ASSESSMENT CONSULTATION for Modification Proposal P220
'Provision of new data items for improving market information'

Prepared by: P220 Modification Group

For attention of: BSC Parties and other interested parties
Responses due: **12 noon** on **Monday 21 January 2008**
(to: **modification.consultations@elexon.co.uk**)

Date of Issue:	7 January 2008	**Document Reference:**	P220AC
Reason for Issue:	For Consultation	**Version Number:**	1.0

Proposed Modification P220 seeks to publish the following new data items on the Balancing Mechanism Reporting Service (BMRS):

a) Outturn and reference temperatures;

b) Wind generation forecast;

c) Instantaneous and half-hourly generation by fuel type (including 'real-time' total demand outturn data and half-hourly Interconnector flows);

d) Daily energy volumes transported across the Transmission System (based on Transmission System Demand); and

e) Non-Balancing Mechanism (BM) Short Term Operating Reserve (STOR) Instructed Volumes.

These new data items would be provided to the Balancing Mechanism Reporting Agent (BMRA) by the Transmission Company and, with the exception of the Non-BM STOR data, would also be included in an 'Electricity Data Summary Page' on the BMRS.

Alternative Modification P220 seeks to publish the same data items as those listed above, except that the daily energy volumes would be based on Initial National Demand Out-Turn and would include some additional trend data. The Alternative Modification also proposes to publish the following further data item:

f) 'Real time' Transmission System Frequency data.

This additional data would be included in the BMRS Electricity Data Summary Page.

PURPOSE OF CONSULTATION

This consultation seeks respondents' views regarding the merits of the Proposed Modification and Alternative Modification (as compared against the current Code baseline and each other) in relation to the Applicable BSC Objectives[1], and in respect of some additional questions posed by the Modification Group.

You are invited to provide a response to the questions contained in the attached pro-forma.

Please send responses, entitled 'P220 Assessment Procedure Consultation', by **12 noon** on **Monday 21 January 2008** to the following e-mail address: modification.consultations@elexon.co.uk.

Any queries should be addressed to Kathryn Coffin on 020 7380 4030 or kathryn.coffin@elexon.co.uk.

[1] A copy of the Applicable BSC Objectives is provided in Appendix 1 of this consultation document.

CONTENTS TABLE

SUMMARY OF IMPACTED PARTIES AND DOCUMENTS

As far as the Modification Group has been able to assess, the following parties/documents would be impacted by P220.

Please note that this table represents a summary of the full impact assessment results in Appendix 3.

Parties		Sections of the BSC		Code Subsidiary Documents	
Distribution System Operators	☐	A	☐	BSC Procedures	☐
Generators	☒	B	☐	Codes of Practice	☐
Interconnectors	☒	C	☐	BSC Service Descriptions	☒
Licence Exemptable Generators	☒	D	☐	Party Service Lines	☐
Non-Physical Traders	☒	E	☐	Data Catalogues	☐
Suppliers	☒	F	☐	Communication Requirements Documents	☐
Transmission Company	☒	G	☐	Reporting Catalogue	☐
Party Agents		H	☐	**Core Industry Documents**	
Data Aggregators	☐	I	☐	Ancillary Services Agreement	☐
Data Collectors	☐	J	☐	British Grid Systems Agreement	☐
Meter Administrators	☐	K	☐	Data Transfer Services Agreement	☐
Meter Operator Agents	☐	L	☐	Distribution Code	☐
ECVNA	☐	M	☐	Distribution Connection and Use of System Agreement	☐
MVRNA	☐	N	☐	Grid Code	☐
BSC Agents		O	☐	Master Registration Agreement	☐
SAA	☐	P	☐	Supplemental Agreements	☐
FAA	☐	Q	☒	Use of Interconnector Agreement	☐
BMRA	☒	R	☐	**BSCCo**	
ECVAA	☐	S	☐	Internal Working Procedures	☐
CDCA	☐	T	☐	**BSC Panel/Panel Committees**	
TAA	☐	U	☐	Working Practices	☐
CRA	☐	V	☒	**Other**	
SVAA	☐	W	☐	Market Index Data Provider	☐
Teleswitch Agent	☐	X	☒	Market Index Definition Statement	☐
BSC Auditor	☐			System Operator-Transmission Owner Code	☐
Profile Administrator	☐			Transmission Licence	☐
Certification Agent	☐				
Other Agents					
Supplier Meter Registration Agent	☐				
Unmetered Supplies Operator	☐				
Data Transfer Service Provider	☐				

1 EXECUTIVE SUMMARY

The key conclusions of the P220 Modification Group ('the Group') to date are outlined below.

The Group:

- **DISCUSSED** the areas raised by its Terms of Reference and **NOTED** the results of National Grid's background work through the Demand Side Working Group (DSWG) and its industry consultation prior to raising P220;
- **NOTED** that related Modification Proposal P219 (Reference 1) had also been raised by National Grid in the area of Balancing Mechanism Reporting Service (BMRS) data reporting;[2]
- **DEVELOPED** the BMRS display requirements for the Proposed Modification, refining these from those which had been provided in National Grid's original 'straw man';
- **DEVELOPED** an Alternative Modification to publish some additional related data items which were not included in the Proposed Modification;
- **CONSIDERED** a potential further option for an Alternative Modification which would allow the BSC Panel ('the Panel') to agree future new BMRS data items without requiring a Modification Proposal, but **AGREED** not to progress this as part of P220;
- **COMMISSIONED** impact assessments from the Balancing Mechanism Reporting Agent (BMRA), Transmission Company, BSCCo[3] and participants, and **NOTED** that the required Transmission Company and BMRA lead times were such that it would not be practicable to implement P220 prior to the November 2008 Release;
- **AGREED** initial recommended Implementation Dates for P220 of:
  - 6 November 2008 if an Authority decision is received on or before 3 April 2008; or
  - 25 June 2009 if an Authority decision is received after 3 April 2008 but on or before 23 October 2008,

  noting that only critical changes will be delivered in the February 2009 Release due to the interaction with Project Isis;
- **NOTED** that the estimated combined BMRA/BSCCo implementation costs of the Proposed Modification and Alternative Modification were in the region of £135,000-£140,000 and £158,000-£162,000 respectively;
- **NOTED** that the estimated Transmission Company implementation costs of the Proposed Modification were in the region of £600,000, with any additional costs resulting from the Alternative Modification being under £20,000;
- **NOTED** that, whilst P219 and P220 were not contingent on each other, if simultaneous Authority decisions were made on both modifications prior to the P220 cut-off dates for implementation in the same release, this would achieve a saving of 20% off the combined costs of the two modifications for both the BMRA, Transmission Company and BSCCo;
- **AGREED** an initial **MAJORITY** view that the Proposed Modification should not be made – since, whilst a majority of members believed that the Proposed Modification would better facilitate Applicable BSC Objectives (b) and (c) when compared with the existing arrangements, these members remained unconvinced that the identified benefits would outweigh the negative impact of the implementation costs on Objective (d);

[2] Modification Proposal P219 'Consistency between forecast and outturn demand'.
[3] The Balancing and Settlement Code Company (ELEXON).

- **AGREED** an initial **MAJORITY** view that the Alternative Modification should not be made – since, whilst a majority of members believed that the Alternative Modification would better facilitate Applicable BSC Objectives (b) and (c) when compared to both the existing arrangements and the Proposed Modification, these members remained unconvinced that the identified benefits would outweigh the negative impact of the implementation costs on Objective (d);
- **AGREED** that it was currently unable to quantify the benefits of P220, and **AGREED** to include a specific consultation question inviting respondents to provide further information regarding the benefits of the data to their organisations;
- **AGREED** to invite a response from the DSWG to the P220 Assessment Procedure consultation;
- **CONSIDERED** the potential inclusion of a real-time BMRS flag for the generation by fuel type data which would flag if any of that data was incomplete, but **AGREED** to include a consultation question seeking participants' views of the benefits of this prior to including it in the P220 solution (noting that this would increase the Transmission Company's estimated implementation costs from those shown above by 80% and its lead time by 6 months - removing the possibility of a November 2008 implementation);[4]
- **CONSIDERED** whether the publication of the proposed P220 data could give rise to any confidentiality issues, and agreed to include a specific consultation question in this area; and
- **NOTED** that it would have limited ability to consider the inclusion of any further data items in P220 which might be suggested by consultation respondents, but **AGREED** that respondents should still be invited to identify any further BMRS data which they believed should be published in order that this could be noted by the Panel.

