table 3. • We do not agree with 'non fuel cost Users' being able to choose what their REP is based on. • If there was a choice, annual would be the best option. • Total monthly REP costs are from £100k to £200k per month, so allowing these users to access REP payments which they

		scrutiny of the side-letter by affected parties.	perhaps oughtn't to, contrary to table 3, will have no discernible impact on bills.
Scottish Power Energy Management Ltd	• Yes. By ensuring that low fuel cost generators are not required to make a response energy payment based upon an avoided fuel cost from which they do not benefit, the proposal will ensure that they are compensated when required to provide Mandatory Frequency Response and will therefore better facilitate competition.	• We agreed with the proposed implementation of 10 Working days after an Authority decision.	• We agree with the generator classifications in table 3. • If non fuel cost Users were able to make this choice we believe that it should not be made more frequently than annually although we would expect most Users to make a one off election.
SSE	• CMP237 assumes that the REP is only to pay for fuel costs incurred or avoided by a generator which is not the case. • Low fuel cost generators also seem to have been overlooked as the Workgroup discussions focus on 'fuel cost' and 'no fuel cost'. • All options are neutral to Applicable CUSC Objective (c). • Original Proposal does not better facilitate (a) or (b) as it is discriminatory and (re)introduces a barrier to competition. • The Hydro storage option does not better facilitate (a) and (b) in comparison to the Baseline, however is better than the Original Proposal. • Opt in /out option does not better facilitate (a) and (b) in comparison to the Baseline, however is better than the Original Proposal.	• We concur with the comments on leaving a full clear month between an Authority approval and the practical implementation. • We agree with Workgroup concerns in regards to allowing sufficient time for National Grid to amend existing MSAs which is highly unlikely to be achieved in one month. • We concur that a short amount of time would be require to change FRBS • Don't see what the option chosen by a generator should not be published.	• It would be appropriate for the REP choice to be made monthly and aligned with the monthly Holding Payment submissions. • Don't agree with classification of generators in table 3 – no justification for these has been made. • We note there is no reference to 'low fuel cost' generator as per the title of the Modification. • In regard to hydro generation with storage, there is not, as suggested 'no fuel cost'. • We would question the legality of this Original proposal in regards to property rights. • The Original proposal is silent on how interconnectors are to be classified. • Allowing non fuel cost Users to freely choose how their REP is calculated will lead to a lower cost for consumers than the alternative of now allowing this choice.

12 Responses to the second Workgroup Consultation

12.1 Five responses (including one late response) were received to the second Workgroup Consultation. These are summarised below, the full responses are included within Annex 6. These consultation responses were circulated to Workgroup Members but were not discussed by the Workgroup. Please see paragraph 6.11 for further detail.

Respondent	Do you believe that CMP237 Original Proposal or either of the potential options for change better facilitate the Applicable CUSC Objectives?	Do you support the proposed implementation approach?	Do you have any other comments?
Drax Power	• Yes. Revised original proposal now better than CUSC baseline.	• Yes, in principle, more information needed.	• No
EDF Energy	• Yes.	• Yes, but suggest 3 month implementation, rather than 1 month, to allow scrutiny of MSA side letters.	• No
GDF Suez	• No. GDF proposes a further alternative instead.	• Yes	• Yes, see our WGCAR.
Scottish Power	• Yes, but development and implementation costs make Drax alternative and hybrid option appear too expensive.	• Not clear on what the implementation approach is – a feasibility study is required first.	• An interim solution should be implemented quickly of giving all Service Providers the choice of the Original Proposal of status quo, the "fuel cost generator" or a £0MWh REP, the "non-fuel cost generator" without being bound by type of generator
SSE	• Yes, revised original is better than baseline as compared to the "original" Original.	• Yes	• We support the assumption that "…parties would submit their REP alongside their Holding Prices…".

Respondent	Do you agree that there is a defect around the volatility of the MIP that is used to calculate the REP?	Do you agree that the proposed Workgroup approach of considering solutions that only address both defects is appropriate?	Do you think that the revised Original solution and potential alternatives better facilitate the Applicable CUSC Objectives better than those outlined in the first Workgroup Consultation?	Do you consider the potential alternatives practical options considering the time and cost implications of implementing them?
Drax Power	• Yes	• Yes	• Yes	• Yes
EDF Energy	• No	• No	• No	• No
GDF Suez	• No	• No	• No	• No
Scottish Power	• Yes	• No	• Yes, in general • Giving other Service Providers the choice of MIP or £0MWHh for REP is fairer too.	• No

SSE	• Yes	• Yes, pragmatic approach.	• Yes	• Yes

13 How to Respond

13.1 If you wish to respond to this Code Administrator Consultation, please use the response pro-forma which can be found under 'Industry Consultation' via the following link;

http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/CUSC/Modifications/CMP237/

13.2 Responses are invited to the following questions;

1. **Do you believe CMP237 or its alternative solution better facilitates the Applicable CUSC Objectives? Please include your reasoning.**

2. **Do you support the proposed implementation approach as set out in Section 9? If not, please state why and provide an alternative suggestion where possible.**

3. **Do you have any other comments?**

13.3 Views are invited on the proposals outlined in this consultation, which should be received by **5pm** on **24th June 2015**. Please email your formal response to:

Cusc.team@nationalgrid.com

13.4 If you wish to submit a confidential response, please note the following;

Information provided in response to this consultation will be published on National Grid's website unless the response is clearly marked 'Private & Confidential', we will contact you to establish the extent of this confidentiality. A response marked 'Private & Confidential' will be disclosed to the Authority in full but, unless agreed otherwise, will not be shared with the CUSC Modifications Panel or the industry and may therefore not influence the debate to the same extent as a non-confidential response.

Please note an automatic confidentiality disclaimer generated by your IT System will not in itself, mean that your response is treated as if it had been marked 'Private & Confidential'.

Annex 1 – CMP237 CUSC Modification Proposal Form

CUSC Modification Proposal Form CMP237

nationalgrid

Connection and Use of System Code (CUSC)

Title of the CUSC Modification Proposal
Response Energy Payment for Low Fuel Cost Generation
Submission Date
18 September 2014
Description of the Issue or Defect that the CUSC Modification Proposal seeks to address

The current Response Energy Payment methodology creates a barrier to competition for low fuel cost generators.

All licensed generators are obliged to provide the mandatory frequency response service as required by the Grid Code. Currently, when instructed to provide frequency response, a generator is paid an hourly Holding Payment and is paid or pays a Response Energy Payment (REP) for net energy delivery per settlement period.

Generators submit individual Holding Prices on a monthly basis whilst the universally-applied REP is defined in the CUSC and is designed to reflect the energy cost incurred or saved from service provision, which includes the associated cost of fuel. The REP is based on Market Index Price (MIP) with different ratios: -0.75 for High Frequency and 1.25 for Low Frequency. The negative sign for High Frequency indicates that the REP is made by generators, as it is anticipated that the generator has saved money by not using as much fuel.

This methodology evolved during a period when the majority of generators providing frequency response had fuel costs that made up a reasonable proportion of the cost of providing frequency response. As such, the current methodology is tailored to these conventional generators, and does not consider the different financing approaches of generators with low or negative energy costs or those that receive additional financial incentives, e.g. Renewable Obligation Certificates (ROC) and, in the future, Feed In Tariff incentives.

An example of this might be a wind farm for whom there is a financial incentive to output at full capability, as ROCs are earned on a MWh output basis. If this unit were to be instructed to carry High Frequency response, it would pay REP for any consequent reduction in energy output, but would have no avoided fuel cost to offset this against. There is a reverse effect for low frequency response, as the wind farm would first need to be bid down (i.e. its output is reduced through acceptance of a bid in the balancing mechanism) in order for it to have the headroom to be able to provide low frequency response. The bid price for this would include lost ROC revenue, and the wind farm would also get paid REP despite having used no additional fuel.

This is illustrated in the following table:

Generator Type	Response Type	Cost	Benefit
Conventional	High Frequency	MIP*-0.75	Avoided fuel
	Low Frequency	Used fuel [Reduced output if req.d]	MIP*1.25 [BOA payment if req.d]
Low Carbon	High Frequency	MIP*-0.75	-
	Low Frequency	Reduced output	BOA payment MIP*1.25

For clarity it should be noted that when a generator has been dispatched for frequency response they are not subject to imbalance payments (or cashout), and therefore any variations in output from their position as a result of providing response would not affect the amount of ROCs earnt.

The current methodology therefore provides a measure of cost mitigation for conventional fuel-stock generators by balancing the avoided/used fuel costs against the REP, but does not appropriately reflect the cost for renewable generators. With the increasing installed capacity of these generators we believe the calculation of the REP needs be re-defined to accommodate a diverse range of frequency response service providers.

Description of the CUSC Modification Proposal

It is proposed that the REP calculation be retained for conventional generators or generators that have a fuel cost (e.g. fossil fuel or biomass). For all other generators the REP would be settled at £0/MWh. This will ensure that generators are not penalised by the cost of changing their energy output in providing frequency response, whether that change involves a fuel cost or not. The effect of this is illustrated in the following table:

Generator Type	Response Type	Cost	Benefit
Conventional	High Frequency	MIP*-0.75	Avoided fuel
	Low Frequency	Used fuel Reduced output (if req.d)	MIP*1.25 BOA payment (if req.d)
Low Carbon	High Frequency	-	-
	Low Frequency	Reduced output	BOA payment

NGET considers this proposal to be a pragmatic step that should be straightforward to implement at minimal cost. By removing the REP from non-conventional generators the proposal removes the financial penalty as a result of assumed fuel costs, whilst ensuring that there would be minimal impact for existing fossil fuel generators.

Impact on the CUSC

Changes would be required to Section 4.

Do you believe the CUSC Modification Proposal will have a material impact on Greenhouse Gas Emissions? Yes / No

No. It is envisaged that the new methodology would encourage renewable generators to participate in the frequency response market, however payments for frequency response are not sufficiently large by themselves to drive a material change in either the investment in new generation or the operation of existing generation.

Impact on Core Industry Documentation. Please tick the relevant boxes and provide any supporting information

BSC ☐

Grid Code ☐

STC ☐

Other ☐
(please specify)

This is an optional section. You should select any Codes or state Industry Documents which may be affected by this Proposal and, where possible, how they will be affected.

Urgency Recommended: Yes / No

No.

Justification for Urgency Recommendation

N/A

Self-Governance Recommended: Yes / No

No.

Justification for Self-Governance Recommendation

N/A

Should this CUSC Modification Proposal be considered exempt from any ongoing Significant Code Reviews?

N/A

Impact on Computer Systems and Processes used by CUSC Parties:

Low impact on:

- Generator frequency response pricing processes

Medium impact on:

- National Grid administration of Frequency Response Price Submission process
- National Grid and Generator Settlement processes

Details of any Related Modification to Other Industry Codes

No other Codes would be impacted.

Justification for CUSC Modification Proposal with Reference to Applicable CUSC Objectives:

Please tick the relevant boxes and provide justification:

☒ (a) the efficient discharge by The Company of the obligations imposed upon it by the Act and the Transmission Licence
This modification proposal proposes relatively simple changes that are believed to have modest implementation costs which should be outweighed by the benefit brought by facilitating competition described below.

☒ (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.
This modification proposal removes a barrier to competition that the current Response Energy Payment methodology presents to generators that have low fuel costs.

☐ (c) compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.
These are defined within the National Grid Electricity Transmission plc Licence under Standard Condition C10, paragraph 1.

Objective (c) was added in November 2011. This refers specifically to European Regulation 2009/714/EC. Reference to the Agency is to the Agency for the Cooperation of Energy Regulators (ACER).

Additional details

Details of Proposer: (Organisation Name)	National Grid
Capacity in which the CUSC Modification Proposal is being proposed: (i.e. CUSC Party, BSC Party or "National Consumer Council")	CUSC Party

Details of Proposer's Representative: Name: Organisation: Telephone Number: Email Address:	 Adam Sims National Grid 01926 655292 adam.sims@nationalgrid.com
Details of Representative's Alternate: Name: Organisation: Telephone Number: Email Address:	 Steve Lam National Grid 01926 653534 steven.lam@nationalgrid.com
Attachments (Yes/No): No If Yes, Title and No. of pages of each Attachment:	

Contact Us

If you have any questions or need any advice on how to fill in this form please contact the Panel Secretary:

E-mail cusc.team@nationalgrid.com

Phone: 01926 655223.

For examples of recent CUSC Modifications Proposals that have been raised please visit the National Grid Website at http://www.nationalgrid.com/uk/Electricity/Codes/systemcode/amendments/currentamendmentproposals/

Submitting the Proposal

Once you have completed this form, please return to the Panel Secretary, either by email to jade.clarke@nationalgrid.com and copied to cusc.team@nationalgrid.com, or by post to:

Jade Clarke
CUSC Modifications Panel Secretary, TNS
National Grid Electricity Transmission plc
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

If no more information is required, we will contact you with a Modification Proposal number and the date 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, the Proposal can be rejected. You will be informed of the rejection and the Panel will discuss the issue at the next meeting. The Panel can reverse the Panel Secretary's decision and if this happens the Panel Secretary will inform you.

Annex 2 – CMP237 Terms of Reference

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Workgroup Terms of Reference and Membership

TERMS OF REFERENCE FOR CMP237 WORKGROUP

Responsibilities

1. The Workgroup is responsible for assisting the CUSC Modifications Panel in the evaluation of CUSC Modification Proposal CMP237 'Response Energy Payment for Low Fuel Cost Generation' tabled by National Grid Electricity Transmission Plc at the Modifications Panel meeting on 26th September 2014.

2. The proposal must be evaluated to consider whether it better facilitates achievement of the Applicable CUSC Objectives. These can be summarised as follows:

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

   (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;

   (c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.

3. It should be noted that additional provisions apply where it is proposed to modify the CUSC Modification provisions, and generally reference should be made to the Transmission Licence for the full definition of the term.

Scope of work

4. The Workgroup must consider the issues raised by the Modification Proposal and consider if the proposal identified better facilitates achievement of the Applicable CUSC Objectives.

5. In addition to the overriding requirement of paragraph 4, the Workgroup shall consider and report on the following specific issues:

   a) Which generators should be classed as low fuel cost generation under CMP237?
   b) What is the interaction with subsidy regimes?
   c) Implementation
   d) Review illustrative legal text

6. The Workgroup is responsible for the formulation and evaluation of any Workgroup Alternative CUSC Modifications (WACMs) arising from Group discussions which would, as compared with the Modification Proposal or the current version of the CUSC, better facilitate achieving the Applicable CUSC Objectives in relation to the issue or defect identified.

7. The Workgroup should become conversant with the definition of Workgroup Alternative CUSC Modification which appears in Section 11 (Interpretation and Definitions) of the CUSC. The definition entitles the Group and/or an individual member of the Workgroup to put forward a WACM if the member(s) genuinely believes the WACM would better facilitate the achievement of the Applicable CUSC Objectives, as compared with the Modification Proposal or the current version of the CUSC. The extent of the support for the Modification Proposal or any WACM arising from the Workgroup's discussions should be clearly described in the final Workgroup Report to the CUSC Modifications Panel.