A explanation of the background to P220 can be found in Section 2 of this consultation document. A high-level overview of the P220 solution is provided in Section 3, whilst further detail regarding the solution requirements for the Proposed Modification and Alternative Modification are provided in Sections 4 and 5 respectively.

Further information regarding the Group's initial discussions of the areas set out in the P220 Terms of Reference is contained in Section 6.3. A summary of the Group's initial views regarding the merits of the Proposed Modification and Alternative Modification can be found in Section 6.4. A copy of the Group's full Terms of Reference is provided in Appendix 2, whilst a summary of the responses to the impact assessment is contained in Appendix 3.

Definitions of the capitalised terms used in this document are provided in Section 8.

Interested parties are now invited to respond to the Assessment Procedure consultation for P220, using the proforma provided, by 12 noon on 21 January 2008. The Group will consider all consultation responses received at its next meeting on 23 January 2008, at which the Group will confirm its solution requirements and recommended Implementation Date as well as agreeing its final recommendation as to whether P220 should be made. The P220 Assessment Report, containing details of the Group's discussion of the consultation responses and final recommendations, will be presented to the Panel on 14 February 2008.

[4] Further information regarding this option can be found in Section 6.5.

2 BACKGROUND

2.1 Overview of Balancing Mechanism Reporting Service

The BMRS provides electricity market participants with a wide range of operational and commercial information relating to the Balancing Mechanism. The BMRS is managed by the BMRA as a BSC Agent on behalf of BSCCo in accordance with Section V 'Reporting' of the Balancing and Settlement Code ('the Code'). A list of all the data currently published on the BMRS can be found within the Code as Table 1 of Annex V-1 'Tables of Reports'. This data is provided by the Transmission Company in accordance with Section Q 'Balancing Mechanism Activities', and definitions of the data items can be found in Annex X-2 'Technical Glossary' of the Code.

The BMRS contains information which is presented from close to real time to a half-hourly resolution, and is available 24 hours a day, 365 days a year. There are two existing methods of receiving information from the BMRS as follows:

- The **BMRS High Grade Service** is a dedicated private communications network, over which the BMRA data is broadcast to subscribing participants as soon as it is available. Currently, the charts and tables accessed via the BMRS High Grade Service website are 'auto-refreshed' such that users receive near-real-time updates.[5] Participants who subscribe to the High Grade Service can also receive data through 'TIBCO' messaging as well as accessing the web pages (i.e. the data is 'pushed' to users). The High Grade Service is available to both BSC Parties ('Parties') and non-Parties at a charge payable to BSCCo.
- The **BMRS Low Grade Service** is a public website (www.bmreports.com), which can be accessed by any internet user free of charge. Data is made available to the High Grade and Low Grade services at the same time, but participants using the Low Grade Service need to use the web page 'refresh' facility to retrieve the latest data as it becomes available (i.e. the data needs to be 'pulled' by users).

2.2 National Grid consultation on electricity market information

In the period following its October 2006 Operational Forum, National Grid has engaged with the industry regarding potential improvements to existing electricity market information. Initial views were gained by National Grid from the Electricity Operational Forum, the Demand Forecasting Seminar and the DSWG. A set of initial proposals were subsequently developed by National Grid and issued for industry consultation in August 2007 (Reference 2).

A key area discussed by the DSWG was the current lack of an electricity daily 'summary page' to provide key market information in a single place. It was noted that such a summary page has been available for the gas market from the National Grid website since 2005,[6] and DSWG members suggested that a similar page for electricity market information would be beneficial for demand-side participants. One of the options issued for consultation by National Grid was therefore the proposed introduction of an electricity daily summary page, to be provided on the BMRS Low Grade Service public website. The data proposed to be published on this summary page was a mixture of existing data already published on the BMRS and new data which would be provided to the BMRA by National Grid in its role as the Transmission Company.

[5] It should be noted that the Imbalance Settlement Group (ISG) has recently agreed that Change Proposal (CP) 1217 'Discontinuing the BMRS High Grade website' should be raised to give consideration to removing the auto-refreshing facility from the BMRS High Grade Service website, such that only one version of the BMRS website would be maintained (and which would be identical to the current Low Grade Service public website). The Modification Group has therefore considered the implications of P220 both with and without the future continuation of the High Grade Service website. Further details can be found in Section 6.9 of this consultation document.
[6] The gas Daily Summary Report can be found at: http://www.nationalgrid.com/uk/Gas/Data/dsr/.

2.3 Creation of BMRS Electricity Daily Summary Page

Following discussions with BSCCo, the BMRA and industry forums, National Grid's consultation document proposed a 3-phase approach for the introduction of an electricity daily summary page as shown in Table 1. An indicative 'straw man' outlining the individual data items proposed to be published on the summary page in each phase was also provided as part of this consultation document (Reference 3).

Table 1 – BMRS Summary Page approach

Phase	Modification Proposal required?	Cost / Lead time	Delivery timescales
"The 10% solution" (A simple 'quick win' page of links to existing data and National Grid graphs)	No – as only links to existing data	Zero cost and minimal delivery time	A high-level Electricity Daily Summary Page was implemented on the BMRS in July 2007 and can be found at: http://www.bmreports.com/dsr.htm
"The 60% solution" (An actual summary page with graphs and summarised data, but only where the data is already available on the BMRS)	No – as only reformatting of existing data	c.£35,000, with a delivery time in the region of 6 months	Work on these aspects of the summary page is currently underway by BSCCo/BMRA for implementation during the first quarter of 2008
"The 100% solution" (A summary page containing new data items provided by National Grid in addition to existing data)	Yes – as includes new data items	Would be established during progression of the Modification Proposal	Would be established during progression of the Modification Proposal

The rationale for this phased approach was that those parts of the proposed summary page which related to existing BMRS data could be delivered relatively quickly and at low cost without requiring a Modification Proposal, whilst those that would involve new data items being published by the BMRA could require more significant expenditure and lead times as well as a modification to the Code.

Table 2 shows the number of respondents to National Grid's original consultation who supported the publication of those new data items which were subsequently taken forward as Modification Proposal P220 'Provision of new data items for improving market information' (P220).

Table 2 – Results of National Grid consultation

Data item	Consultation responses
Outturn/reference temperatures	N/A – no specific question asked
Wind generation forecast	10 out of 11 respondents supported
Generation by fuel type	6 out of 11 respondents supported
Daily energy volumes	N/A – no specific question asked
Non-BM STOR Instructed Volumes	10 out of 11 respondents supported

In addition, 5 out of 11 respondents to National Grid's consultation supported the introduction of a BMRS Data Summary Page.

Following consideration of the full responses received to its consultation (Reference 4), National Grid raised P220 on 26 October 2007. For a more detailed description of the original Modification Proposal as submitted by National Grid ('the Proposer'), please refer to the P220 Initial Written Assessment (IWA, Reference 5).

3 SUMMARY OF MODIFICATION SOLUTION

This section outlines the solution for the Proposed Modification and Alternative Modification as developed by the Modification Group.

3.1 Proposed Modification

Proposed Modification P220 would publish the following new data items on the BMRS:

a) Outturn and reference temperatures;

b) Wind generation forecast;

c) Instantaneous and half-hourly generation by fuel type (including 'real-time' total demand outturn data and half-hourly Interconnector flows);

d) Daily energy volumes transported across the Transmission System (based on Transmission System Demand); and

e) Non-Balancing Mechanism (BM) Short Term Operating Reserve (STOR) Instructed Volumes.

These new data items would be provided to the BMRA by the Transmission Company. With the exception of the Non-BM STOR data, the new data items would also be added to the 'Phase 1' Electricity Data Summary Page (hereafter referred to as the 'Summary Page') which is already being developed for the publication of existing BMRS data. Table 3 shows the high-level BMRS publication requirements for the Proposed Modification.

Table 3 – BMRS publication requirements for Proposed Modification

Data item	New Summary Page graph	New Summary Page table	New 'current data' page	New 'historic data' page
Outturn and reference temperatures	Yes (rolling 3 months)	No	No	Yes (rolling 6 months)
Wind generation forecast	Yes (D-1, D and D+1)	Yes (D and D+1)	Yes (D-1, D and D+1)	No*
Instantaneous generation by fuel type	No	Yes (current snapshot)	No	Yes (rolling 24 hours)
Half hourly generation by fuel type	Yes	Yes (rolling half hour and 24 hours)	No	Yes (rolling 3 months)
Real-time total demand outturn	Yes (rolling 60 minutes)	No	No	Yes (rolling 48 hours)
Half-hourly Interconnector flows	Yes x 2 (Yesterday/Today)	No	No	Yes (rolling 30 days)
Daily energy volumes	Yes (rolling 3 months)	No	No	Yes (rolling 6 months)
Non BM-STOR Instructed Volumes	No	No	Yes (Yesterday/Today)	No

**Available separately as part of half-hourly generation by fuel type data.*

Further detail regarding the requirements for each of these new data items can be found in Section 4.

It should be noted that, consistent with the existing 'quick wins' page and planned 'Phase 1' additions, the P220 Summary Page would only be provided on the Low Grade Service public website, and not on the High Grade Service website.[7] High Grade Service Users would be able to access the new data through the public site, as well as receiving the data through new TIBCO messages.

3.2 Alternative Modification

Alternative Modification P220 would publish all of the data items included in the Proposed Modification, except that the daily energy volumes would be based on Initial National Demand Out-Turn (INDO) and would include some additional trend data.

The Alternative Modification would also publish one further additional data item of 'real-time' Transmission System Frequency.

The additional data required by the Alternative Modification would be provided to the BMRA by the Transmission Company. It would be included in the BMRS Summary Page and new web pages on the Low Grade Service website, and would be provided to High Grade Service Users through TIBCO messaging. Table 4 shows the high-level BMRS publication requirements for the Alternative Modification.

Table 4 – BMRS publication requirements for Alternative Modification

Data item	New Summary Page graph	New Summary Page table	New 'current data' page	New 'historic data' page
Real-time System Frequency	Yes (rolling 60 minutes)	No	No	Yes (rolling 48 hours)
Outturn and reference temperatures	As per Proposed Modification.			
Wind generation forecast	As per Proposed Modification.			
Instantaneous generation by fuel type	As per Proposed Modification.			
Half hourly generation by fuel type	As per Proposed Modification.			
Real-time total demand outturn	As per Proposed Modification.			
Half-hourly Interconnector flows	As per Proposed Modification.			
Daily energy volumes	As per Proposed Modification, but based on INDO and with additional trend data.			
Non BM-STOR Instructed Volumes	As per Proposed Modification.			

Further detail regarding the requirements for each data item contained in the Alternative Modification can be found in Section 5.

[7] See Section 6.9 of this consultation document for further details regarding the Group's discussion of the interaction between P220 and CP1217, which is separately considering the potential discontinuation of the High Grade Service website.

4 DETAIL OF PROPOSED MODIFICATION SOLUTION

This section details the solution requirements agreed by the Modification Group for the Proposed Modification. An explanation of the Group's rationale for developing these requirements can be found in Section 6 of this consultation document.

4.1 Outturn and reference temperatures

The Transmission Company would be required to provide the BMRA with new daily temperature data for the previous day, as shown in Table 5.

Table 5 – New outturn and reference temperature data

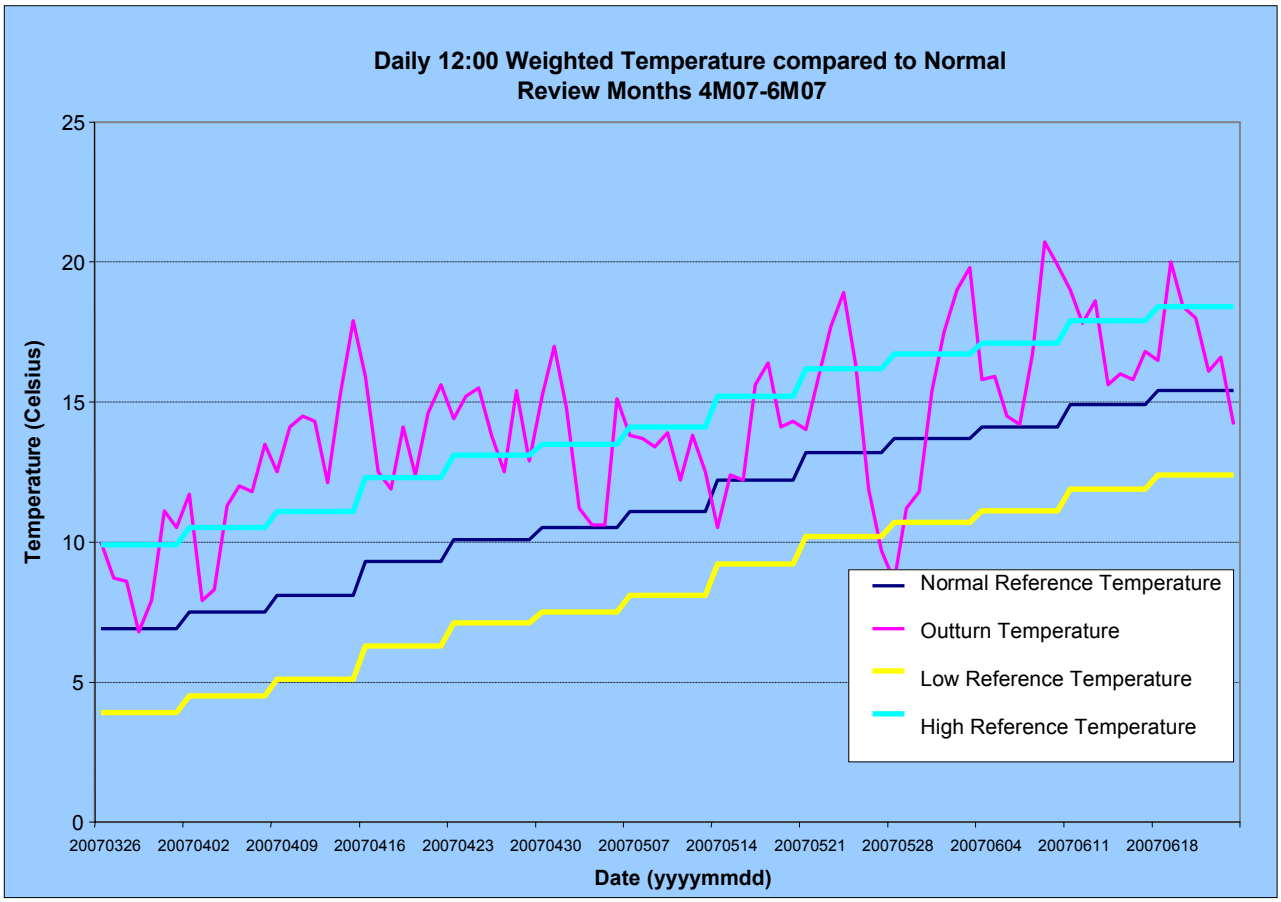
Data Item	Submission Time	Description
Outturn temperature	No later than 17:00 each day	The following data applicable for the day preceding the current day: the outturn (i.e. actual) GB temperature, expressed as a composite variable average Celsius value deemed to be representative of the temperature measured at midday.
Reference temperatures	No later than 17:00 each day	The following data applicable for the day preceding the current day: a) The Normal Reference Temperature expressed as a degrees Celsius value; b) The Low Reference Temperature expressed as a degrees Celsius value; and c) The High Reference Temperature expressed as a degrees Celsius value.

Each different temperature data item (outturn, Normal, Low, High) would be a separate daily GB figure.

The Code requirement would be for the High, Normal and Low Reference Temperature data to be submitted by the Transmission Company no later than 17:00 each day. However, in practice these new reference temperature data items would be provided to the BMRA as standing data at the beginning of each calendar year for all days in that year – although the BMRA would only publish the values a day at a time. This standing data would be provided to the BMRA as a 'comma-separated' (.csv) file in a format agreed between the BMRA and the Transmission Company. The BMRA would be required to manually extract and publish the data for each day. The outturn temperature data file would be submitted by the Transmission Company to the BMRA on a daily basis.

The BMRA would be required to publish a new graph on the BMRS Summary Page in a format similar to that shown in Figure 1, containing all of the daily temperature data items listed in Table 5 over a rolling three-month period.

Figure 1 – Summary Page display for new outturn and reference temperatures



(Please note that the above graph is indicative only, and has been produced using hypothetical data.)

In addition, the BMRA would be required to publish historic values for this data for each day in the past rolling 6-month period. This data would not be published on the Summary Page itself, but would be made available as a table on a separate new page of the BMRS and also via a .csv file download from that page. A link to this new page would be provided on the Summary Page.