8. Workgroup members should be mindful of efficiency and propose the fewest number of WACMs possible.

9. All proposed WACMs should include the Proposer(s)'s details within the final Workgroup report, for the avoidance of doubt this includes WACMs which are proposed by the entire Workgroup or subset of members.

10. There is an obligation on the Workgroup to undertake a period of Consultation in accordance with CUSC 8.20. The Workgroup Consultation period shall be for a period of 15 Working days as determined by the Modifications Panel.

11. Following the Consultation period the Workgroup is required to consider all responses including any WG Consultation Alternative Requests. In undertaking an assessment of any WG Consultation Alternative Request, the Workgroup should consider whether it better facilitates the Applicable CUSC Objectives than the current version of the CUSC.

    As appropriate, the Workgroup will be required to undertake any further analysis and update the original Modification Proposal and/or WACMs. All responses including any WG Consultation Alternative Requests shall be included within the final report including a summary of the Workgroup's deliberations and conclusions. The report should make it clear where and why the Workgroup chairman has exercised his right under the CUSC to progress a WG Consultation Alternative Request or a WACM against the majority views of Workgroup members. It should also be explicitly stated where, under these circumstances, the Workgroup chairman is employed by the same organisation who submitted the WG Consultation Alternative Request.

12. The Workgroup is to submit its final report to the Modifications Panel Secretary on 22nd January 2015 for circulation to Panel Members. The final report conclusions will be presented to the CUSC Modifications Panel meeting on 30th January 2015.

Membership

13. It is recommended that the Workgroup has the following members:

Role	Name	Representing
Chairman	Alex Thomason	Code Administrator
*National Grid Representative**	Adam Sims	National Grid
Industry	Lee Taylor	GDF Suez

*Representatives**	Garth Graham Paul Mott Bjarne Beck Guy Phillips Yanik Leunen	SSE EDF Energy DONG Energy E.ON Vattenfall
Authority Representatives	Jonathan Bryson	Ofgem
Technical secretary	Jade Clarke	Code Administrator
Observers		

NB: A Workgroup must comprise at least 5 members (who may be Panel Members). The roles identified with an asterisk in the table above contribute toward the required quorum, determined in accordance with paragraph 14 below.

14. The chairman of the Workgroup and the Modifications Panel Chairman must agree a number that will be quorum for each Workgroup meeting. The agreed figure for CMP237 is that at least 5 Workgroup members must participate in a meeting for quorum to be met.

15. A vote is to take place by all eligible Workgroup members on the Modification Proposal and each WACM. The vote shall be decided by simple majority of those present at the meeting at which the vote takes place (whether in person or by teleconference). The Workgroup chairman shall not have a vote, casting or otherwise]. There may be up to three rounds of voting, as follows:

- Vote 1: whether each proposal better facilitates the Applicable CUSC Objectives;
- Vote 2: where one or more WACMs exist, whether each WACM better facilitates the Applicable CUSC Objectives than the original Modification Proposal*;*
- Vote 3: which option is considered to BEST facilitate achievement of the Applicable CUSC Objectives. For the avoidance of doubt, this vote should include the existing CUSC baseline as an option.

The results from the vote and the reasons for such voting shall be recorded in the Workgroup report in as much detail as practicable.

16. It is expected that Workgroup members would only abstain from voting under limited circumstances, for example where a member feels that a proposal has been insufficiently developed. Where a member has such concerns, they should raise these with the Workgroup chairman at the earliest possible opportunity and certainly before the Workgroup vote takes place. Where abstention occurs, the reason should be recorded in the Workgroup report.

17. Workgroup members or their appointed alternate are required to attend a minimum of 50% of the Workgroup meetings to be eligible to participate in the Workgroup vote.

18. The Technical Secretary shall keep an Attendance Record for the Workgroup meetings and circulate the Attendance Record with the Action Notes after each meeting. This will be attached to the final Workgroup report.

19. The Workgroup membership can be amended from time to time by the CUSC Modifications Panel.

Annex 3 – Workgroup attendance register

A – Attended
X – Absent
O – Alternate
D – Dial-in

Name	Organisation	Role	07/11/14	21/11/14	02/02/15	05/03/15	30/04/15
Alex Thomason	Code Administrator	Independent Chair	A	A	A	A	A
Jade Clarke	Code Administrator	Technical Secretary	A	A	A	A	A
Adam Sims	National Grid	Proposer	A	A	A	A	A
Garth Graham	SSE	Workgroup Member	D	A	A	D	D
Paul Mott	EDF Energy	Workgroup Member	D	A	A	A	D
Bjarne Beck	DONG Energy	Workgroup Member	A	D	A	D	A
Guy Phillips	E.ON	Workgroup Member	A	A	A	D	A
Yanik Leunen	Vattenfall	Workgroup Member	D	X	X	X	X
Lee Taylor	GDF Suez	Workgroup Member	A	D	D	D	A
Jonathan Bryson	Ofgem	Authority Representative	A	D	D	D	A
Cem Suleyman	Drax Power	Observer	X	X	D	D	X
Joseph Underwood	Drax Power	Observer	X	X	D	A	A
Simon Lord	GDF Suez	Observer	X	X	X	X	A

Annex 4 – First Workgroup Consultation responses

CUSC Workgroup Consultation Response Proforma

CMP237 – Response Energy Payment for Low Fuel Cost Generation

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **21st January 2015** to cusc.team@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Workgroup.

Any queries on the content of the consultation should be addressed to Jade Clarke at jade.clarke@nationalgrid.com

These responses will be considered by the Workgroup at their next meeting at which members will also consider any Workgroup Consultation Alternative Requests. Where appropriate, the Workgroup will record your response and its consideration of it within the final Workgroup Report which is submitted to the CUSC Modifications Panel.

Respondent:	*Christoph Horbelt* *Phone: 020 7811 5508* *Address:* *33 Grosvenor Place, Belgravia* *SW1X 7HY London* *United Kingdom*
Company Name:	*DONG Energy*
Please express your views regarding the Workgroup Consultation, including rationale. **(Please include any issues, suggestions or queries)**	For reference, the Applicable CUSC objectives are: (a) The efficient discharge by The Company of the obligations imposed upon it by the Act and the Transmission Licence. (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. (c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.

Standard Workgroup consultation questions

Q	Question	Response
1	**Do you believe that CMP237 Original proposal or either of the potential options for change better facilitates the Applicable CUSC Objectives?**	DONG Energy welcomes the proposal to change the methodology behind the setting of Response Energy Payments (REP) as we believe that it is a significant step forward to the implementation of renewable energy in the electricity system. We believe that the current arrangements for calculating the REP do not accurately reflect the characteristics of a more diverse generation portfolio which includes renewable energy and that this modification will have a positive impact on applicable CUSC objective (a). Furthermore, in DONG Energy's view settling the REP at zero £/MWh for designated types of generation that have zero or very low fuel costs will better facilitate applicable CUSC objective (b) as it more closely represents the specific characteristics of these generation profiles. DONG Energy also expects that overall cost for high frequency response from no-fuel generation will reduce if this modification is implemented as the anticipated REP is one determinant for the holding fee setting. If the REP is settled at zero £/MWh no-fuel cost generators will no longer have to anticipate this cost when determining their holding fees. Overall, DONG Energy agrees with the classification of generation outlined in Table 3 of the Workgroup Consultation document. However, we see a need to find a solution that will continue to accurately class generation in "fuel cost" and "no-fuel cost" even when new concepts of generation and storage will be implemented. DONG Energy therefore believes that by giving no-fuel cost generators (as described in paragraph 4.23) the choice to decide for themselves whether or not to opt for an REP based on fuel costs would facilitate the classification process more efficiently. In addition to generation already classed as no-fuel cost we believe that "Electricity Storage" directly connected to a no-fuel unit should be given an option to choose to facilitate a potential future implementation of these concepts.

Q	Question	Response
2	**Do you support the proposed implementation approach?**	DONG Energy believes that if an approach is chosen where generators have a choice of REP calculation, then there needs to be sufficient lead time to facilitate the switch operationally.We support the proposed lead time of one month.
3	**Do you have any other comments?**	No
4	**Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?**	*No*

Specific questions for CMP237

Q	Question	Response
5	**Do you agree with the proposed classification of generators with or without a fuel cost in table 3?**	As set out in the response to Question 1, DONG Energy agrees with the classification of generators into no-fuel cost and fuel cost shown in Table 3. However, we believe that generators classed as no-fuel cost should have the option to choose the REP calculation. Furthermore, electricity storage directly connected to no-fuel cost generation should be given the possibility to choose as well to facilitate the development of potential new storage solutions solely charged by no-fuel generation.
6	**If non fuel cost Users were able to choose what their REP is based on, do you think this choice should be made (i) monthly, (ii) annually or (iii) on a one off basis?**	We believe that giving generators the option to switch annually offers sufficient flexibility while at the same time limits administrative work to a reasonable level.
7	**Do you consider there to be any changes to your systems / processes required as a result of this modification? If so, would you propose any changes to the suggested transitional period?**	We do not expect significant changes to our systems and therefore we agree with the suggested transitional period of one month.

Q	Question	Response
8	**How to you think allowing non fuel cost Users to choose how their REP is calculated will affect costs to consumers?**	As the proposer indicated, only minor implementation costs from the optionality for no-fuel generators are expected. DONG Energy believes that there is no material cost to the consumer, and any costs are outweighed by the benefits from a more flexible mechanism that more closely reflects the cost for providing frequency response which will have a benefit to consumers.

CUSC Workgroup Consultation Response Proforma

CMP237 – Response Energy Payment for Low Fuel Cost Generation

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **21st January 2015** to cusc.team@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Workgroup.

Any queries on the content of the consultation should be addressed to Jade Clarke at jade.clarke@nationalgrid.com

These responses will be considered by the Workgroup at their next meeting at which members will also consider any Workgroup Consultation Alternative Requests. Where appropriate, the Workgroup will record your response and its consideration of it within the final Workgroup Report which is submitted to the CUSC Modifications Panel.

Respondent:	*Joe Underwood – joseph.underwood@drax.com*
Company Name:	*Drax Power Limited*
Please express your views regarding the Workgroup Consultation, including rationale. **(Please include any issues, suggestions or queries)**	While the Workgroup has deliberated over a number of possible solutions, we believe there is an additional solution worthy of consideration. Below we have suggested that, if the current regime is modified, all generators should have the option to choose the basis upon which their REP is calculated. As such, we have submitted a Workgroup Consultation Alternative Request that proposes generators submit their own REP price. Please see below and the attached form for further reasoning.

Standard Workgroup consultation questions

Q	Question	Response

Q	Question	Response
1	**Do you believe that CMP237 Original proposal or either of the potential options for change better facilitates the Applicable CUSC Objectives?**	No. Whilst we believe change is required, we do not believe CMP237 Original, nor either of the alternative options for change, adequately addresses the defect. The current model is outdated, better suited to a time where renewable generation on the system was sparse and the marginal costs of generators were similar. Presently the marginal costs of generators are very different, with some generators having negative marginal costs. The increase in renewable generation connected to the system is likely to lead to increased volatility and uncertainty around the MIP. This increasing volatility risk will most likely have an effect on the holding fees submitted by generators and some generators may price themselves out of the market. The current REP calculation is an inefficient way to cover this risk and will have a detrimental effect on National Grid's ability to properly procure Frequency Response. This increased cost will eventually be passed on to the end consumer. Ultimately, any proposal to amend the REP consultation should endeavour to solve this problem. However, we believe that the CMP237 solution will not comprehensively solve this problem as it only seeks to provide a solution for one class of generating technology. As such we do not believe that CMP237 will better facilitate Applicable CUSC objective (a). Specifically, it will not better enable National Grid to procure and utilise Frequency Response more efficiently, providing no benefits in terms of effective system operation. Furthermore, we believe that the current proposal favours a particular group of generation technologies – those classified as having no fuel cost. This therefore goes against Applicable CUSC objective (b) as it may distort competition between technologies defined as having a fuel cost and those defined as not having a fuel cost. To differentiate power stations by whether they have a fuel cost or not is crude way of categorising plant. More granular categorisation of the different marginal costs of plant is required to deliver a solution which better facilitates the relevant CUSC objectives. To this end, we are proposing an alternative solution in answer to question four (see attached form).

Q	Question	Response
2	**Do you support the proposed implementation approach?**	Yes, if approved the approach appears sensible.
3	**Do you have any other comments?**	We believe that, if this modification were to be implemented, all generators regardless of generation technology should be able to choose their stance on what their REP is based on, i.e. the current method or £0/MWh. If, for example, a generator believes its marginal costs are closer to £0/MWh, then it should have the option to choose £0/MWh, as opposed to National Grid centrally determining the status of each plant. Such optionality should be taken forward as a CUSC Alternative solution.
4	**Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?**	Yes. In summary, all generators should be allowed to submit their own price to properly reflect their marginal cost. Please see attached a completed Workgroup Consultation Alternative Request form which provides more detail on our preferred solution.

Specific questions for CMP237

Q	Question	Response
5	**Do you agree with the proposed classification of generators with or without a fuel cost in table 3?**	No. The table should instead reflect marginal costs and not simply fuel costs. No convincing arguments are provided in the Workgroup consultation for classifying generators in this way. Indeed, on reviewing the consultation document, the issue does not appear to have been discussed by the Workgroup in any meaningful way. Considering only whether a generator has fuel costs or not is a particularly crude form of characterising different generators and only provides a partial consideration of the costs of Frequency Response utilisation.

Q	Question	Response
6	**If non fuel cost Users were able to choose what their REP is based on, do you think this choice should be made (i) monthly, (ii) annually or (iii) on a one off basis?**	Monthly. Fuel prices and other costs can vary so a generator should be able to choose what their REP is based on. A generator should not be committed to any one payment structure for a significant amount of time in the event of market conditions changing, as would be the case if changes were only allowed on a one off basis. Holding fees are currently updated by generators on a monthly basis, so it would be logical for updates to the REP to coincide with this. For the avoidance of doubt, we do not consider only 'non fuel cost' users should be allowed to choose what their REP is based on. All generators regardless of technology type should have this choice.
7	**Do you consider there to be any changes to your systems/processes required as a result of this modification? If so, would you propose any changes to the suggested transitional period?**	No. However, in the case of our proposed solution (please see answer to question four for details), a process for choosing the basis of the REP would be required. It is assumed that CUSC parties already know their own marginal cost and therefore calculating their own REP should not be overly burdensome.
8	**How do you think allowing non fuel cost Users to choose how their REP is calculated will affect costs to consumers?**	Giving 'non fuel cost' generators the ability to choose how their REP is calculated may reduce the risk premium factored into submitted holding prices, which would ultimately benefit consumers. However, only allowing one type of generator to choose its REP introduces the potential to distort competition, which may ultimately increase costs to consumers. The solution we propose to allow all generators to submit their own REP would amplify the benefits associated with reducing the risks and thus generator holding payments, whilst avoiding any disadvantages associated with the potential to distort competition.

CUSC Workgroup Consultation Response Proforma

CMP237 – Response Energy Payment for Low Fuel Cost Generation

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **21st January 2015** to cusc.team@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Workgroup.

Any queries on the content of the consultation should be addressed to Jade Clarke at jade.clarke@nationalgrid.com

These responses will be considered by the Workgroup at their next meeting at which members will also consider any Workgroup Consultation Alternative Requests. Where appropriate, the Workgroup will record your response and its consideration of it within the final Workgroup Report which is submitted to the CUSC Modifications Panel.

Respondent:	Paul Mott
Company Name:	EDF Energy
Please express your views regarding the Workgroup Consultation, including rationale. **(Please include any issues, suggestions or queries)**	For reference, the Applicable CUSC objectives are: (a) The efficient discharge by The Company of the obligations imposed upon it by the Act and the Transmission Licence. (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. (c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.

Standard Workgroup consultation questions

Q	Question	Response
1	**Do you believe that CMP237 Original proposal or either of the potential options for change better facilitates the Applicable CUSC Objectives?**	Yes, the mod in its original form would slightly better facilitate CAO (b), effective competition in the generation and supply of electricity. This is because it would remove a (small) barrier to competition that the current Response Energy Payment methodology presents to generators that have low fuel costs – although the materiality is modest. As to the potential alternatives, see our comment in reply to question 6.
2	**Do you support the proposed implementation approach?**	We agree that there needs to be time for National Grid to contact the User, for existing generators, to amend their MSAs. We noted that the National Grid representative considers that the proposal could be implemented with a side letter to the MSA rather than needing to amend existing MSAs – generators should be happy with a side-letter to help the change come in. We note that Grid estimated that this process would take three months. We note that the workgroup nonetheless felt that an appropriate transition would leave a full clear month in between an Authority decision and the effective implementation of the Modification, with MSA's being amended over the next two months. We do not strongly object to this, but wonder if a little more time, such as three months notice to implementation, might be prudent, so that MSA's can (via a side-letter) be amended in time, to avoid uncertainty as to what REP regime generators are operating under, so that frequency response market participation can be efficient, and to give time for legal scrutiny of the side-letter by affected parties.
3	**Do you have any other comments?**	No
4	**Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?**	No

Specific questions for CMP237

Q	Question	Response
5	**Do you agree with the proposed classification of generators with or without a fuel cost in table 3?**	The categorisation in table 3 seems appropriate, so that REP is not set to zero for "Electricity Storage Technologies" (inc. pumped storage, batteries) – they do have a fuel cost. We agree that all hydro, whether dammed or run of river, should be treated as having zero fuel cost, and hence have zero REP – just as they are in table 3 (in the Original, as proposed)

Q	Question	Response
6	**If non fuel cost Users were able to choose what their REP is based on, do you think this choice should be made (i) monthly, (ii) annually or (iii) on a one off basis?**	We do not agree with "non fuel cost Users" being able to choose what their REP is based on. For a start, it is necessary to agree what is a "non fuel cost user". It is evident from workgroup discussions that some feel that dammed hydro falls in this category; others don't, as they believe that rain and river water is free to collect. Given that this whole issue is of low materiality, the complexity of allowing user-choice in this area, doesn't seem warranted. If there were a choice, annual seems best.
7	**Do you consider there to be any changes to your systems / processes required as a result of this modification? If so, would you propose any changes to the suggested transitional period?**	No significant system changes; no special transitional period needed in relation to our systems.
8	**How to you think allowing non fuel cost Users to choose how their REP is calculated will affect costs to consumers?**	See reply to question 6. Total monthly REP costs are from £100k to £200k per month, so allowing these users to access REP payments which they perhaps oughtn't to, contrary to table 3 in the original proposal, will have no discernible impact on bills.

CUSC Workgroup Consultation Response Proforma

CMP237 – Response Energy Payment for Low Fuel Cost Generation

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **21st January 2015** to cusc.team@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Workgroup.

Any queries on the content of the consultation should be addressed to Jade Clarke at jade.clarke@nationalgrid.com

These responses will be considered by the Workgroup at their next meeting at which members will also consider any Workgroup Consultation Alternative Requests. Where appropriate, the Workgroup will record your response and its consideration of it within the final Workgroup Report which is submitted to the CUSC Modifications Panel.

Respondent:	James Anderson
Company Name:	ScottishPower Energy Management Ltd
Please express your views regarding the Workgroup Consultation, including rationale. **(Please include any issues, suggestions or queries)**	For reference, the Applicable CUSC objectives are: (a) The efficient discharge by The Company of the obligations imposed upon it by the Act and the Transmission Licence. (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. (c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.

Standard Workgroup consultation questions

Q	Question	Response
1	**Do you believe that CMP237 Original proposal or either of the potential options for change better facilitates the Applicable CUSC Objectives?**	ScottishPower believes that the Original Proposal and both potential alternatives better facilitate the Applicable CUSC Objectives. By ensuring that low fuel cost generators are not required to make a response energy payment based upon an avoided fuel cost from which they do not benefit, the proposal will ensure that they are adequately compensated when required to provide Mandatory Frequency Response and will therefore better facilitate competition.
2	**Do you support the proposed implementation approach?**	We agree with the proposed implementation10working days after an Authority decision.
3	**Do you have any other comments?**	No
4	**Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?**	No

Specific questions for CMP237

Q	Question	Response
5	**Do you agree with the proposed classification of generators with or without a fuel cost in table 3?**	Yes, We agree with the generator classifications proposed in Table 3 of the consultation document.
6	**If non fuel cost Users were able to choose what their REP is based on, do you think this choice should be made (i) monthly, (ii) annually or (iii) on a one off basis?**	If non fuel cost users were able to make this choice we believe that it should not be made more frequently than annually although we would expect most Users simply to make a one-off election.

Q	Question	Response
7	**Do you consider there to be any changes to your systems / processes required as a result of this modification? If so, would you propose any changes to the suggested transitional period?**	We do not envisage a requirement for any change to our systems or processes as a result of this modification.
8	**How to you think allowing non fuel cost Users to choose how their REP is calculated will affect costs to consumers?**	We do not anticipate that there will be any adverse impact upon costs to consumers from allowing Users to choose how their REP is calculated. By better reflecting the costs actually incurred/avoided in the REP, low fuel costs Users should be able to price their Holding Payments on a more economic basis thus enabling a more competitive price merit order to be established for frequency response.

CUSC Workgroup Consultation Response Proforma

CMP237 – Response Energy Payment for Low Fuel Cost Generation

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **21st January 2015** to cusc.team@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Workgroup.

Any queries on the content of the consultation should be addressed to Jade Clarke at jade.clarke@nationalgrid.com

These responses will be considered by the Workgroup at their next meeting at which members will also consider any Workgroup Consultation Alternative Requests. Where appropriate, the Workgroup will record your response and its consideration of it within the final Workgroup Report which is submitted to the CUSC Modifications Panel.

Respondent:	*Garth Graham (garth.graham@sse.com)*
Company Name:	*SSE*
Please express your views regarding the Workgroup Consultation, including rationale. **(Please include any issues, suggestions or queries)**	For reference, the Applicable CUSC objectives are: (a) The efficient discharge by The Company of the obligations imposed upon it by the Act and the Transmission Licence. (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. (c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency. See our response to Q1 below.

Standard Workgroup consultation questions

Q	Question	Response
1	**Do you believe that CMP237 Original proposal or either of the potential options for change better facilitates the Applicable CUSC Objectives?**	**[See separate Appendix 1]**
2	**Do you support the proposed implementation approach?**	We note the deliberations of the Workgroup as set out in paragraphs 4.26-4.33. We concur with the comments in para 4.28 as regards leaving a full clear month between an Authority approval and the practical implementation for Users in terms of their data submission(s) etc. In respect of the one off option; and notwithstanding our comments above under Q1; we agree with the Workgroup members' concerns (noted in para 4.29) as regards allowing sufficient time for National Grid and Users to amend existing MSAs. For the avoidance of doubt this process is highly unlikely to be achieved in circa one month. We note the comments in para 4.32. We concur that a short amount of time would be required to change FRBS. In respect of the Workgroup deliberations set out in para 4.33 we support openness and transparency and do not see why the option chosen by a generator should not be published; especially as those Users will themselves know how other Users are classified (by virtue, for example, of not being 'no fuel cost' generators).

Q	Question	Response
3	**Do you have any other comments?**	We have considered the CMP237 proposal in detail and set out our views to the questions posed in the consultation document elsewhere in this response and the associated Appendix 1. In addition to those comments we believe, on reflection, that <u>if</u> a different approach to REP is to be introduced then all CUSC Users should be treated equally – all of them should, when providing mandatory frequency response, be allowed the free choice as to whether they wish to price their mandatory frequency response provision <u>either</u>:- a) by way of the 'status quo' type approach of both (i) a monthly holding payment and (ii) a market based REP (using the current agreed formula); <u>or</u> b) by way of just a monthly holding payment (i.e. they receive no REP income, but rather have to factor this into their Holding Price). For the avoidance of doubt this choice would be a binary one of either (a) or (b). Making this choice on a Monthly basis (as long as the market is aware of those decisions) could, in our view, maximum competition in the provision of the mandatory frequency service. Furthermore, this free choice approach would, in our view, best align with both the letter and the spirt associated with the introduction of a competitive process for the provision of mandatory frequency response (as set out in CAP47) when compared with the Original.
4	**Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?**	No

Specific questions for CMP237

Q	Question	Response

Q	Question	Response
5	**Do you agree with the proposed classification of generators with or without a fuel cost in table 3?**	**[See separate Appendix 1]**
6	**If non fuel cost Users were able to choose what their REP is based on, do you think this choice should be made (i) monthly, (ii) annually or (iii) on a one off basis?**	As noted in response to Q1 above, in our view it would be appropriate for the REP choice to be made Monthly, and this should be aligned with the monthly Holding Payment submission (i.e. a tick box option that has to be completed each month to either opt in or opt out for the corresponding Holding Payment month). This choice, once made, should be published.
7	**Do you consider there to be any changes to your systems / processes required as a result of this modification? If so, would you propose any changes to the suggested transitional period?**	Yes. Based on the information set out in the consultation document (which we note maybe subject to change) we would need to amend our processes and procedures as a result of this Modification.
8	**How to you think allowing non fuel cost Users to choose how their REP is calculated will affect costs to consumers?**	In our view allowing non fuel cost Users (based on the artificially classification set out in the CMP237 Original) to freely choose how their REP is calculated will lead to a lower cost for consumers than the alternative of not allowing this choice.

SSE CMP237 Appendix 1

[The pro forma does not facilitate long submissions – the responses to the following questions are part of our CMP237 response].

1	**Do you believe that CMP237 Original proposal or either of the potential options for change better facilitates the Applicable CUSC Objectives?**	For reference, the Applicable CUSC objectives are: (a) The efficient discharge by The Company of the obligations imposed upon it by the Act and the Transmission Licence. (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. (c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.

For the avoidance of doubt all the options (the Original and the three potential options noted below) are, in our view, neutral with respect to Applicable Objective (c).

Original

In considering the Original proposal and its bettering of the Applicable CUSC Objectives it is important to consider the basis on which a competitive process for the provision of mandatory frequency response was introduced into the CUSC (by way of CAP47).

As Ofgem noted (on page 2 of its CAP47 decision letter):-

> "The Response Energy Payment is made for the expected volume of frequency response delivered. It is intended to compensate generators for Energy Imbalance exposure under the Balancing and Settlement Code (BSC) due to providing frequency response. **The mechanism also includes an element to compensate for the cost or avoided cost of energy production**." [emphasis added.]

This, in our view, is a key aspect that CMP237 glosses over as it (CMP237) assumes (falsely) that the REP is only to pay for fuel costs incurred or avoided by generators.

However, as Ofgem explicitly stated (and notwithstanding the energy imbalance exposure situation) the REP includes an element "…to compensate for the cost or avoided cost of energy production". In other words the REP is not just associated with fuel costs saved or incurred as CMP237 Original (incorrectly in our view) assumes..

It is also important to remember that the cost of energy production is not confined to just fuel cost. There are ongoing operational and maintenance costs (as well as financing costs) which when combined with fuel cost make up the cost of energy production.

Furthermore, it is also important to consider nuclear generation the classification of which, for the purposes of CMP237, appears to be as 'fuel cost'.

The World Nuclear Association notes on its website[1]:-

> "Fuel costs for nuclear plants are a minor proportion of total generating costs, though capital costs are greater than those for coal-fired plants and much greater than those for gas-fired plants"

They go on to note that:-

> "The US Nuclear Energy Institute suggests that for a coal-fired plant 78% of the cost [of electricity production] is the fuel, for a gas-fired plant the figure is 89%, and for nuclear the uranium is about 14%, or double that to include all front end costs."

We note (i) the title of the CMP237 Original Proposal is "Response Energy Payment for Low Fuel Cost Generation" [emphasis added] and (ii) the justification, by the Proposer, against Applicable Objective (b):-

"This modification proposal removes a barrier to competition that the current Response Energy Payment methodology presents to generators that have low fuel costs." [emphasis added].

This appears to have been overlooked in the consultation document, which focusses instead on the (artificial) classification of 'fuel cost' and 'no fuel cost'.

Moving on to consider the Applicable CUSC Objectives we consider that CMP237 Original does not better facilitate (a) or (b).

Applicable Objective (a)

With respect to (a) we note that in approving CAP47 the Authority made a number of references (under Applicable Objective (a)) to moving from a 'cost reflective charging principle' for the provision of mandatory frequency response to an approach which:-

> "….will provide more accurate market signals as to the value of the frequency response service which should provide service providers with reliable additional information on which to determine their investment plans in the long-term, thereby facilitating security of supply. Ofgem considers that the proposed market arrangements are likely to provide an incentive to both potential new entrants and current providers to invest in the service to the extent that such investment is

[1] http://www.world-nuclear.org/info/Economic-Aspects/Economics-of-Nuclear-Power/

> economically justified. This should ensure that the amount of frequency response capacity being made available to NGC would assist the efficient and secure operation of the transmission system in the long-term". [emphasis added]

It was stated, under Applicable Objective (a), for CAP47, that:-

> "Ofgem considers that if the current cost-based mandatory frequency response arrangements are not amended in the long-term, NGC's ability to balance the transmission system may be affected." [emphasis added]

In addition, with respect to Applicable Objective (a) for CAP47, it was noted that:-

> "Ofgem considers that value based payments will encourage innovation in the delivery of the service from existing and new providers and could attract interest from potential new providers that may not have a current mandatory requirement to provide the service (including demand side) in the short term". [emphasis added]

Finally, with respect to Applicable Objective (a), it was noted that the CAP47 (Alternative A):-

> "…will encourage efficiency and innovation and there will be significant benefits to customers in terms of increased security of supply through the provision of frequency response at competitive prices."