An explanation of the new data would be provided on the BMRS, including:

- Definitions of High, Normal and Low Reference Temperatures;
- Details of the data points used to derive the outturn temperature as a composite variable (for example, these might be temperature measurement times 09:00, 10:00, 11:00 and 12:00);
- Clarifications of the times shown in the graph/spreadsheet (e.g. that '12:00' represents 12 noon);
- Details of the sample of different weather stations used by the Transmission Company to derive the temperature data; and
- Clarification that, if data from a particular weather station was unavailable on a given day, the Transmission Company would temporarily substitute this with data from another station.

These explanations/clarifications would either be added to the BMRS Help page, or would be provided via another method such as the use of local mouse-over pop-ups on the Summary Page. The precise format and wording would be agreed between the BMRA, the Transmission Company and BSCCo during the implementation period for P220.

4.2 Wind generation forecast

The Transmission Company would be required to provide the BMRA with new wind generation forecast data for the current day, day ahead and 2 days ahead, as shown in Table 6 below.

Table 6 – New wind generation forecast data

Data Item	Time	Description
Forecast wind generation (day, day ahead, and 2 day ahead values)	No later than 17:00 each day	The following data applicable for the 48-hour period commencing at 21:00 on the current day (D) and ending at 21:00 on D+2 (i.e. including the Settlement Period 21:00-21:30 on D+2): a) The forecast total generation across all Power Park Modules metered by the Transmission Company, in respect of those Settlement Periods for which the Transmission Company has forecast data; b) The time associated with each Settlement Period defined in (a) above; c) The Total Metered Capacity for each Settlement Period defined in (a) above, expressed as an average MW value of the Registered Capacity of all Power Park Modules metered by the Transmission Company.

Note that the Transmission Company would only provide forecast data for a selection of Settlement Periods for each day, and not for every Settlement Period in the day. For example, data might be provided for 00:00, 05:00, 08:00, 12:00, 17:00 and 21:00. Since these data points might change in the future, the BMRA systems would be 'future-proofed' by being designed with the flexibility to receive a maximum of one forecast value every 30 minutes for every Settlement Period up to the end of D+2.

Since an updated set of 48-hour data would be provided by 17:00 each day, 3 different sets of forecast data would therefore apply to any given day (D) as follows:

1) The 'original' forecast data sent by 17:00 on D-2 which, in respect of the current day, would include those Settlement Periods between 00:00 and 21:00 inclusive for which the Transmission Company had forecast data relating to that day;

2) The 'revised' forecast data sent by 17:00 on D-1 which, in respect of the current day, would include all Settlement Periods between 00:00 and 24:00 on that day for which the Transmission Company had forecast data; and

3) The 'further revised' forecast data sent by 17:00 on D which, in respect of the current day, would include those Settlement Periods between 21:00 and 24:00 on that day for which the Transmission Company had forecast data.

4.2.1 BMRS Summary Page requirements

4.2.1.1 New Summary Page table

The BMRA would be required to publish a new table on the BMRS Summary Page in a similar format to Figure 2, containing the following data:

1) The Transmission Company's forecast of total 'peak' generation across all Power Park Modules which are metered by the Transmission Company, in relation to:

   a) The current day (D); and

   b) The day ahead (D+1),

   expressed as the highest MW value amongst the sample of Settlement Period forecast figures provided by the Transmission Company for the day concerned;

2) The time of day (i.e. time of the Settlement Period) associated with the 'peak' generation as defined under 1) above; and

3) The Total Metered Capacity associated with the 'peak' generation Settlement Period as defined under 1) and 2) above.

Figure 2 – Summary Page display for new wind generation forecast data

Thursday 19/07/2007	Forecast Today	Forecast Tomorrow
Time of Maximum Wind Generation:	12:00	17:00
Peak (Max) MW	**64**	**55**
Total Metered Capacity (MW)	870	870
Data last updated: 19-Jul-2007 17:29:48		

(Please note that the above table is indicative only, and has been produced using hypothetical data.)

The 'peak' values published by the BMRA for a given day would be the highest MW value amongst the sample of Settlement Period forecast figures provided by the Transmission Company for that day. For the avoidance of doubt, since the Transmission Company would not provide forecast values for each Settlement Period in the day, the published 'peak' value would not necessarily be a forecast of the true peak for that day.

The values shown in the table would be updated daily by the BMRA at the point at which revised forecast figures were submitted by the Transmission Company (which would be submitted no later than 17:00 each day). If the 'peak' values in the revised forecast data were different to the original values already in the table, these would overwrite the previous values. In addition, the calendar dates represented by 'today' and 'tomorrow' in the table would automatically change on the BMRS display at 00:00 each day (i.e. the day which had been represented by 'tomorrow' would become 'today'). The table would therefore contain a time stamp, showing the date and time at which the data was last updated.

4.2.1.2 New Summary Page graph

In addition to the new table shown in Figure 2, the BMRA would also be required to publish a new graph on the BMRS Summary Page. This new graph would be published in a similar format to that shown in Figure 3, and would contain the following data items for the previous day, current day and day ahead (D-1, D and D+1):

1) The 'original' forecast data provided by the Transmission Company for each of these days in accordance with Section 4.2.1.1;

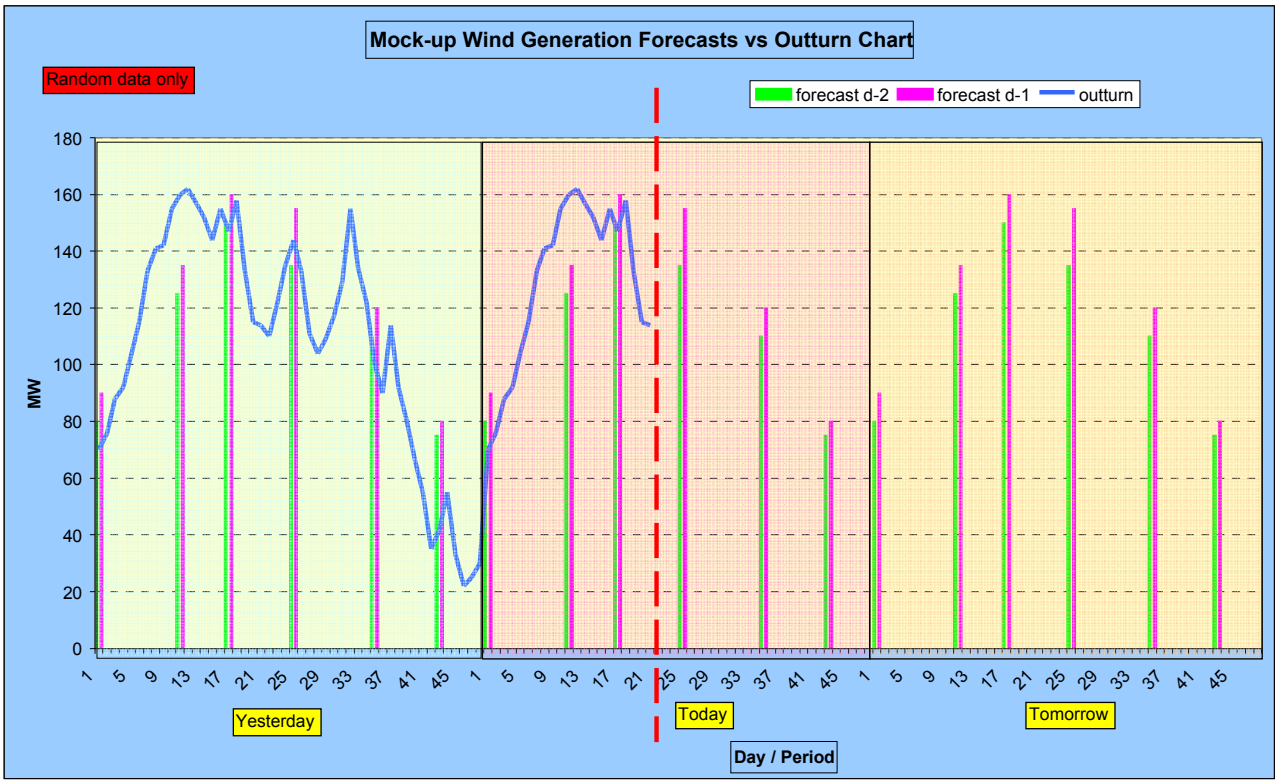
2) The 'revised' forecast data provided by the Transmission Company for each of these days in accordance with Section 4.2.1.1, received a day later than the 'original' forecast in (1) above;

3) The 'further revised' forecast provided by the Transmission Company for each of these days in accordance with Section 4.2.1.1, received a day later than the 'revised' forecast in (2) above and overwriting the earlier 'revised' forecast; and

4) The actual outturn wind generation for each Settlement Period in each of these days (whether or not there was a forecast value associated with that Settlement Period).