In our view CMP237 Original seeks, for certain types of generators only, to return to a 'cost reflective' rather than a 'value based' approach to the provision of mandatory frequency response – it seeks to return (for some generators only) to the pre CAP47 CUSC.

Not only is this discriminatory (as other generators are, artificially, and unjustifiably treated differently) but runs counter to the benefits associated with Applicable Objective (a) that Ofgem (and others) identified when the provision of mandatory frequency response was introduced into the CUSC (by way of CAP47).

In this regard it must be remembered that in addition to the normal CUSC consultations that, unusually, Ofgem undertook two separate consultation on CAP47 (in December 2003 and August 2004 respectively). This indicates to us that the introduction of a competitive process for the provision of mandatory frequency response was given the fullest possible consideration by Ofgem prior to the Authority approving the CAP 47 (Alternative A) change to the CUSC.

Finally, in passing, and by way of illustration, we observe that the CMP237 Original refers, in the identification of the defect, to 'cost' eight times (excluding, for obvious reasons, references to 'cost' in the title of Proposal itself). There is no reference in the CMP237 Proposal itself to the 'value' of the mandatory frequency response service.

For these reasons we conclude that CAP237 Original does not better facilitate the Applicable CUSC Objective (a).

Applicable Objective (b)

As with Objective (a), it is important when considering Applicable Objective (b) to consider the Authority views when they concluded that CAP47 (Alternative A) should be implemented.

For the sake of brevity we shall avoid repeating those helpful comments in detail here. Instead we reiterate our views under (a) (as they too apply under Objective (b)) that, in our view, CMP237 Original seeks, for certain types of generators only, to return to the pre CAP47 CUSC which – as Ofgem stated, did not better facilitate Applicable Objective (b), hence why they approved CAP47.

Notwithstanding that we note, in respect of the defect that CMP237 Original seeks to address, the Proposer states that:-

> "As such, the current methodology is tailored to these conventional generators, and does not consider the different financing approaches of generators with low or negative energy costs or those that receive additional financial incentives, e.g. Renewable Obligation Certificates (ROC) and, in the future, Feed In Tariff incentives."

However, this appears to be in contrast to Ofgem's view (when approving CAP47 for implementation). This is illustrated, for example, by the following quotes:-

> "…Ofgem considers that there could be more additional response available from a variety of providers such as non-conventional sources of generation which would add to available supply and liquidity in the mandatory frequency response market". [emphasis added]

> "Ofgem considers that in the longer-term the amount of frequency response capability is likely to increase particularly from more diverse sources of supply which would increase the amount of competition and liquidity in the mandatory frequency response market as proposed by [CAP47] Alternative Amendment A." [emphasis added]

> "Ofgem remains of the view that [CAP47] Alternative Amendment A could have a positive environmental impact by improving the efficiency of investment signals to CHPs and renewables and more accurately reflecting the value of the frequency response service provided by CHP and renewables in the event they are called upon to provide the mandatory frequency response service." [emphasis added]

This view was not just confined to Ofgem. As they note in the CAP47 decision letter:-

> "Two of these respondents [to Ofgem's December 2003 consultation] suggested that the frequency response market would also improve the economics of building and

operating renewables plants (in particular wind farms)... because it will enable them to accurately reflect the costs of providing mandatory frequency response."

In addition to these comments we also note that CMP237 Original would mandate that those generators that it (artificially) classifies as 'non fuel cost' could only recover all their costs of energy production via the monthly holding payment. This would place those generators at a competitive disadvantageous position when compared to all other generators that are classified as 'fuel cost' as those 'fuel cost' generators would be able to recover their costs via both the holding payment and the existing REP (of x 0.75 / 1.25 of the market price - as appropriate to the service they provide).

The competitive situation is most starkly shown in Figure 4 of the consultation document. This shows that hydro generation competes with other mandatory frequency response service provides (which are classified (artificially) for the purposes of CMP237 Original as 'fuel cost' such as coal, gas, nuclear, pump storage and oil) via the holding payment and REP. Figure 4 shows hydro generation clustering with the 'fuel cost' generation along the vertical. In stark contrast to this, wind generation can clearly be seen along the horizontal and no clustering pattern with 'fuel cost' generation can be easily discerned.

Furthermore, in our view CMP237 Original (re)introduces a barrier to competition not only by virtue of its discriminatory treatment of 'non fuel cost' generation buts also in undermining the long term investment signal that Ofgem highlighted would be provided to CUSC Users by the provision of mandatory frequency response services in accordance with CAP47.

In addition we note that the Proposer justified CMP237 Original, with respect to Applicable Objective (b), in the following terms:-

"This modification proposal removes a barrier to competition that the current Response Energy Payment methodology presents to generators that have low fuel costs." [emphasis added].

As we have noted above, CMP237 Original (as set out in the consultation document) demonstrably fails to do this as, for example, it treats low fuel cost (and low carbon) nuclear generation differently to other low cost (and low carbon) generation.

For these reasons we conclude that CAP237 Original does not better facilitate the Applicable CUSC Objective (b).

Hydro Storage (para 4.21)

Whilst this potential option does not better facilitate Applicable CUSC Objectives (a) and (b) when compared to the Baseline (for the reasons we set out above under 'Original') it does better facilitate Applicable CUSC Objectives (a) and (b) than the Original. This is because it does not discriminate in its treatment of this type of generation (and so is better in terms of (a)) and it allows this generation to recover the costs it has incurred (as we detail in our response to Q5 below – items (1)-(3)) which better facilitates (b).

Hydro Storage / Tidal Barrage / generation with batteries (para 4.22)

The potential option is similar to that noted in para 4.21 and therefore we have an identical view for this option; namely that whilst this potential option does not better facilitate Applicable CUSC Objectives (a) and (b) than the Baseline (for the reasons we set out above under 'Original') it does better facilitate Applicable CUSC Objectives (a) and (b) than the Original. This is because it does not discriminate in its treatment of this type of generation (and so is better in terms of (a)) and it allows this generation to recover the costs it has incurred (as we detail in our response to Q5 below – items (1)-(3)) which better facilitates (b).

Opt in/out (para 4.23)

In our view the opt in / opt out potential option does not better facilitate Applicable CUSC Objectives (a) and (b) when compared to the Baseline (for the reasons we set out above under 'Original').

This potential option does better facilitate Applicable CUSC Objectives (a) and (b) than the Original. This is because it does not discriminate in its treatment of certain types of generation (and so is better in terms of (a)) and it allows this generation to recover the costs it has incurred (as we detail in our response to Q5 below – items (1)-(3)) which better facilitates (b).

(i) Monthly / (ii) Annually / (iii) One Off

In our view it would be appropriate for the REP choice to be made Monthly, and this should be aligned with the monthly Holding Payment submission (i.e. a tick box option that has to be completed each month to either opt in or opt out for the corresponding Holding Payment month). This seeks to ensure equity of treatment between Users as some may be unable to factor in an Annual figure.

For those parties that can factor in an Annual figure there is no 'downside' to using the Monthly approach as they can easily use the data for 12 consecutive months (if they wish) which has the same 'annual' effect.

The One-Off basis is, in our view, to 'draconian' as circumstances may change. Allowing Users the flexibility to change should maximise competitive providers, and thus prices, in the provision of mandatory frequency response.

Any change in a Users' opt in / opt out status should be notified to all Users in a timely manner, particularly if the Monthly option is adopted. This ensures openness and transparency.

5	**Do you agree with the proposed classification of generators with or without a fuel cost in table 3?**	

No.

The following comments are in addition to (and should be read in conjunction with) our comments under Q1 above.

We do not agree with the proposed classification of generators as set out in Table 3.

The proposed classification is arbitrary in nature. No justification of the artificial classifications of various types of generation into the 'fuel cost' / 'no fuel cost' groupings suggested has been made.

We note that there is no reference to 'low fuel cost' (as per the title of the Modification and the justification against Applicable Objective (b) provided in the Proposal Form).

In particular the proposed classification of hydro generation with storage is wrong as it uses a far to simplistic approach which is a gross distortion of reality and leads to an unjustified treatment of hydro generation which is counter to the law on the ground of (i) discrimination and (ii) competition.

In regard to hydro generation with storage there is not, as suggested, a 'no fuel cost'. There are three main reasons for this:-

(1) Hydro generation has a volume of water held in storage. If this water is used for the purposes of providing response energy it cannot, by definition, then be used for other commercial energy uses. This is an opportunity cost – 'valuing' this stored fuel at 'no fuel cost' for the purposes of CMP237 Original is factually incorrect. It also runs counter to the Authority's approval letter for CAP47 which states that "Ofgem considers that value based payments will encourage innovation in the delivery of the service from existing and new providers and could attract interest from potential new providers that may not have a current mandatory requirement to provide the service (including demand side) in the short term".

(2) Hydro generation with storage incurs ongoing operational and maintenance costs associated with the dam(s) (there maybe more than one per hydro power station) tunnels / aqueducts / pipelines etc.. These costs are recovered from the revenues associated with the throughput from the power station. If some of the output from the water stored is provided to the System Operator for free (which is what 'no fuel cost' can amount to practically) then (i) these O&M costs are not recovered from those units of energy used for free by the SO and (ii) these costs therefore have to

recovered from the remaining (non frequency response) energy units produced. Put simply, say the hydro O&M costs is £100 and 1,000 units of energy are produced; i.e. £0.10 per unit produced. If 100 units are required for frequency response energy then the £100 now has to be recovered from just 900 units, leading to the price for that (non frequency response) energy being higher. This leads, in the simple example used here, to a unit price of £0.11 which means this hydro storage generation is less competitive than other generation in the provision of mandatory frequency response services. Thus it can be seen that CMP237 Original will distort competition in the generation and supply of electricity (and thus is counter to the Applicable CUSC Objective (b)).

(3) Hydro generation with storage, like all other generation (be they artificially classified on the basis of (an arbitrary) 'fuel cost' / 'no fuel cost') has financing cost. In a similar way to the O&M costs noted under (2) above, these costs are recovered from the revenues associated with the throughput from the power station. If some of the energy output from the water stored is provided to the System Operator for free (which is what 'no fuel cost' can amount to practically) then (i) these financing costs are not recovered from those units of energy used for free by the SO and (ii) they therefore have to recovered from the remaining (non frequency response) energy units produced. The simple example noted under (2) above applies equally to finance costs and the Original proposed approach means this hydro generation (as well as other 'no fuel cost' generation) is potentially less competitive than other (fuel cost classified) generation. Thus it can be seen that CMP237 Original will distort competition in the generation and supply of electricity (and thus is counter to the Applicable CUSC Objective(b)).

In addition to the above, we would also question the legality of this Original proposal as regards our property rights as set out under Article 1 of the First Protocol of the European Convention of Human Rights as its proposing to use our property assets without the ability for receiving a market based compensation (whilst allowing other generators to receive such market based compensation) for the Response Energy provided to the System Operator.

Furthermore we notice that the Original proposal is silent on how 'interconnectors' are to be classified. It seems to us that interconnectors might be said, based on the artificial approach adopted by the Proposer, to also have 'no fuel cost' and so could be included as such in Table 3.

Annex 5 – CUSC Workgroup Consultation Alternative Request 1

CUSC WORKGROUP CONSULTATION ALTERNATIVE REQUEST FORM

Please send your completed form along with your completed Workgroup Consultation Response to ####### by #####.

Please note that any responses received after the deadline may not receive due consideration by the Workgroup.

Respondent Name and contact details	*Joe Underwood: joseph.underwood@drax.com – Drax Power Limited*
CMP### [Add – Title of the Modification]	CMP237 – Response Energy Payment for Low Fuel Cost Generation
Capacity in which the WG Consultation Alternative Request is being raised : (i.e. CUSC Party, BSC Party or "National Consumer Council ")	CUSC party

Description of the Proposal for the Workgroup to consider*(mandatory by proposer)*:

We propose that each generator be able to choose their own REP. This will allow generators to take their total marginal cost into account, not just simply fuel cost.

Description of the difference(s) between your proposal compared to Original / Workgroup Alternative(s) *(mandatory by proposer)*:

The original proposal modifies the current model by introducing two prices (£0/MWh and the MIP*1.25/0.75) that the REP will be based upon, rather than a single price for all generators (MIP*1.25/0.75). We suggest that each generator be able to choose their own REP. Neither table 3 in the Workgroup Consultation report nor the current system in place adequately reflects the marginal costs of each generator.

Justification for the proposal (*including why the Original proposal / Workgroup Alternative(s) does not address the defect*) *(mandatory by proposer)*:

The current model is outdated, better suited to a time where renewable generation on the system was sparse and the marginal costs of generators were similar. Presently the marginal costs of generators are very different, with some generators having negative marginal costs. The increase in renewable generation connected to the system is likely to lead to increased volatility and uncertainty around the MIP. This increasing volatility risk will most likely have an effect on the holding fees submitted by generators and some generators may price themselves out of the market.

The current REP calculation is an inefficient way to cover this risk and will have a detrimental effect on National Grid's ability to properly procure Frequency Response. This increased cost will eventually be passed on to the end consumer. Ultimately, any proposal to amend the REP consultation should endeavour to solve this problem.

However, we believe that the CMP237 solution will not comprehensively solve this problem as it only seeks to provide a solution for one class of generating technology. As such we do not believe that CMP237 will better facilitate Applicable CUSC objective (a). Specifically, it will not better enable National Grid to procure and utilise Frequency Response more efficiently, providing no benefits in terms of effective system operation.

Furthermore, we believe that the current proposal favours a particular group of generation

technologies – those classified as having no fuel cost. This therefore goes against Applicable CUSC objective (b) as it may distort competition between technologies defined as having a fuel cost and those defined as not having a fuel cost. To differentiate power stations by whether they have a fuel cost or not is crude way of categorising plant. More granular categorisation of the different marginal costs of plant is required to deliver a solution which better facilitates the relevant CUSC objectives.

As such we believe that all generators regardless of technology type should be able to set their own REP. This will better facilitate Applicable CUSC Objectives (a) and (b), as allowing generators to set their own REP will allow them to better manage the risks noted above, reducing the holding payment prices submitted ceteris paribus. This will also likely maximise the quantity of plant providing cost effective Frequency Response. This will both improve the SO's procurement and utilisation of Frequency Response (thus ensuring more efficient system operation), as well as maximising effective competition between providers of Frequency Response. Both impacts will benefit end consumers.

Impact on the CUSC *(this should be given where possible)*:

Same as in original proposal – change to Section 4.

Impact on Core Industry Documentation *(this should be given where possible)*:

Same as in original proposal – None identified.

Impact on Computer Systems and Processes used by CUSC Parties *(this should be given where possible)*:

We request that this issue is discussed by the Workgroup. It is assumed that CUSC parties already know their own marginal cost and therefore calculating their own REP should not be an onerous task. Changes to National Grid's systems will also need to be discussed by the Workgroup. A detailed analysis of the impact and cost of our proposal on National Grid's systems is required to effectively evaluate this proposal.

Justification for the proposal with Reference to Applicable CUSC Objectives* *(mandatory by proposer)*:

This alternative proposal would allow National Grid to procure Frequency Response based upon the cost base of the generator, removing uniformity of cost-base assumptions and allowing generators to reflect the true costs of providing the service. This will improve cost effectiveness, better facilitating Applicable CUSC Objective (a).

In addition, the alternative proposal would better align prices against generators' actual marginal costs of generation, allowing cost efficiencies to be passed through to the consumer and introducing signals to reduce price where appropriate. This will promote competition in the delivery of Frequency Response, thereby better facilitating Applicable CUSC Objective (b).

Attachments (Yes/No): **If Yes, Title and No. of pages of each Attachment:**	No

Notes:

1. Applicable CUSC Objectives* - These are defined within the National Grid Electricity Transmission plc Licence under Standard Condition C10, paragraph 1. Reference should be made to this section when considering a proposed Modification.

Annex 6 – Second Workgroup Consultation responses

CUSC Workgroup Consultation Response Proforma

CMP237 'Response Energy Payment for Lowe Fuel Cost Generation'

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **23rd April 2015** to cusc.team@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Workgroup.

Any queries on the content of the consultation should be addressed to Jade Clarke at jade.clarke@nationalgrid.com

These responses will be considered by the Workgroup at their next meeting at which members will also consider any Workgroup Consultation Alternative Requests. Where appropriate, the Workgroup will record your response and its consideration of it within the final Workgroup Report which is submitted to the CUSC Modifications Panel.

Respondent:	*Joe Underwood – joseph.underwood@drax.com*
Company Name:	*Drax Power Limited*
Please express your views regarding the Workgroup Consultation, including rationale. **(Please include any issues, suggestions or queries)**	Drax considers the Revised Original to now better facilitate the Applicable CUSC Objectives (a) and (b) and have suggestions on how to further Proposal. However, we consider that the Drax Alternative Request best facilitates the Applicable CUSC Objectives. Please see below for reasoning.

Standard Workgroup Consultation questions

Q	Question	Response
1	**Do you believe that CMP237 Original Proposal or either of the potential options for change better facilitate the Applicable CUSC Objectives? Please state which ones and why.**	Drax believes that the CMP237 Original Proposal has been altered by the Proposer to a standard where it is now an improvement on the baseline and better meets the Applicable CUSC Objectives (ACO) (a) and (b). The previous issues raised in our first Workgroup Consultation Response have been addressed and resolved to a reasonable extent. Under the revised Original Solution, with generators factoring in all costs to their holding price, the price risk (associated with the MIP) should be eliminated. Further, generators are no longer categorised into two groups with different pricing methods. Therefore no generator, or class of generators, will

		be subject to a competitive advantage/disadvantage thereby better facilitating ACO (b) with respect to the baseline and the original proposal presented in the first Workgroup consultation. The revised Original would allow National Grid to procure FR based upon the cost-base of the generator, removing the need to make assumptions when utilising FR and allowing generators to reflect the true costs of providing the service. This improved cost effectiveness will better facilitate Applicable CUSC Objective (a). The most important revision of the Original is the fixed price (currently suggested to be set at zero) as it removes price risk. This fixed price, however, could be set at a number that more accurately represents the marginal cost of generators delivering the majority of FR, whilst still eliminating the price risk. It is the case that coal and gas plant provides the majority of FR and therefore a REP reflecting the marginal cost of these plant could be set monthly, ahead of the requirement to submit holding prices. Plant would then have the option of selecting a zero fixed price or this new 'fossil' fixed price. Notwithstanding our concerns on MIP pricing, we envisage the option of also choosing MIP may have some merit here if there is a desire from the industry for this to be included. In addition consideration could be given to setting the MIP in an alternative way, e.g. at the day ahead stage. Having these multiple options would need to be evaluated in order to assess the practicality in incorporating this into National Grid's FR optimisation programs. The one major drawback of the Revised Original is that it fails to allow the FR provider to efficiently manage the volume risk associated with FR utilisation. As such, Drax maintains that our Workgroup Consultation Alternative Request (potential option for change 1, hereon named "Change 1") would best facilitate the ACOs as both the price and the volume risk are considered and can be efficiently managed. In addition, the Drax alternative proposal would better align prices against generators' actual marginal costs of generation, allowing cost efficiencies to be passed through to the consumer and introducing signals to reduce price where appropriate. This will promote competition in the delivery of Frequency Response, thereby better facilitating Applicable CUSC Objective (b). We would like to address National Grid's reservations with Change 1 and to take this opportunity to respond. National Grid stated that Change 1 would make optimisation of FR utilisation infeasible, stressing that it would not be possible to gauge which generator would be able to provide the most

		economic FR. REP volumes, however, will tend to zero in the long run as the system needs to be balanced at 50Hz, an assumption made when the current pricing scheme was introduced. These costs should therefore be minimal and as such National Grid can continue to optimise on holding payments alone. Drax deems the issue regarding a generator lowering its holding cost and increasing its REP in order to game the system too risky as the generator will not know whether they would be utilised for upward or downward FR. Therefore the FR provider could face material losses depending on how it is instructed. National Grid stated that the development of the optimisation and despatching algorithm needed to implement the Alternative could cost £10m but would need to spend ~£30k on a feasibility study before any level of confidence could be ascribed to the figure. It was mentioned in the Workgroup meetings that a similar modification, CAP107, has been raised previously where a similar system was proposed. However, this system would have cost in the region of £600k and therefore some clarification is needed on how both of these estimates have been derived and also the large disparity between the estimates. Further, Drax would like to point out that total holding payments for 2014 amounted to £44.6m and therefore over the period of a decade, Change 1 would only need to improve on the baseline, if £10m is indeed the cost of implementation, by 2.2% per year to make back the investment. Additionally, the point raised above regarding REP volumes tending to zero may lead National Grid to reassess the complexity, and therefore cost, of the program needed. Finally, we would like to note that the hybrid approach seems the most sensible way forward if National Grid's estimate of the implementation timescales required noted in the Workgroup Consultation are correct.
2	**Do you support the proposed implementation approach?**	More information on hybrid approach is needed but in principal Drax supports the implementation approach.
3	**Do you have any other comments?**	No.

4	**Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?**	No.

Specific questions for CMP237

Q	Question	Response
5	**Do you agree that there is a defect around the volatility of the MIP that is used to calculate the REP?**	Yes, please refer to our analysis which is attached as Annex 1 to this response and available on the National Grid website: http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/CUSC/Modifications/CMP237/
6	**Do you agree that the proposed Workgroup approach of considering solutions that only address both defects is appropriate?**	Yes. We believe the two defects would be better addressed if addressed together. Further, this approach will save time and resources.
7	**Do you think that the revised Original solution and potential alternatives better facilitates the Applicable CUSC Objectives better than those outlined in the first Workgroup Consultation?**	Yes, please refer to question 1.
8	**Do you consider the potential alternatives practical options considering the time and cost implications of implementing them?**	Yes. The Change 1 alternative would only need to improve on the baseline by 2.2% per year to make back the investment. We would also like more information on the origins of the £10m estimate with respect to the Cap107 £600k estimate.

Annex 1: Response Energy Payment Analysis

Background

The Response Energy Payment (REP) compensates Frequency Response (FR) providers for the costs incurred associated with changes in generation output. The principle is that the Market Index Price (MIP) represents the marginal cost of the marginal generator, the party most likely to be providing FR. When the REP was introduced power prices and consequently the MIP were predominantly set by either coal or gas fired plant due to these types of plant dominating the system. The Short Run Marginal Costs (SRMCs) of each technology were often similar and looking forward one month the MIP had a degree of predictability. The use of MIP for this purpose was imperfect, but the risk was manageable.

Changing Generation Mix

We are now faced with a very different generation background. For example, in 2004 coal and gas plant accounted for almost three quarters of generation output with wind plant accounting for only a very small proportion of generation output. By 2013 coal and gas plant accounted for approximately 60% of generation output, with wind's share of generation output rising to over 7%. Scenarios out to 2020 suggest that coal and gas will contribute somewhere between 35%-45% of generation output, with wind contributing between 15%-20%.

The range of technologies and, with it the range of SRMCs, is much wider and this will become more pronounced over the next few years. For illustration, a rough estimate of the SRMCs of different generation technologies is provided below:

- Coal 36% efficient = £30/MWh
- Gas 49% efficient = £40/MWh
- Onshore Wind = -£50/MWh
- Offshore Wind = -£100/MWh
- Solar = -£40/MWh
- Nuclear = £6/MWh (or ~-£10,000/MWh if neglecting start-up costs)

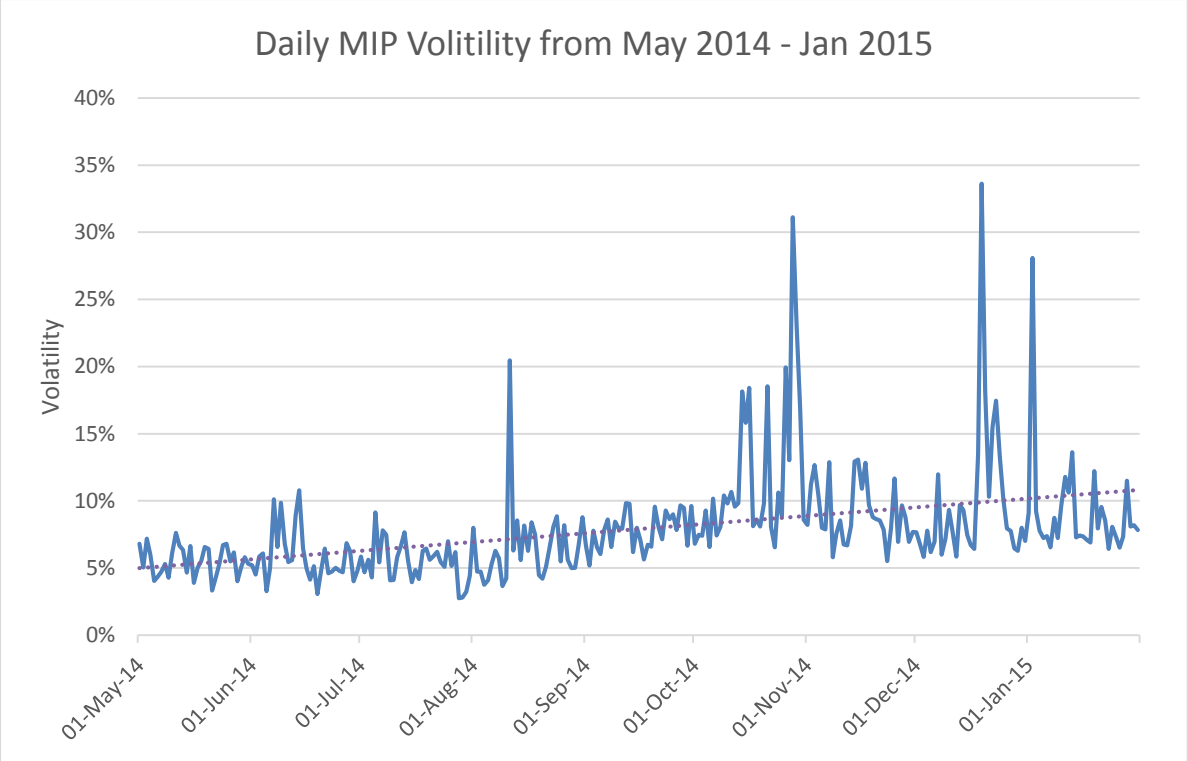
Even within the coal and gas generation technologies the range of SRMCs is increasing. This is due to increasing efficiency variations across the generation fleets, rising carbon costs and the need to comply with the Industrial Emissions Directive (IED).

Under the Renewables Obligation scheme the SRMC of wind generation is negative, the SRMC of biomass is considerably lower than coal or gas. The introduction of Contract for Difference Feed in Tariff (CfD FiT) support for biomass and wind will create another class of marginal cost. All renewables, gas, coal and hydro are capable of providing FR, all are capable of being the marginal generator and setting the market price. It is entirely feasible that within a 24 hour period all classes of technology may provide FR and all may, at some point, set the market price.

Increasing MIP Volatility

Due to the changing generation mix noted above, we expect the MIP will become increasingly volatile in future years. To illustrate, a report from Brattle Group suggested that in markets with high levels of wind penetration, the "management of wind power has become a major issue in all three of the markets [Spain, Germany and Denmark] studied…" The report then goes on to say "All three markets provide a preview of the increased price volatility that GB can expect with increased levels of wind power."[1]

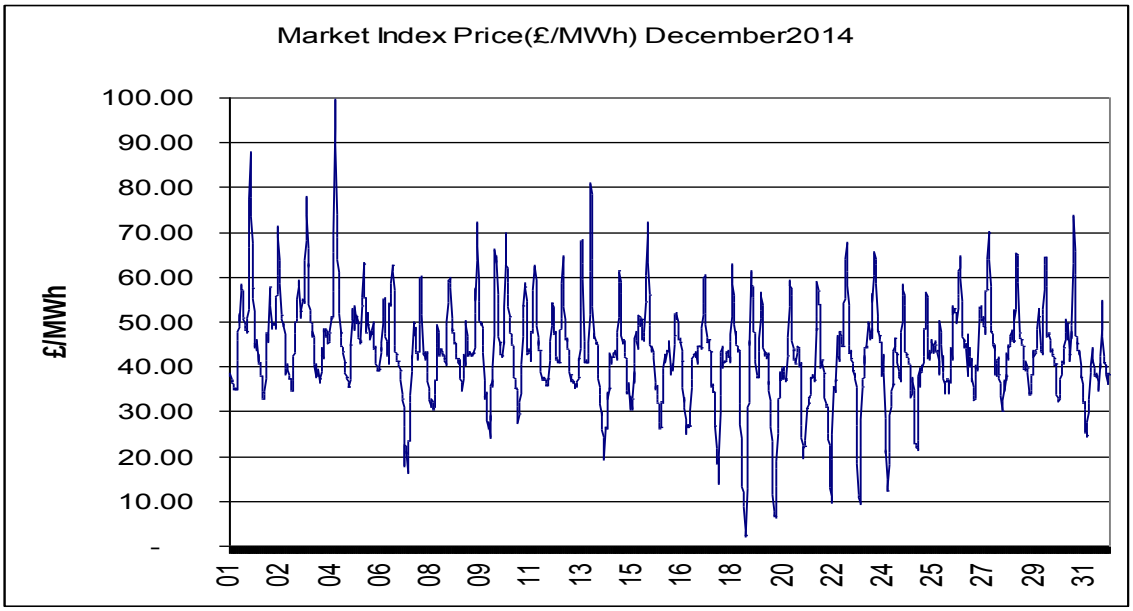
Analysis of the MIP also shows an increase in its volatility as displayed in the graph below. The graph presents the within day volatility of the period from early 2014 up to the end of January 2015. The within day volatility is represented by the standard deviation of the MIP over 48 half hour prices. The line of best fit shows the gradual increase in volatility.