Note that (4) would not require a new data item to be submitted by the Transmission Company specifically for the purposes of this data, since these values would be derived by the BMRA using the half-hourly outturn by fuel type data provided by the Transmission Company separately under P220 (see Section 4.3.1 below).

Figure 3 – New Summary Page display for wind generation forecast and outturn data



(Please note that the above graph is indicative only, and has been produced using hypothetical data.)

The new graph would show a fixed, rather than a rolling, 3-day period – containing all Settlement Periods from Settlement Period 1 (00:00) on the previous day up to and including Settlement Period 48 (23:30) on D+1 (giving 144 Settlement Periods in total). The original and revised forecast data would be shown as two differently-coloured bars on the graph, whilst the outturn data would be shown as a line. Original forecast data would always be shown for each of the 3 days, whilst revised forecast data (submitted daily) and outturn data (submitted half-hourly) would be published as these data items were received by the BMRA.

Those Settlement Periods for which forecast data had not been provided by the Transmission Company would be left blank (i.e. they would not have bars associated with them). The graph would contain a time stamp, showing the date and time at which the graph was last updated.

Although the graph would run from 00:00 on D-1 to 24:00 on D+1, forecast data would always be submitted daily by the Transmission Company for 21:00 on D to 21:00 on D+2. As a result:

- The graph would always show 2 sets of forecast data (original and revised) from 00:00 to 24:00 for D-1;
- The graph would always show 2 sets of forecast data (original and revised) from 00:00 to 24:00 for D (although the 'revised' forecast figures for 21:00 to 24:00 would be updated following the Transmission Company's submission of updated data at 17:00 on D);
- Before 17:00 on D, the graph would only be able to show original forecast data from 00:00 to 21:00 for D+1;
- At 17:00 on D, the Transmission Company would submit a new set of data and the BMRS would then be able to display original forecast data for 21:00 to 24:00 on D+1, as well as revised forecast data for the whole of D+1 (00:00 to 24:00).

Note that the Code would require the Transmission Company to submit the daily data updates 'no later' than 17:00. The above explanation is based on the assumption that the BMRA would receive updates at 17:00 each day; however, in practice the data could be received earlier.

4.2.2 Other BMRS requirements

As well as the above data, the BMRA would also be required to publish a table showing the values underpinning the Figure 3 graph for the previous day, current day, and day ahead. This table would not be published on the Summary Page itself, but would be made available on a separate new page of the BMRS and also via a .csv file download from that page. A link to this new page would be provided on the Summary Page.

No further historic wind forecast data would be made available. However, a rolling 3 months of historic outturn generation data for those Power Park Modules metered by the Transmission Company would be published separately under P220, as part of the half-hourly outturn by fuel type data provided by the Transmission Company (see Section 4.3).

Finally, an explanation of the new wind data would also be provided on the BMRS – including the following:

- Details of the data points (i.e. Settlement Periods) for which the Transmission Company would provide wind generation forecast data for each day (for example, these might be 00:00, 05:00, 08:00, 12:00, 17:00 and 21:00);
- Clarification that the 'peak' wind forecast table would be updated daily as revised forecast data is received by the BMRA;
- Clarification that, since the Transmission Company would not provide forecast values for each Settlement Period in a day, the 'peak' value published in the table would not necessarily be a forecast of the true peak for the day;
- An explanation of how and when the new wind forecast/outturn graph would be updated (similar to that provided for Figure 3 in Section 4.2.1.2 above);
- Clarification that not all Settlement Periods shown in the graph would have associated forecast data;
- Clarification that each data item shown in both the table and graph would represent a single MW figure across all Power Park Modules metered by the Transmission Company;

- Clarification that the new wind generation forecast and outturn data would therefore represent only a subset of total GB wind capacity, as it would exclude any wind generators which are not metered by the Transmission Company;[8]
- Clarification that the figures would be based on the Transmission Company's operational metering rather than BSC Settlement data;
- Clarification that, if for any reason, forecast data was not submitted by the Transmission Company then it would not be published on the BMRS;
- Definitions of Power Park Module and Total Metered Capacity; and
- An up-to-date list of all the Power Park Modules which are metered by the Transmission Company (for the avoidance of doubt, the outturn values of individual Power Park Modules would not be published).[9]

These explanations/clarifications would either be added to the BMRS Help page, or would be provided via another method such as the use of local mouse-over pop-ups on the Summary Page. The precise format and wording would be agreed between the BMRA, the Transmission Company and BSCCo during the implementation period for P220.

4.3 Instantaneous and half-hourly generation by fuel type

The Transmission Company would be required to provide the BMRA with new 'instantaneous' and half-hourly outturn generation data by fuel type, as shown in Table 7.

Table 7 – New outturn generation by fuel type data

Data Item	Time	Description
Outturn 'instantaneous' generation by fuel type (including Interconnector flows)	Every 5 minutes	The outturn total instantaneous generation, expressed as a MW 'snapshot' spot value for each of the following categories: a) Combined Cycle Gas Turbine (CCGT) Modules; b) Oil Plant; c) Coal Plant; d) Nuclear Plant; e) Power Park Modules metered by the Transmission Company; f) Pumped Storage Plant; g) Non Pumped Storage Hydro Plant; h) Open Cycle Gas Turbine (OCGT) plant; i) External Interconnection flows from France to England; j) External Interconnection flows from Ireland to Scotland; and k) Other.

[8] A link would be provided on the BMRS Help page to the British Wind Energy Association (BWEA) website (http://www.bwea.com), which contains details of the total capacity across all currently-operational wind farms in Great Britain.
[9] This would not require a new data item to be submitted by the Transmission Company, as the list would be taken from the BM Unit fuel-type categorisation spreadsheet provided by the Transmission Company for the outturn generation data (see Section 4.3.3). The list would include the BSC BM Unit ID, National Grid's BM Unit ID and the name of the wind farm with which the BM Unit was associated.

Data Item	Time	Description
Outturn 'half-hourly' generation by fuel type (including Interconnector flows)	No later than 15 minutes following the end of each Settlement Period	The outturn total generation expressed as an average MW value for that Settlement Period for each of the following categories: a) CCGT Modules; b) Oil Plant; c) Coal Plant; d) Nuclear Plant; e) Power Park Modules metered by the Transmission Company; f) Pumped Storage Plant; g) Non Pumped Storage Hydro Plant; h) OCGT plant; i) External Interconnection flows from France to England; j) External Interconnection flows from Ireland to Scotland; and k) Other.

The fuel type of each BM Unit for both the 'instantaneous' and half-hourly outturn data would be determined by the Transmission Company using data provided to it by generators under the Grid Code and as part of the production of its Seven Year Statement (SYS). This categorisation would be based on the primary fuel type of each power station, such that all BM Units for a particular power station would be classed as having the same fuel type for the purposes of the data.[10]

The values published for the 'instantaneous' outturn data would be single 'snapshot' spot values as polled and provided by the Transmission Company every 5 minutes. The half-hourly outturn data would be single average figures for each fuel-type category in each Settlement Period. These values would be derived from the Transmission Company's operational metering rather than BSC Settlement data.

4.3.1 New 'instantaneous' and half-hourly outturn data by fuel type

4.3.1.1 New Summary Page table

The BMRA would be required to publish a new table on the BMRS Summary Page in a similar format to that shown in Figure 4. The table would include a time stamp, showing when the data was last updated.

The table would include the following:

1) The most recent update of the 'instantaneous' outturn generation data for each fuel-type category (as provided by the Transmission Company every 5 minutes), expressed as 'snapshot' MW spot values for each category;

2) The values of the total outturn generation for each fuel-type category for the last half-hour (i.e. for the last complete Settlement Period, as submitted by the Transmission Company no later than 15 minutes after the end of each Settlement Period), expressed as average MW figures;

3) The total outturn generation for each fuel-type category (as defined under (2) above) expressed as a percentage of the total average MW generation across all fuel-type categories for the last complete Settlement Period (these percentages would be calculated by the BMRA);

[10] For example, all BM Units of a power station whose main fuel type was 'CCGT', but which was also capable of running on distillate, would be categorised and reported as CCGT even during the periods when the station was temporarily running on distillate.