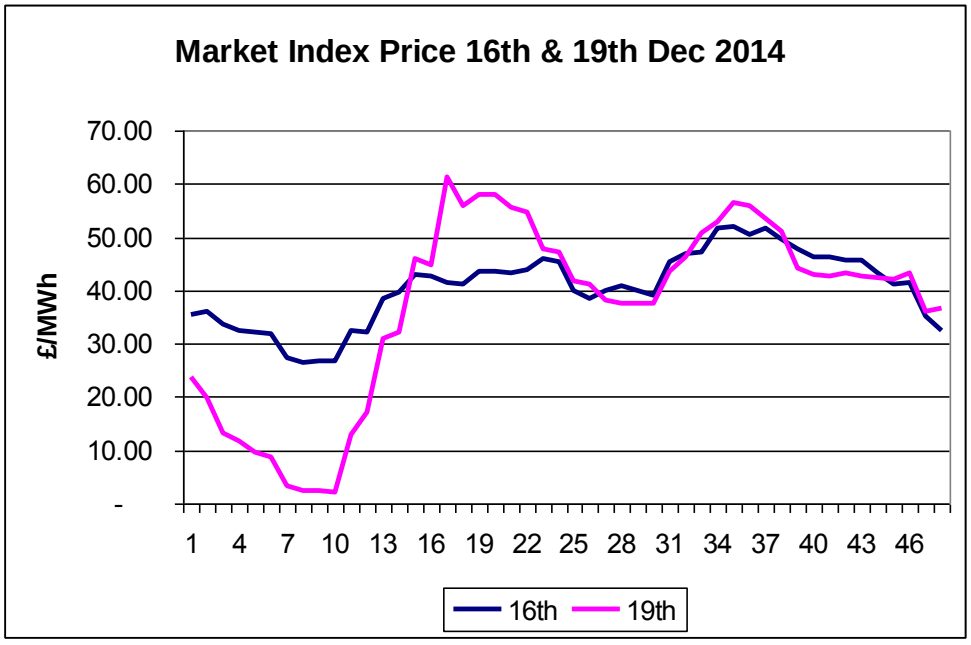
[1] ALTERNATIVE TRADING ARRANGEMENTS FOR INTERMITTENT RENEWABLE POWER: A CENTRALISED RENEWABLES MARKET AND OTHER CONCEPTS (April 2010). Hesmondhalgh, S; Et al. *Brattle Group p16.* https://www.ofgem.gov.uk/ofgem-publications/40208/brattle-report-alternative-trading-arrangements-intermittent-renewable-power-pdf.pdf

MIP December 2014 Example

Below is a chart of the MIP for December. The average price was £43.25/MWh, the maximum price was £99.61/MWh and the minimum price was £2.20/MWh. The REP would have been settled on these half hour prices.



If we consider two days (16 and 19 December), we can see the following variation in the MIP:



Day ahead power prices £/MWh		
	16th	19th
Overnight	34.00	29.50
Peak	52.80	47.30

Both coal and gas generators were providing FR during all periods on 16 & 19 December. The SRMC of coal and gas units did not change significantly over the two days. Depending upon which period the units were utilised for FR, a generator could be cashed out at a range of prices between £2.20/MWh and £61.38/MWh.

By way of illustration appendix 2 identifies when Drax Units 1 and 6 were utilised for frequency response. The Units had the same utilisation price i.e. the cost of despatch to the SO was the same. However, the Units pattern of utilisation was very different, consequently the average MIP at which the response energy was cashed out at was different for each Unit and each day even though their utilisation prices were identical. The spread of prices that Drax Units 1 and 6 was exposed to was around £15/MWh as shown in the table below:

Response Energy MIP Exposure £/MWh			
T_DRAXX-1 16TH	**T_DRAXX-1 19TH**	**T_DRAXX-6 16TH**	**T_DRAXX-6 19TH**
40.09	29.15	36.30	25.36

This shows that units called to deliver FR are likely to experience a material difference in the REP they receive/pay back relative to the cost incurred/saved. The only circumstance where a unit's REPs would match its costs incurred/saved is where:

- It is used continuously for FR every day, on every period; and
- It is part loaded such that it will provide high and low FR; and
- It's high and low FR capability at that part load point are equal

It is unclear whether this scenario will occur particularly often. In summary, the wider the spread of potential MIP the greater the risk to the FR generator. As the analysis above shows, the volatility of the MIP is only likely to increase.

REP Risk for FR Providers

There are two types of risk that FR providers face; price risk due to the volatility of the MIP and volume risk due to the uncertainty associated with FR utilisation. Currently, with a method based on MIP*1.25/0.75, FR providers face both price risk and volume risk. It should also be noted that until now the MIP has not dropped below £0/MWh because the APX exchange would not accept negative prices. From January 2015 this was no longer the case. Given the growth of wind and solar, both of which have negative SRMCs, a prudent generator would anticipate negative prices in the near future. Therefore MIP volatility is likely to increase further in future.

Under the proposed REP method, having a fixed price of £0/MWh (although the principle is the same for any other value) eliminates the price risk caused by the volatility of the MIP. This is likely to be beneficial for all FR providers so if it were to be introduced this option should be available to all FR providers. However this option does not help manage the volume risk. It is also worth noting that for wind, a £0/MWh REP price is unlikely to be greatly beneficial considering its negative marginal cost.

Ultimately, regardless of whether a FR provider operates under the current or proposed REP method, the only way to protect against running at a loss (due to REP costs being greater than REP revenue) is to increase holding prices.

This increase in holding fee will have a detrimental impact on National Grid's ability to carry out efficient FR. Further, If the risk cannot be quantified the generator may price itself out of the market. This reduction in competition cannot be of benefit to end consumers. If a generator could nominate a specific REP, both the price and volume risk could be more efficiently managed and would result in lower holding prices. This is likely to better facilitate competition and assist National Grid's procurement of FR, thus resulting in better outcomes for the end consumer.

Appendix 2

Periods	MIP £/MWh		T_DRAXX-1 16TH	T_DRAXX-1 19TH	T_DRAXX-6 16TH	T_DRAXX-6 19TH
	16TH	19TH	Utilised for FR 1= yes 0 = no			
1	35.44	23.80	1	1	1	1
2	35.96	19.76	1	1	1	1
3	33.65	13.13	1	1	1	1
4	32.53	11.74	1	1	1	1
5	32.00	9.72	1	1	1	1
6	31.72	8.70	1	1	0	1
7	27.33	3.30	0	1	0	1
8	26.35	2.36	0	1	0	1
9	26.62	2.47	0	1	0	1
10	26.61	2.20	0	1	0	1
11	32.31	13.03	0	1	0	1
12	32.03	17.19	0	0	0	1
13	38.53	31.00	0	0	0	1
14	39.77	32.22	0	0	0	1
15	42.92	45.93	0	0	0	1
16	42.73	44.78	0	0	0	0
17	41.48	61.38	0	0	0	0
18	41.02	55.73	0	0	0	0
19	43.48	58.07	1	0	0	0
20	43.71	57.98	1	0	0	0
21	43.41	55.50	1	0	0	0
22	43.84	54.68	1	0	0	0
23	45.93	47.83	1	0	0	0
24	45.26	47.20	1	0	0	0
25	39.87	41.63	1	0	0	0
26	38.33	41.05	1	0	0	0
27	39.89	38.03	1	0	0	0
28	40.78	37.61	0	0	0	0
29	40.09	37.68	0	0	0	0
30	39.10	37.54	0	1	0	0
31	45.32	43.71	0	1	0	0
32	47.00	46.37	0	1	0	0
33	47.19	50.87	0	1	0	0
34	51.81	52.75	0	1	0	0
35	52.09	56.54	0	0	0	0
36	50.46	55.83	0	0	0	0
37	51.55	53.58	0	0	0	0
38	49.68	51.13	0	0	0	0
39	47.88	44.31	0	1	0	0
40	46.14	42.97	1	1	0	1
41	46.36	42.61	1	1	0	1
42	45.56	43.31	1	1	0	1
43	45.53	42.74	1	1	0	1
44	43.23	42.50	1	1	1	1
45	41.21	41.92	1	1	1	1
46	41.39	43.22	1	1	1	1
47	35.25	36.16	1	1	1	1
48	32.35	36.67	1	1	1	1

CUSC Workgroup Consultation Response Proforma

CMP237 'Response Energy Payment for Low Fuel Cost Generation'

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **23rd April 2015** to cusc.team@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Workgroup.

Any queries on the content of the consultation should be addressed to Jade Clarke at jade.clarke@nationalgrid.com

These responses will be considered by the Workgroup at their next meeting at which members will also consider any Workgroup Consultation Alternative Requests. Where appropriate, the Workgroup will record your response and its consideration of it within the final Workgroup Report which is submitted to the CUSC Modifications Panel.

Respondent:	Paul Mott
Company Name:	EDF Energy
Please express your views regarding the Workgroup Consultation, including rationale. **(Please include any issues, suggestions or queries)**	For reference, the Applicable CUSC objectives are: (a) The efficient discharge by The Company of the obligations imposed upon it by the Act and the Transmission Licence. (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. (c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.

Standard Workgroup Consultation questions

Q	Question	Response
1	**Do you believe that CMP237 Original Proposal or either of the potential options for change better facilitate the Applicable CUSC Objectives? Please**	Yes, the mod in its original form would slightly better facilitate CAO (b), effective competition in the generation and supply of electricity. This is because it would ensure that REP payments are cost-reflective in a way that takes account of generation technology and whether or not a

	state which ones and why.	generator has a fuel cost. We agree that REP should not be set to zero for "Electricity Storage Technologies" (inc. pumped storage, batteries) – they do have a fuel cost. We believe that all hydro, whether dammed or run of river, should be treated as having zero fuel cost, and hence have zero REP. We accept that the argument can go both ways on dammed hydro, as it can be viewed as having some inherent storage; our views on that are not strongly-felt.
2	**Do you support the proposed implementation approach?**	Yes. There does need to be time for National Grid to contact the User, for existing generators, to amend their MSAs. The workgroup believes that an appropriate transition would leave one month in between an Authority decision and the effective implementation of the Modification, with MSA's being amended over the next two months. We do not strongly object to this, but wonder if a little more time, such as three months notice to implementation, might be prudent, so that MSA's can (via a side-letter) be amended in time, to avoid uncertainty as to what REP regime generators are operating under, so that frequency response market participation can be efficient, and to give time for legal scrutiny of the side-letter by affected parties.
3	**Do you have any other comments?**	-
4	**Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?**	No

Specific questions for CMP237

Q	Question	Response
5	**Do you agree that there is a defect around the volatility of the MIP that is used to calculate the REP?**	We do not believe that there is an issue with MIP volatility that actually needs to be addressed. It is true that MIP can be hard to forecast. The total materiality of REP is low and there is no easy way to mitigate for MIP volatility; the suggestion of allowing REP to be input as a daily price by each generator doesn't seem practical given the scale of

		expenditure that might be needed by Grid to produce a new optimiser for frequency response despatch; £10m of expenditure, when annual REP is only £1m to £2m. We note that Grid responded to Drax's concerns around MIP volatility by suggesting an alternative of setting the REP to zero for all parties, so that REP has no dependence on MIP, even for fossil plant. We are not minded to support this *REP=0 for all*, alternative (as the revised original), as it is less cost-reflective than what we have – although it is simpler.
6	**Do you agree that the proposed Workgroup approach of considering solutions that only address both defects is appropriate?**	We don't consider the volatility of MIP to be a major additional defect to address. There is therefore no need o choose between setting REP to zero for all generators, as Grid now suggest as the revised original, or allowing all generators to choose their REP. We prefer the original, but with REP NOT\ set to 0 for some storage plant (and maybe also tidal and dammed type hydro).
7	**Do you think that the revised Original solution and potential alternatives better facilitates the Applicable CUSC Objectives better than those outlined in the first Workgroup Consultation?**	We are not convinced that the new *REP=0 for all* version as the revised original, better facilitates the Applicable CUSC Objectives than the original and variants outlined in the first Workgroup Consultation, as it is less cost-reflective than what we have – although it is simpler, which is a merit. Given the cost to Grid, in terms of a new optimiser, of the REP-user-choice variant suggested by Drax, we also are not convinced that this version, better facilitates the Applicable CUSC Objectives than the original and variants outlined in the first Workgroup Consultation; the cost of the IT project, of up to £10m, to facilitate it seems likely to be disproportionate in terms of cost, and IT/Grid's time, in relation to the very low total annual materiality of REP payments.
8	**Do you consider the potential alternatives practical options considering the time and cost implications of implementing them?**	Regarding the REP-user-choice variant suggested by Drax, we also are not convinced that this version, better facilitates the Applicable CUSC Objectives than the original and variants outlined in the first Workgroup Consultation; the cost of the IT project, of up to £10m, to facilitate it seems likely to be disproportionate in terms of cost, and IT/Grid's time, in relation to the very low total annual materiality of REP payments. Our mild objection to Grid's suggested revised original does not lie in time or cost; there are no barriers to it from that direction. If fuel costs are the driver, it would perhaps be feasible to have an approach which takes a view of fuel costs for each plant type and uses this as the basis of REP instead of MIP,

		as MIP may not necessarily be representative of the particular generator's fuel costs depending on what's on the system. On the other hand, National Grid would not want the responsibility for forecasting fuel costs, so this may raise practical issues.

CUSC Workgroup Consultation Response Proforma

CMP237 'Response Energy Payment for Low Fuel Cost Generation'

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **23rd April 2015** to cusc.team@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Workgroup.

Any queries on the content of the consultation should be addressed to Jade Clarke at jade.clarke@nationalgrid.com

These responses will be considered by the Workgroup at their next meeting at which members will also consider any Workgroup Consultation Alternative Requests. Where appropriate, the Workgroup will record your response and its consideration of it within the final Workgroup Report which is submitted to the CUSC Modifications Panel.

Respondent:	*Lee Taylor (lee.taylor@gdfsuez.com)* *Tel: 0207 320 8974*
Company Name:	*GDF Suez*
Please express your views regarding the Workgroup Consultation, including rationale. **(Please include any issues, suggestions or queries)**	For reference, the Applicable CUSC objectives are: (a) The efficient discharge by The Company of the obligations imposed upon it by the Act and the Transmission Licence. (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. (c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.

Standard Workgroup Consultation questions

Q	Question	Response
1	**Do you believe that CMP237 Original Proposal or either of the potential options for change better**	**No.** We believe that none of the options presented in the Workgroup Consultation v2 Report adequately facilitate the applicable CUSC objectives. In relation to the CUSC

	facilitate the Applicable CUSC Objectives? Please state which ones and why.	objectives, we believe the key issues with this proposal are: • The economic case for the removal of REP for everyone has not been proven in the report. It is not clear that the consumer will benefit, or as a minimum be unaffected by this proposal. Removing REP for everyone could result in an increase in holding payments as generators manage the delivery risk of frequency response (particularly delivery of low frequency response) through increased holding fees, submitted monthly. This could increase costs for consumers. It is therefore not clear that this alternative better facilitates the Applicable CUSC objectives (a) and (b). • Changing the REP to zero will clearly remove the incentive for market participants to offer Primary and/or Secondary response. High frequency response providers will be over rewarded and low frequency response providers will be discouraged from providing response. Some generators primarily deliver only low frequency response and therefore this group will be discriminated against. This will therefore not better facilitate the Applicable CUSC objectives. • The report does not clarify how the removal of REP for every generator will impact the NGC incentives scheme (Section 6 of the BSIS incentives scheme). • The REP was not originally designed to reflect generators costs, but rather to reflect the market cost of power. Setting the REP to zero potentially creates a distortion in competition between generators in this market and does not reflect the market cost of power. We therefore do not believe that this better facilitates the Applicable CUSC objective (b). • It is not clear that the correct governance has been followed in this proposal. There are two defects and therefore each requires a different modification. Further clarification should be sought from Ofgem. We would therefore question whether this is an issue under the Applicable CUSC objective (c). • Allowing generators to submit their own REP is likely to be time consuming and expensive to implement (if technically possible at all), as noted in the report. We therefore do not believe this would be either efficient (a) or effective (b) under the Applicable CUSC objectives. Whilst we do not support the removal of REP payments for all generators, we do recognise the merit of developing a

		'hybrid' option, which will eventually lead to generators being able to submit their own REP price. **See Alternative Request for further detail**
2	**Do you support the proposed implementation approach?**	**Yes.** We agree with the suggestion that CMP237 should be implemented into the CUSC 10 Working days after an Authority decision, with a transitional period of at least one month (As stated in Section 4 of the report).
3	**Do you have any other comments?**	***Yes* – See Alternative Request for further detail**
4	**Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?**	**Yes.** In summary, we propose an interim alternative whereby generators with a low/no fuel cost (defined as those who receive ROC's/CfD's) are able to choose either a £Zero REP **or** a payment mechanism based on the day ahead auction (STEP 1). For all other generators, the REP will be based upon the day ahead auction (using the current multipliers of 0.75 and 1.25). We propose that this should be the enduring solution until it is possible for National Grid to accept REP price submissions from each individual generator (STEP 2). **STEP 1** In the immediate term, we propose: 1. For generators who receive ROC's/CfD's, we propose that these generator types have a choice of either £Zero REP **or** REP set using the N2EX/APX day ahead auction prices (hourly), retaining the current multipliers of 0.75 (high frequency) and 1.25 (low frequency) These generator types choose the REP methodology on an annual basis. 2. For all other generators, REP set using the N2EX/APX day ahead auction prices (hourly), retaining the current multipliers of 0.75 (high frequency) and 1.25 (low frequency). The main benefits of this are: • Allows all generators the choice of REP methodology

		and addresses the original defect. • Allows generators foresight of the REP price. Generators will know the exact REP well before delivery and can therefore factor this in more accurately to plant optimisation. • Generators use the day ahead auction to optimise positions. They can therefore take a view of the likely frequency response volume to be called and optimise accordingly. This should, to some extent, remove the price/volume risk. • The Day Ahead auction has a close correlation to the MIP price (~£0.20/MWh average difference between Jan 2014 and April 2015). REP was designed to reflect the market cost of power, therefore the close correlation between the day ahead auction and the MIP would provide a suitable alternative pricing basis. • This method should be easy, quick and relatively cheap to implement as the multipliers remain the same and NGC dispatch systems should not require significant investment or modification for implementation. • The N2EX/APX day ahead auction is a transparent and published market. **STEP 2** Allow generators to submit their own REP price. We propose that National Grid look to further develop the technical roadmap for achieving this solution. **See Alternative Request for further detail.**

Specific questions for CMP237

Q	Question	Response
5	**Do you agree that there is a defect around the volatility of the MIP that is used to calculate the REP?**	**No.** The response energy payment was not originally designed to reflect generators costs, but rather to reflect the market cost of power. The volatility in MIP reflects the changing plant mix on the GB system, particularly overnight, where must run and subsidised generation are becoming more influential in setting the MIP. If a generator is scheduled to run (FPN) over these periods, then they should expect to receive a lower and more volatile payment based on market prices.

6	**Do you agree that the proposed Workgroup approach of considering solutions that only address both defects is appropriate?**	**No.** We believe that two different defects have been identified and therefore each one requires a separate modification. We believe that Ofgem should be consulted for clarification on this issue.
7	**Do you think that the revised Original solution and potential alternatives better facilitates the Applicable CUSC Objectives better than those outlined in the first Workgroup Consultation?**	**No.** The original solution in the first consultation provided a better solution than the revised option. **See Alternative Request for further detail.**
8	**Do you consider the potential alternatives practical options considering the time and cost implications of implementing them?**	**No.** Whilst implementation of the current proposals would unlikely be restricted by the time and cost of implementation only, we do not believe the overall costs of these proposals have been adequately defined in the report. It has not been clarified in the report how generators will recover the REP payment once removed and what the cost implications of this might be.

CUSC Workgroup Consultation Response Proforma

CMP237 'Response Energy Payment for Lowe Fuel Cost Generation'

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **23rd April 2015** to cusc.team@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Workgroup.

Any queries on the content of the consultation should be addressed to Jade Clarke at jade.clarke@nationalgrid.com

These responses will be considered by the Workgroup at their next meeting at which members will also consider any Workgroup Consultation Alternative Requests. Where appropriate, the Workgroup will record your response and its consideration of it within the final Workgroup Report which is submitted to the CUSC Modifications Panel.

Respondent:	*Simon Reid 0141 614 2935* *simonpeter.reid@scottishpower.com*
Company Name:	*ScottishPower*
Please express your views regarding the Workgroup Consultation, including rationale. **(Please include any issues, suggestions or queries)**	Thank you for the opportunity to comment. Our comments are brief and we hope direct to aid the workgroup. Any changes must add value to the GB market especially final customers, after the costs of development and implementation costs are paid and with this in mind the Drax alternative and its hybrid cause us concern. However, the current arrangements penalise non-fuel cost generators and is a poor proxy for marginal costs of fuel cost generators. Therefore, in the first instance, addressing this deficit should be a priority and moving to a REP of 0MWh dose this for non-fuel cost generators and leaving the fuel cost generators as is. As an alternative suggestion giving the fuel cost generators the choice to move £0MWh REP, we believe, would also be fairer. This should be implemented as it is assumed that the Holding Payment would be reduced by non-fuel cost generators. This should lead to greater access by NGET of mandatory services provided by large non-fuel cost generators delivering: • The efficient discharge by national Grid of the obligations imposed upon it by the Act and the Transmission Licence (A), and • Its facilitation of more 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 (B). For reference, the Applicable CUSC objectives are: • The efficient discharge by The Company of the obligations imposed upon it by the Act and the Transmission Licence. • 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. • Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.

Standard Workgroup Consultation questions

Q	Question	Response
1	**Do you believe that CMP237** revised **Original Proposal or either of the potential options for change better facilitate the Applicable CUSC Objectives? Please state which ones and why.**	We believe that based on the evidence provided and discussed, each proposal progressively improves delivery of the identified CUSC objectives on the face of it. However the development and implementation costs appear to make the DRAX alternative and the hybrid too expensive. The MIP may reflect scarcity of generation rather than the cost of production and we agree that the volatility of the MIP imposes risks on the Service Providers delivering mandatory services to National Grid including negative prices on occasion. Removal of REP for all will help facilitate 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 but may not level the playing field and may just reverse discriminatory cost issues. The DRAX alternative is the ideal with Service Providers submitting their Holding Price and REP. The Service Providers being able to change their prices each month is sufficient. However as the weekly tenders for commercial ancillary services become available then perhaps the ability to update prices weekly may be appropriate. This too allows NGET to facilitate 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. Change is required as the consultation highlights. However it is important that any solution has a positive contribution including welfare benefit but based on the costings suggested the DRAX alternative appears to be unable to meet this requirement. A cheaper solution appears to be required. It appears nonsense that NGET is building a new Electricity Balancing System with merit order tables, communications routes & despatch instructions to solve another similar £MWh based problem and this cannot cannot be adapted swiftly and in a cost effective manner to allow each Service Provider to be able to set its own REP.
2	**Do you support the proposed implementation approach?**	We are not clear what is the implementation approach – the results of a feasibility study are required before any reason based support can be given.
3	**Do you have any other comments?**	An interim solution should be implemented quickly of giving all Service Providers the choice of the Original Proposal of status quo, the "fuel cost generator" or a £0MWh REP, the "non-fuel cost generator" without being bound by type of generator.
4	**Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?**	*If yes, please complete a WG Consultation Alternative Request form, available on National Grid's website[1], and return to the CUSC inbox at cusc.team@nationalgrid.com* Not at this time.

Specific questions for CMP237

Q	Question	Response
5	**Do you agree that there is a defect around the volatility of the MIP that is used to calculate the REP?**	Yes and we believe this will only become even more apparent in the future.
6	**Do you agree that the proposed Workgroup**	No – The current arrangement penalises non-fuel cost generators and is a poor proxy for marginal costs of fuel

[1] http://www.nationalgrid.com/uk/Electricity/Codes/systemcode/amendments/forms_guidance/

	approach of considering solutions that only address both defects is appropriate?	cost generators. However, in the first instance, addressing the deficit relating to “non-fuel cost generators” should be a priority and moving to a REP of £0MWh goes some way to address this and in any case we believe this to be an improvement.. Addressing the MIP defect could be partly addressed by giving the Service Providers to opt for £0MWh REP whilst a feasibility study takes place and a cost effective solution for the DRAX alternative is found, or not found.
7	**Do you think that the revised Original solution and potential alternatives better facilitates the Applicable CUSC Objectives better than those outlined in the first Workgroup Consultation?**	Yes, in general, but moving to a REP of £0MWh as a stepping stone to each Service Provider setting their own REP is still a pipe-dream and in its own right it does not level the playing field but creates different inconsistencies. The first consultation highlighted a solution that could be implemented with no change for some existing Service Providers and therefore is quicker and easier to implement whilst still addressing some of the issues of non-fuel cost generators. Giving other Service Providers the choice of MIP or £0MWHh for REP is fairer too. The current arrangement penalises non-fuel cost generators and is a less than perfect proxy for marginal costs of fuel cost generators. However, in the first instance, addressing the deficit relating to non-fuel cost generators should be a priority and moving to a REP of 0MWh does this for non-fuel cost generators only and leaving the fuel cost generators as is. Giving other Service Providers the choice of MIP or £0MWHh for REP is fairer too
8	**Do you consider the potential alternatives practical options considering the time and cost implications of implementing them?**	No - with the information provided in the consultation and the related discussion documents the costs appear prohibitive. However, it appears nonsense that NGET is building a new Electricity Balancing System with merit order tables, communications routes & despatch instructions to solve another similar £MWh based problem and this cannot be adapted swiftly and in a cost effective manner to allow each Service Provider to be able to set its own REP.

CUSC Workgroup Consultation Response Proforma

CMP237 'Response Energy Payment for Lowe Fuel Cost Generation'

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **23rd April 2015** to cusc.team@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Workgroup.

Any queries on the content of the consultation should be addressed to Jade Clarke at jade.clarke@nationalgrid.com

These responses will be considered by the Workgroup at their next meeting at which members will also consider any Workgroup Consultation Alternative Requests. Where appropriate, the Workgroup will record your response and its consideration of it within the final Workgroup Report which is submitted to the CUSC Modifications Panel.

Respondent:	*Garth Graham (garth.graham@sse.com)*
Company Name:	*SSE*
Please express your views regarding the Workgroup Consultation, including rationale. **(Please include any issues, suggestions or queries)**	For reference, the Applicable CUSC objectives are: (a) The efficient discharge by The Company of the obligations imposed upon it by the Act and the Transmission Licence. (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. (c) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.

Standard Workgroup Consultation questions

Q	Question	Response
1	**Do you believe that CMP237 Original Proposal or either of the potential options for change better facilitate the Applicable CUSC Objectives? Please**	In our response to the first Workgroup consultation we set out in detail our reasoning as to why, in our view, the Original Proposal does not better facilitate the Applicable CUSC Objectives. For the sake of brevity we do not repeat that detail here –

	state which ones and why.	instead we refer you to that response which is contain on pages 58-67 of the second Workgroup consultation. In terms of the Revised Original Solution, this we understand (from Table 5) would treat all generators equally in respect of the REP being removed for all generators (i.e. no artificial 'low/no cost' discrimination introduced) and, as such, this addresses our detailed reasoning about the anticompetitive aspects which are at the core of the Original Proposal. As such this better facilitates the Applicable CUSC Objectives (and in particular (b) facilitating effective competition). In terms of the potential option for change 1 (Drax Alternative Request) this has similar merits, in terms of better facilitating the Applicable CUSC Objectives (and in particular (b) facilitating effective competition) as the Revised Original Solution. However, we note the potential timescales associated with implementing this change 1 and therefore welcome the pragmatic approach introduced by change 2 (if the Drax Alternative Request were to proceed further as a WACM) to initially introduce the Revised Original Solution in the short term as we progress in the medium term to the change 1 approach. Given our comments above under both the Revised Original Solution and option for change 1 it follows that the option for change 2 better facilitates the Applicable CUSC Objectives (and in particular (b) facilitating effective competition).
2	**Do you support the proposed implementation approach?**	As noted under Q1 above, we support the proposed implementation approach.
3	**Do you have any other comments?**	We welcome the additional Workgroup consultation undertaken as a result of alternative request. Given the indication from the party making the request that "….the [frequency response] market is hugely distorted and that it is expected that the Market Index Price will reach a value below zero in the near future" this was an appropriate way to proceed. We note the Workgroup discussions in paragraphs 5.2 and 5.3 of the consultation document. In our view the submission of the REP (if there is to be one) and the Holding Payment by the generator at the same time (once a month) means that all generators are treated equally and

		no generator is afforded undue advantage. Given this we support the assumption that "…parties would submit their REP alongside their Holding Prices…".
4	**Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?**	*[It is our understanding that a Workgroup Consultation Alternative request is not permitted to be made where a second Workgroup consultation is undertaken.]*

Specific questions for CMP237

Q	Question	Response
5	**Do you agree that there is a defect around the volatility of the MIP that is used to calculate the REP?**	We note the Workgroup deliberations in this area. As we set out in our response to the first Workgroup consultation we have a different view to the Proposer as regards the defect identified.
6	**Do you agree that the proposed Workgroup approach of considering solutions that only address both defects is appropriate?**	We note the Workgroup deliberation on this, as set out in Section 5 of the second consultation document. We observe that the pragmatic approach would seem to be to address the issues surrounding Response Energy Payments via this CMP237 proposal (and any associated alternative(s)). However, if on reflection the issues highlighted by the Drax Alternative Request do not form part of the defect in the CMP237 proposal then we would hope that a new modification, based on the Drax Alternative Request, comes forward as soon as possible to allow the Authority to opine on these two proposals at the same time as if the defect in the Drax Alternative Request is not the same as that in the CMP237 Original Proposal then it cannot have substantially the same effect and should thus proceed as a stand alone Modification.
7	**Do you think that the revised Original solution and potential alternatives better facilitates the Applicable CUSC Objectives better than those outlined in the first**	Yes, for the reasons we set out in answer to Q1 above.