4) The values of the total MW outturn generation for each fuel-type category for the previous rolling 24-hour period (to be calculated as MWh values by the BMRA by summing the average MW values provided under (3) across all 48 Settlement Periods in that 24 hours, and then dividing this total by two to derive a MWh value); and

5) The total outturn generation of each fuel-type category (as defined under (4) above) expressed as a percentage of the total MWh generation across all fuel-type categories for the previous rolling 24-hour period (these percentages would be calculated by the BMRA).

Figure 4 – Summary Page display for new 'instantaneous' outturn data by fuel type

Generation By Fuel Type

GB Generating Plant	Current MW	Current %age	Last Half Hour (03:00-03:30) MW	Last Half Hour (03:00-03:30) %age	Last 24 Hours (03:30-03:30) MWh	Last 24 Hours (03:30-03:30) %age
CCGT	18137	42.1%	18274	42.4%	402038	41.4%
OCGT	1850	4.3%	1400	3.2%	37800	3.9%
Oil	0	0.0%	35	0.1%	385	0.0%
Coal	15315	35.6%	15625	36.3%	375321	38.6%
Nuclear	7308	17.0%	7155	16.6%	143128	14.7%
Power Park Modules (Wind)	189	0.4%	65	0.2%	2600	0.3%
Pumped Storage Plant	15	0.0%	145	0.3%	3423	0.4%
Non-PS Hydro Plant	15	0.0%	20	0.0%	488	0.1%
Other	0	0.0%	65	0.3%	1397	0.1%
Interconnectors						
French Interconnector	55	0.1%	125	0.3%	2250	0.2%
Irish Interconnector	152	0.4%	175	0.4%	2800	0.3%
TOTAL	**43036**	**100%**	**43084**	**100%**	**971630**	**100%**

Data last updated: 19-Nov-2007 16:52:23

(Please note that the above table is indicative only, and has been produced using hypothetical data.)

The 'Total' generation value shown in Figure 4 would be derived by the BMRA as the sum of the total generation across all fuel-type categories, and the resulting value would be equivalent to Transmission System Demand. This overall total would be updated every 5 minutes along with the total values for each category.

In addition, the BMRA would be required to publish historic 5-minute-apart 'snapshot' values for the past rolling 24-hour period. This data would not be published on the Summary Page itself, but would be made available as a table on a separate new page of the BMRS and also via a .csv file download from that page. A link to this new page would be provided on the Summary Page.

Although the data provided by the Transmission Company to the BMRA would be its 'raw' operational metering data, which would include both positive and negative values, only positive or zero generation values for each fuel-type category would be published on the BMRS web pages for the above data (with the negative values being 'filtered out' by the BMRA). Where Interconnector Exports, station load or pumping resulted in the overall MW for a category being a negative 'demand' value, these negative values would not be published on the Summary Page display or additional web pages for the instantaneous or half-hourly generation by fuel type data. Instead, the values in these circumstances would be shown as zero.

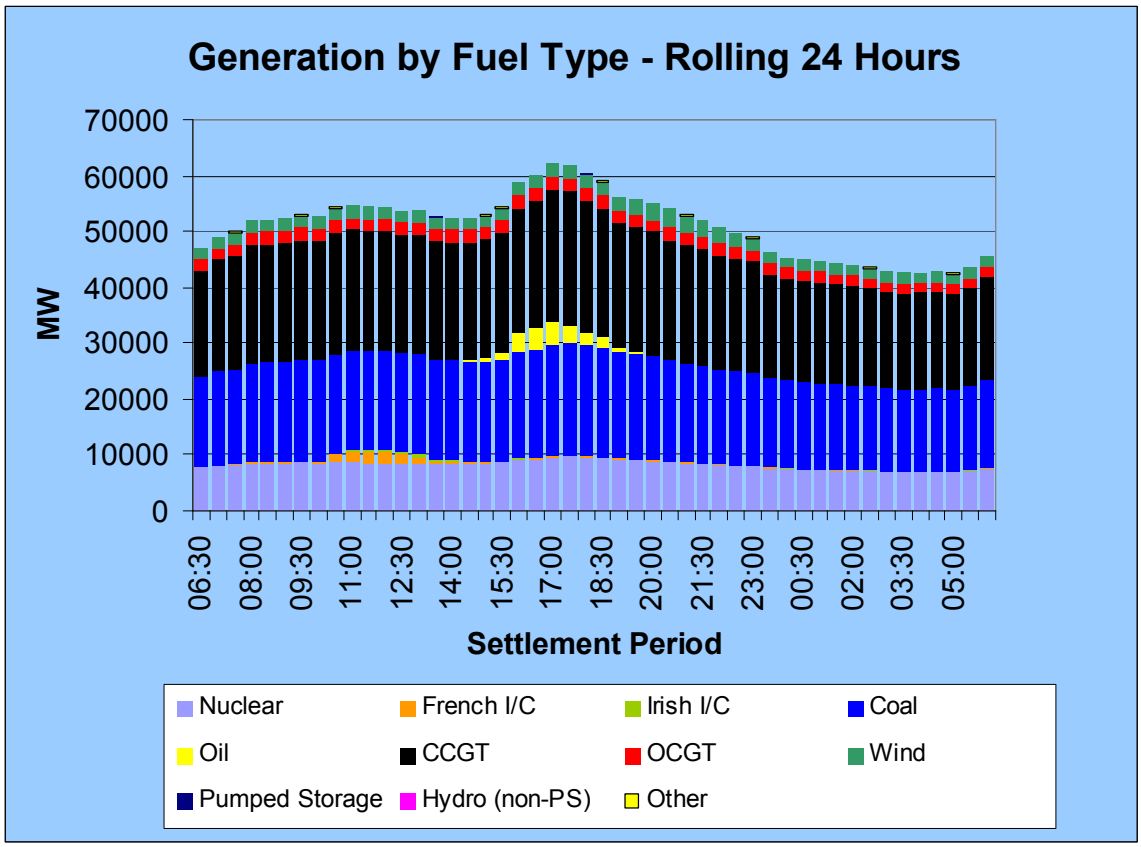
However, additional graphs showing both positive and negative Interconnector flows would be published separately under P220 (see Section 4.3.3 below). For this reason, a mixture of positive and negative Interconnector values would be provided to High Grade Service users through TIBCO messages, though only positive or zero values would be provided through TIBCO for the other fuel-type categories (with negative values being filtered out by the BMRA).

4.3.1.2 New outturn generation by fuel type Summary Page graph

As well as the table shown in Figure 4, the BMRA would be required to publish a new bar chart on the BMRS Summary Page, containing the average outturn values for each different fuel-type category in each Settlement Period during the previous rolling 24-hour period. This would be published in a similar format to that shown in Figure 5.

As for the 'instantaneous' data above, only positive or zero values would be published on the BMRS Summary Page display or additional web pages for this data, with negative values being filtered out by the BMRA.

Figure 5 – Summary Page display for new half-hourly outturn data by fuel type



(Please note that the above chart is indicative only, and has been produced using hypothetical data.)

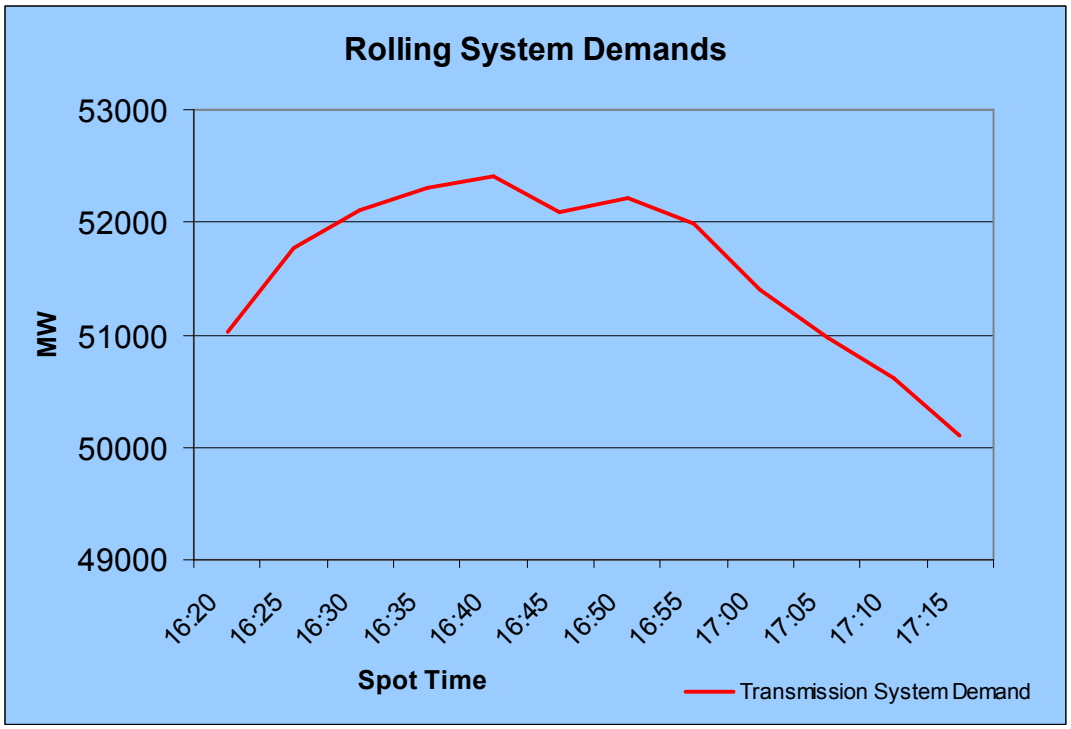
The BMRA would also be required to publish historic Settlement Period values for this data over a rolling three-month period. This data would not be published on the Summary Page itself, but would be made available as a table on a separate new page of the BMRS as well as via a .csv file download from that page. A link to this new page would be provided on the Summary Page.