	Workgroup Consultation?	
8	**Do you consider the potential alternatives practical options considering the time and cost implications of implementing them?**	Yes.

Annex 7 – CUSC Workgroup Consultation Alternative Request 2

CUSC WORKGROUP CONSULTATION ALTERNATIVE REQUEST FORM

Please send your completed form along with your completed Workgroup Consultation Response to ####### by #####.

Please note that any responses received after the deadline may not receive due consideration by the Workgroup.

Respondent Name and contact details	*Lee Taylor: lee.taylor@yahoo.com* *TEL: 0207 320 8974* *GDF Suez*
CMP### [Add – Title of the Modification]	CMP237 – Response Energy Payment for Low Fuel cost Generation
Capacity in which the WG Consultation Alternative Request is being raised : (i.e. CUSC Party, BSC Party or "National Consumer Council ")	CUSC Party

Description of the Proposal for the Workgroup to consider*(mandatory by proposer)*:

In summary, we propose an interim alternative whereby generators with a low/no fuel cost (defined as those who receive ROC's/CfD's) are able to choose either a £Zero REP **or** a payment mechanism based on the day ahead auction – as described below (STEP 1).

For all other generators, the REP will be based upon the day ahead hourly auction (using the current multipliers of 0.75 and 1.25).

This should be the enduring solution until it is possible for National Grid to accept REP price submissions from each individual generator (STEP 2).

STEP 1
In the immediate term, we propose:

1. For generators who receive ROC's/CfD's, we propose that these generator types have a choice of either £Zero REP **or** REP set using the N2EX/APX day ahead auction prices (hourly), retaining the current multipliers of 0.75 (high frequency) and 1.25 (low frequency).

These generator types choose the REP methodology on an annual basis.

2. For all other generators, REP set using the N2EX/APX day ahead auction prices (hourly), retaining the current multipliers of 0.75 (high frequency) and 1.25 (low frequency).

STEP 2
Allow generators to submit their own REP price. We propose that National Grid look to further develop the technical roadmap for achieving this solution.

Description of the difference(s) between your proposal compared to Original / Workgroup Alternative(s) *(mandatory by proposer)*:

The revised original proposal modifies the current arrangements by removing REP from all generators. The two options take into consideration Drax's consultation alternative proposal to allow generators to submit their own REP values (one based purely on the alternative and one based on a hybrid of this and the revised original).

The alternative proposal described in this document is closely linked to both the current arrangements and those outlined in the original proposal put forward by National Grid. Rather than the REP being set to £Zero for all generators, we propose that low/no fuel cost generator types (defined as those who receive ROC's/CfD's) will be given the choice of REP payment mechanism. This alternative would allow a choice of methodology which best facilitates these generators ability to compete in the frequency response market.

For all other generator types, the methodology for REP payments remains very similar to the current arrangements. The key difference is that the price will be calculated from the day ahead auction. This alternative proposal keeps the current charging methodology for REP (multipliers of 0.75 and 1.25 remain) but changes the index or market against which this is priced. This alternative methodology more closely reflects the market cost of power rather than the REP being set to £Zero for all generators.

We propose that this should be the enduring solution until it is possible for National Grid to accept REP price submissions from each individual generator.

Justification for the proposal (*including why the Original proposal / Workgroup Alternative(s) does not address the defect*) *(mandatory by proposer)*:

The revised original proposal does not adequately address the defect(s) identified by the CMP237 workgroup. Whilst we identify that there is now a large spread in the marginal costs of different generator types, and that this has contributed to an increase in MIP volatility, we believe that setting the REP to £Zero further distorts the relationship between market power prices and REP, therefore potentially discriminating against certain types of generation.

We believe the key issues with the revised original proposal in terms of addressing the defect(s) are;

- The response energy payment was not originally designed to reflect generators costs, but rather to reflect the market cost of power. The volatility in MIP reflects the changing plant mix on the GB system, particularly overnight, where must run and subsidised generation are becoming more influential in setting the MIP. If a generator is scheduled to run (FPN) over these periods, then they should expect to receive a lower and more volatile payment based on market prices.
- Changing the REP to £Zero will clearly remove the incentive for market participants to offer Primary and/or Secondary response. High frequency response providers will be over rewarded and low frequency response providers will be discouraged from providing response. Some generators primarily deliver only low frequency response and therefore this group will be discriminated against.
- If REP is set to £Zero for all generators then this is likely to lead to an increase in cost to the consumer. The current arrangements mean that high frequency response providers pay and low frequency response providers are paid. If REP is zero then low frequency response providers will need to increase their holding price in order to cover costs. As these are submitted monthly, the holding prices are also likely to include a proportion of risk premium.
- The workgroup report does not clarify how the removal of REP for every generator will impact the NGC incentives scheme (Section 6 of the BSIS incentives scheme).
- Low frequency response generators cannot include the droop energy payment in an

efficient manner. Generators delivery of droop energy relates to power delivery tables and not response holding. It is therefore not possible for the REP price to be simply added to the Primary and Secondary response holding. No consideration of this has been given by the group.

- The alternative proposal of allowing generators to submit their own REP price is likely expensive and time consuming in the short term, if at all feasible. NGC estimate this to be at a cost of around £10M to implement after a ~30k scoping study. In the workgroup report, the proposer (National Grid) noted that they did not think that this was a 'workable solution' (Section 5.12 of the workgroup report).

There is also a question over the governance of the proposal with regards to the second defect identified in the consultation alternative. We believe this is a different defect and therefore requires a separate modification to be raised. Ofgem should be further consulted on this issue.

We are generally in favour of a hybrid solution, with the eventual aim of allowing all generators to submit their own REP.

We believe that the alternative raised in this document more adequately addresses the defect(s) and better facilitates the Applicable CUSC objectives. The main justifications for this alternative are:

- Allows all generators the choice of REP methodology and addresses the original defect. Allowing the choice to all generators should better facilitate the Applicable CUSC objectives (a) and (b) in that competition within the frequency response market should increase and therefore better enable National Grid to procure these services from a wider range of sources.
- Allows generators foresight of the REP price. Generators will know the exact REP well before delivery and can therefore factor this in more accurately to plant optimisation. This better facilitates Applicable CUSC objective (b).
- Generators use the day ahead auction to optimise positions. They can therefore take a view of the likely frequency response volume to be called and optimise accordingly. This should, to some extent, remove the price/volume risk identified in the workgroup report. Generators who are running in periods where the day ahead price is below their marginal cost already know the risks.
- The Day Ahead auction has a close correlation to the MIP price (~£0.20/MWh average difference between Jan 2014 and April 2015). REP was designed to reflect the market cost of power and not the marginal cost of generators, therefore the close correlation between the day ahead auction and the MIP would provide a suitable alternative pricing basis.
- This method should be easy, quick and relatively cheap to implement as the multipliers remain the same and NGC dispatch systems should not require significant investment or modification for implementation.
- The N2EX/APX day ahead auction is a transparent and published market.

This would provide an interim solution to the defect(s) identified whilst a roadmap to allowing all generators to submit their own REP is put in place.

Impact on the CUSC *(this should be given where possible)*:

Changes to Section 4. We would request that this is discussed by the CMP237 workgroup.

Impact on Core Industry Documentation *(this should be given where possible)*:

We would request that this is discussed by the CMP237 workgroup.

Impact on Computer Systems and Processes used by CUSC Parties *(this should be given where possible)*: This alternative is closely linked to the original modification proposal put forward by NGC. During workgroup consultation for this proposal, no significant impact on computer systems or processes were identified. We would request that this is discussed further by the CMP237 workgroup.
Justification for the proposal with Reference to Applicable CUSC Objectives* *(mandatory by proposer)*: The details provided in this alternative proposal give a clear solution to the defect(s) identified by the workgroup. By allowing low/no fuel cost generators to choose their REP payment methodology, this alternative would provide National Grid with more alternatives for the procurement of Frequency Response. This should better facilitate the Applicable CUSC objectives (a) and (b) in that competition within the frequency response market should increase and therefore better enable National Grid to procure these services from a wider range of sources. By linking the REP payment to the day ahead auction, generators will know the exact REP well before delivery and can therefore factor this in more accurately to plant optimisation. This better facilitates Applicable CUSC objective (b) in that this will promote more open and effective competition for frequency response.

Attachments (Yes/No): **If Yes, Title and No. of pages of each Attachment:**	No

Notes:

1. Applicable CUSC Objectives* - These are defined within the National Grid Electricity Transmission plc Licence under Standard Condition C10, paragraph 1. Reference should be made to this section when considering a proposed Modification.

Annex 8 – Draft Legal text

CMP237 (Original)

Edits to CUSC Section 4 Paragraph 4.1.3.9A as follows:

*Payment Formulae – **Response Energy Payment***

4.1.3.9A (a) The **Response Energy Payments** for **BM Unit** i in **Settlement Period** j to be made by **The Company** to a **User** referred to in Paragraph 4.1.3.8 shall be calculated in accordance with the following formulae:-

$$REP_{ij} = RE_{ij} \times \text{Reference Price}$$

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

Where:

REP_{ij} is the **Response Energy Payment** to be made to or, as the case may be, by the User; and

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

$$RE_{ij} = \int_0^{SPD} \begin{bmatrix} \max(FR_{ij}(t),0) \times (1 - SF_{LF}) \\ + \min(FR_{ij}(t),0) \times (1 - SF_H) \end{bmatrix} \times K_T \times K_{GRC}\, dt$$

Where:

$\int_0^{SPD} dt$ is the integral at times t, over the **Settlement Period** duration.

SF_{LF} is equal to SF_P in the case of a **BM Unit** being instructed to deliver **Primary Response** without **Secondary Response** or the mean of SF_P and SF_S in the case of a **BM Unit** being instructed to deliver **Primary Response** and **Secondary Response**.

SF_P, SF_S, SF_H, K_T and K_{GRC} have the meanings ascribed to them in Paragraph 4.1.3.9.

$FR_{ij}(t)$ 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 **Frequency Response Power Delivery Data** table 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 table entitled **"High Frequency Response Power Delivery – Mode A"** 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 table entitled "Primary Response Power Delivery – Mode A" in the case of a **BM Unit** being instructed to deliver **Primary Response** without **Secondary Response**; or

B) the table entitled "Primary and Secondary Response Power Delivery – Mode A" in the case of a **BM Unit** being instructed to deliver **Primary Response** and **Secondary Response**,

in each case set out in the **Mandatory Services Agreement** and shall be signed positive.

Where: RE_{ij} is positive then:

Reference Price = max ($\sum_s$ {**PXP$_{sj}$** x **QXP$_{sj}$**} / $\sum_s$ {**QXP$_{sj}$**} x 1.25, 0) except in the case of a non-fuel cost **BM Unit** where it = 0

where $\sum_s$ represents the sum over all **Market Index Data Providers**.

Where RE_{ij} is negative then:

Reference Price = max ($\sum_s$ {$\mathbf{PXP_{sj}}$ x $\mathbf{QXP_{sj}}$} / $\sum_s$ {$\mathbf{QXP_{sj}}$} x 0.75, 0) except in the case of a non-fuel cost **BM Unit** where it = 0

where $\sum_s$ represents the sum over all **Market Index Data Providers**

Where for the purposes of this Paragraph:

a non-fuel cost **BM Unit** means a **BM Unit** [associated with] [registered in respect of] a non-fuel cost **Power Station**

a non-fuel cost **Power Station** means:

a **Power Station** of the following type which does not have the facility to store the energy produced)

- Onshore wind
- Offshore wind
- Solar
- Tidal
- Wave

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

"$\mathbf{PXP_{sj}}$"
"$\mathbf{QXP_{sj}}$"
"SPD"
"Market Index Data Provider"

CMP237 (WACM1)

Edits to CUSC Section 4 Paragraph 4.1.3.9A as follows:

*Payment Formulae – **Response Energy Payment***

4.1.3.9A (a) The **Response Energy Payments** for **BM Unit** i in **Settlement Period** j to be made by **The Company** to a **User** referred to in Paragraph 4.1.3.8 shall be calculated in accordance with the following formulae:-

$$REP_{ij} = RE_{ij} \times \text{Reference Price}$$

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

Where:

REP_{ij} is the **Response Energy Payment** to be made to or, as the case may be, by the User; and

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

$$RE_{ij} = \int_0^{SPD} \begin{bmatrix} \max(FR_{ij}(t),0) \times (1 - SF_{LF}) \\ + \min(FR_{ij}(t),0) \times (1 - SF_H) \end{bmatrix} \times K_T \times K_{GRC}\, dt$$

Where:

$\int_0^{SPD} dt$ is the integral at times t, over the **Settlement Period** duration.

SF_{LF} is equal to SF_P in the case of a **BM Unit** being instructed to deliver **Primary Response** without **Secondary Response** or the mean of SF_P and SF_S in the case of a **BM Unit** being instructed to deliver **Primary Response** and **Secondary Response**.

SF_P, SF_S, SF_H, K_T and K_{GRC} have the meanings ascribed to them in Paragraph 4.1.3.9.

$FR_{ij}(t)$ 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 **Frequency Response Power Delivery Data** table 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 table entitled **"High Frequency Response Power Delivery – Mode A"** 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 table entitled "Primary Response Power Delivery – Mode A" in the case of a **BM Unit** being instructed to deliver **Primary Response** without **Secondary Response**; or

B) the table entitled "Primary and Secondary Response Power Delivery – Mode A" in the case of a **BM Unit** being instructed to deliver **Primary Response** and **Secondary Response**,

in each case set out in the **Mandatory Services Agreement** and shall be signed positive.

Where: RE_{ij} is positive then:

Reference Price = max ($\sum_s$ {**PXP$_{sj}$** x **QXP$_{sj}$**} / $\sum_s$ {**QXP$_{sj}$**} x 1.25, 0) except in the case of a non-fuel cost **BM Unit** where it = 0

where $\sum_s$ represents the sum over all **Market Index Data Providers**.

Where RE_{ij} is negative then:

Reference Price = max ($\sum_s$ {$\mathbf{PXP_{sj}}$ x $\mathbf{QXP_{sj}}$} / $\sum_s$ {$\mathbf{QXP_{sj}}$} x 0.75, 0) except in the case of a non-fuel cost **BM Unit** where it = 0

where $\sum_s$ represents the sum over all **Market Index Data Providers**

Where for the purposes of this Paragraph:

a non-fuel cost **BM Unit** means a **BM Unit** [associated with] [registered in respect of] a non-fuel cost **Power Station**

a non-fuel cost **Power Station** means:

a **Power Station** of the following type which does not have the facility to store the energy produced)

- Onshore wind
- Offshore wind
- Solar
- Tidal
- Wave

and in respect of which a **User** has not opted for that **Financial Year** for such **Power Station** to not be classed as a non- fuel cost **Power Station** for the purposes of this Paragraph.

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

"PXP_{sj}"
"QXP_{sj}"
"SPD"
"Market Index Data Provider"