4.3.2 New 'real-time' total demand outturn data

The BMRA would be required to publish a new graph containing 5-minute-apart 'snapshot' MW values of Transmission System Demand, as derived from the 'instantaneous' outturn data as described in Section 4.3.1.1 above. This graph would contain a single value for every 5 minutes in the past rolling 60-minute period, and would be published on the BMRS Summary Page in a similar format to that shown in Figure 6.

This graph would replace the 'real-time' demand graph which is currently available on the BMRS Summary Page as a 'framed' link to National Grid's website. The P220 graph would show lower-granularity data than is currently available from the National Grid graph (i.e. it would be updated every 5 minutes rather than every 15 seconds). National Grid would continue to separately publish the 15-second update graph on its own website outside of the BSC, and a normal web link to the National Grid website (rather than the existing 'framed' version of the graph itself) would be provided from the BMRS Summary page under P220 for participants who wished to view this higher-granularity data.

Figure 6 – Summary Page display for new 'real-time' demand data



(Please note that the above graph is indicative only, and has been produced using hypothetical data.)

In addition, the BMRA would be required to publish historic 'snapshot' Transmission System Demand values for every 5 minutes over the past rolling 48-hour period. This data would not be published on the Summary Page itself, but would be made available as a table on a separate new page of the BMRS as well as via a .csv file download from that page. A link to this new page would be provided on the Summary Page.

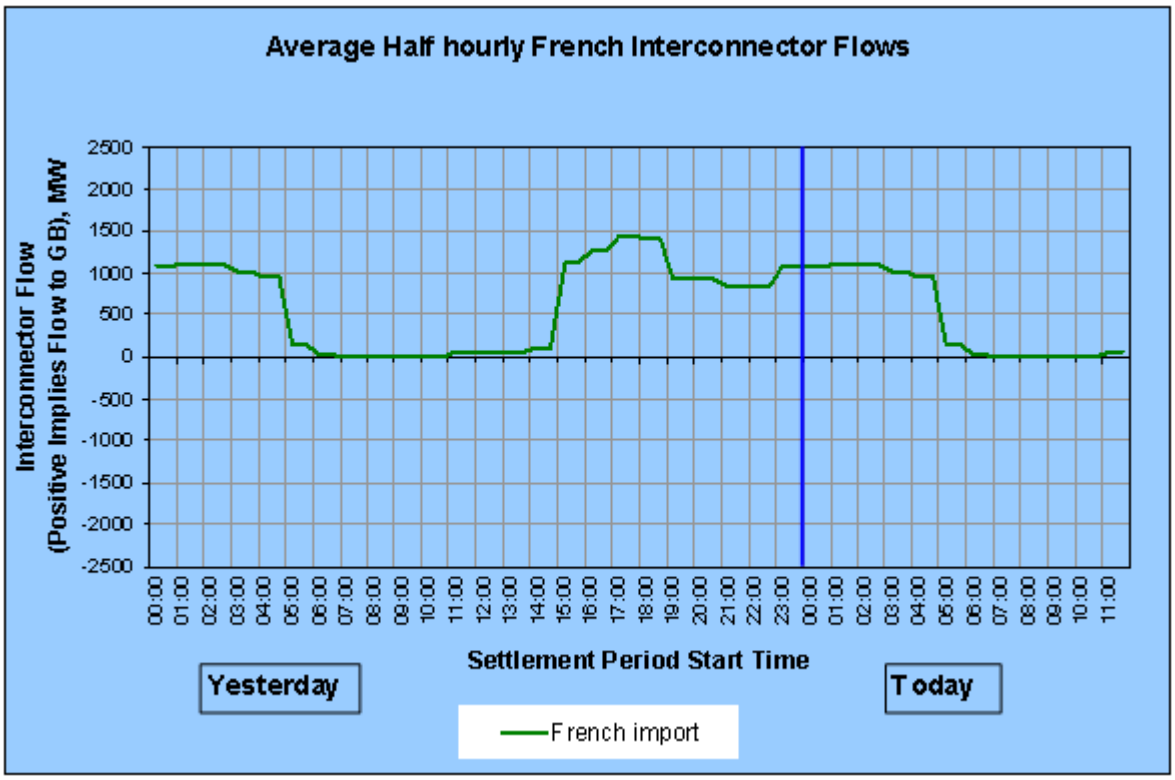
4.3.3 New Interconnector flow data

The BMRA would be required to publish two new graphs displaying flows across the French and Moyle Interconnectors respectively. These graphs would be published on the BMRS Summary Page, and would show the average MW flows across each Interconnector for each Settlement Period during the previous day and as much of the current day as was available.

A new data item would not be required specifically for the purposes of these graphs, since the data would be taken from the half-hourly generation by fuel type values already provided by the Transmission Company under P220 (see Section 4.3.1). The graphs would be updated every half hour following the end of each Settlement Period, and would be published in a similar format to that shown in Figures 7 and 8.

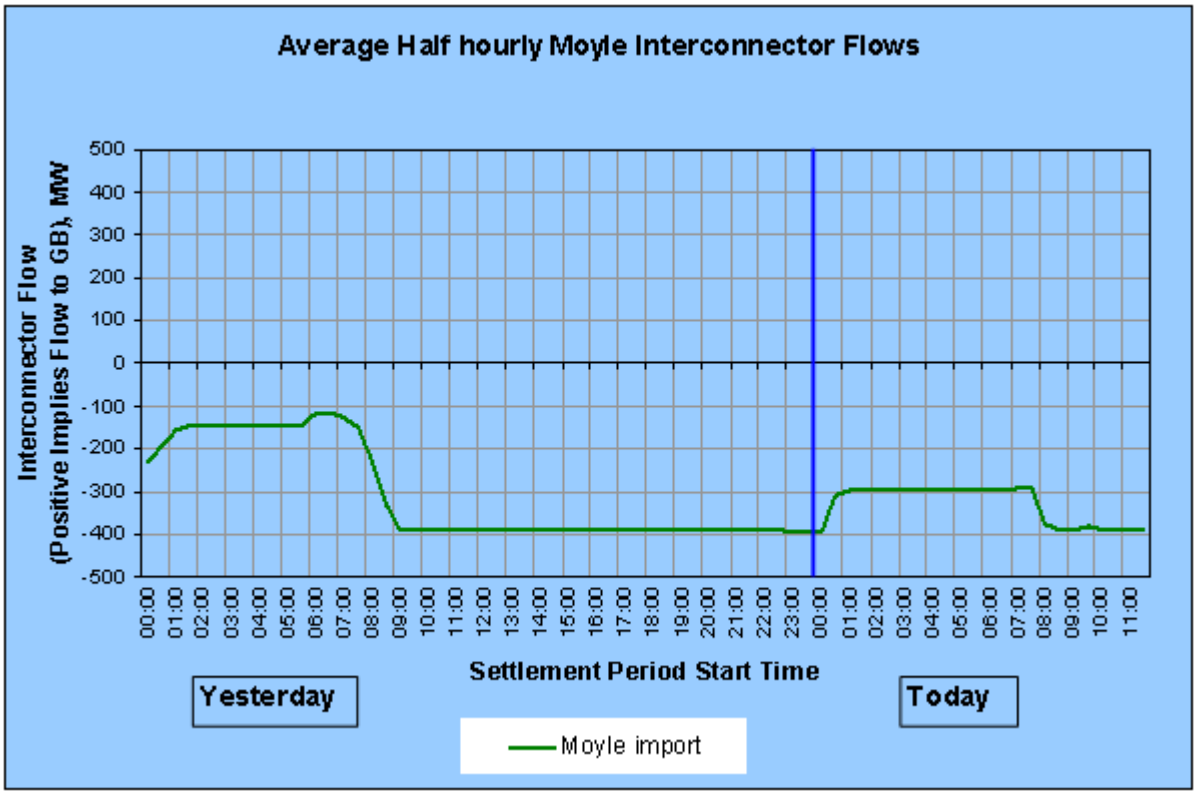
The graphs would show both positive (Import) and negative (Export) Interconnector flows, and the values underpinning the graphs (whether positive or negative) would be provided to High Grade Service Users via TIBCO messaging as part of the half-hourly generation by fuel-type data. The graphs would also display the dates associated with 'Yesterday' and 'Today'.

Figure 7 – Summary Page display for new French Interconnector flow data



(Please note that the above graph is indicative only, and has been produced using hypothetical data.)

Figure 8 – Summary Page display for new Moyle Interconnector flow data



(Please note that the above graph is indicative only, and has been produced using hypothetical data.)

In addition, the BMRA would be required to publish historic half-hourly Interconnector flow values (whether positive or negative) for each Interconnector in every Settlement Period over the past rolling 30-day period. This data would not be published on the Summary Page itself, but would be made available as a table on a separate new page of the BMRS as well as via a .csv file download from that page. A link to this new page would be provided on the Summary Page.

4.3.4 Other BMRS requirements

An explanation of the new data would be provided on the BMRS, including:

- Definitions of each fuel-type category used in the 'instantaneous' and half-hourly outturn generation data;
- A definition of Transmission System Demand;
- Clarification that the fuel-type categorisation for the outturn data had been undertaken by the Transmission Company using Grid Code/SYS data rather than the BM Unit registration data held by the Central Registration Agent (CRA) under the BSC;
- A list of all the BM Units which fell within each fuel type as categorised by the Transmission Company (this spreadsheet would be provided to the BMRA by the Transmission Company upon the registration/deregistration of any BM Unit, or upon any change in a BM Unit's categorisation);[11]
- Clarification that the outturn and 'real-time' demand figures were based on the Transmission Company's operational metering rather than BSC Settlement data;

[11] The spreadsheet would contain the BSC BM Unit ID, National Grid's BM Unit ID, the name of the power station, and the fuel type of that station. For the avoidance of doubt, the spreadsheet would not contain the outturn values for individual BM Units.

- Clarification that of how negative values would be treated for the outturn by fuel-type and Interconnector flow data, and that any 'demand' due to Interconnector Exports, station load, or pumping would not be shown;
- Details of the other types of generation (e.g. biomass) which would be included in the 'Other' fuel-type category;
- Clarification that, if the data for one or more BM Units within a fuel-type category was incomplete, there would be no flag on the BMRS to indicate this – and that participants would therefore need to take their own view as to the reliance which could be placed on operational metering data (a one-off piece of analysis regarding the historic reliability of operational metering would be provided to help participants make this judgement);[12] and
- Clarification of the conventions used in the Interconnector flow graphs (e.g. that positive values would represent Imports to GB, whilst negative values would represent Exports from GB).

These explanations/clarifications would either be added to the BMRS Help page, or would be provided via another method such as the use of local mouse-over pop-ups on the Summary Page. The precise format and wording would be agreed between the BMRA, the Transmission Company and BSCCo during the implementation period for P220.

4.4 Daily energy volumes

The Transmission Company would be required to provide the BMRA with new daily energy volume data for the previous day, as shown in Table 8.

Table 8 – New daily energy volume data

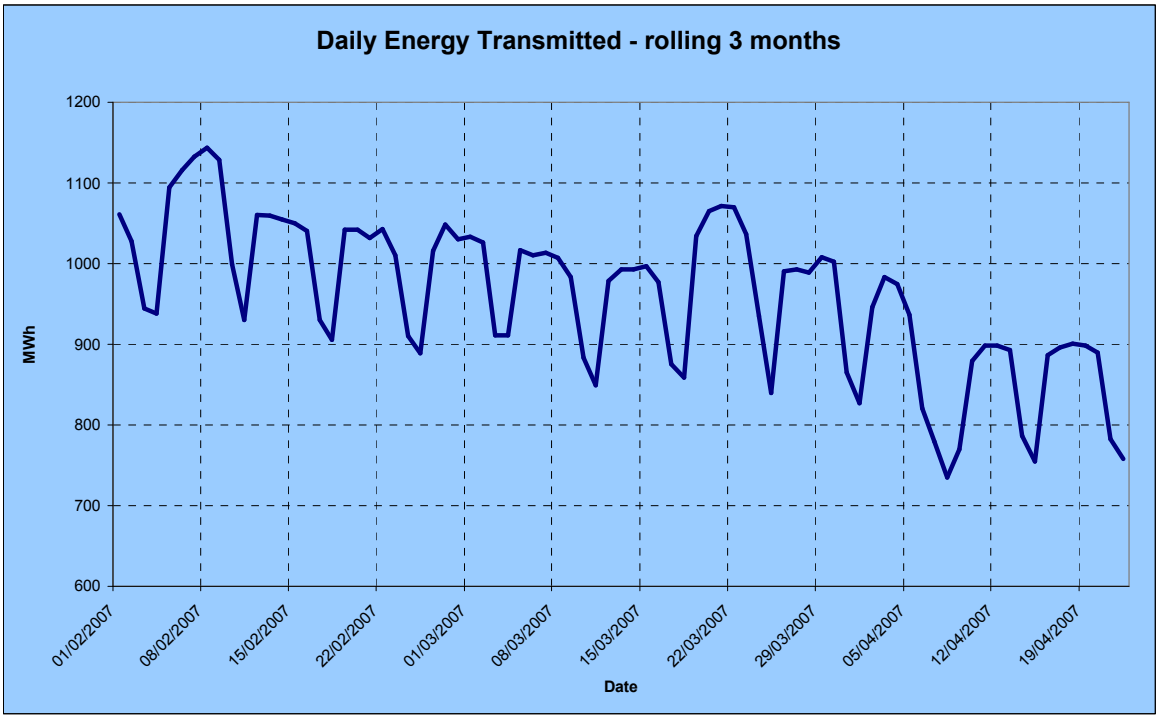
Data Item	Time	Description
Outturn energy	No later than 17:00 each day	The following data applicable for the day preceding the current day: the outturn Transmission System Energy transmitted across the Transmission System, expressed in MWh.

The BMRA would be required to publish a new graph on the BMRS Summary Page in a similar format to that shown in Figure 9, containing daily volumes for a rolling three-month period.

In addition, the BMRA would be required to publish daily historic values for this data for a rolling 6-month period. This data would not be published on the Summary Page itself, but would be made available as a table on a separate new page of the BMRS as well as via a .csv file download from that page. A link to this new page would be provided on the Summary Page.

[12] Note that the Group is considering the potential inclusion of a requirement to publish a real-time 'data incomplete' flag in such circumstances, although this does not currently form part of its agreed solution for P220. Further information can be found in Section 6.5 of this consultation document. A copy of the Proposer's analysis of the historic reliability of operational generation metering can be found in Appendix 4.

Figure 9 – Summary Page display for new daily energy volume data



(Please note that the above graph is indicative only, and has been produced using hypothetical data.)

An explanation of the new data would be provided on the BMRS, including the following:

- Definitions of Transmission System Demand and Transmission System Energy (including clarification that Transmission System Demand includes Interconnector Exports, transmission losses, station load and some embedded generation); and
- Clarification that the daily energy volumes graph and spreadsheet would be derived from the Transmission Company's operational data rather than BSC Settlement data.

These explanations/clarifications would either be added to the BMRS Help page, or would be provided via another method such as the use of local mouse-over pop-ups on the Summary Page. The precise format and wording would be agreed between the BMRA, the Transmission Company and BSCCo during the implementation period for P220.

4.5 Non-BM STOR Instructed Volumes

The Transmission Company would be required to provide the BMRA with new half-hourly Non-BM STOR Instructed Volume data, as shown in Table 9.

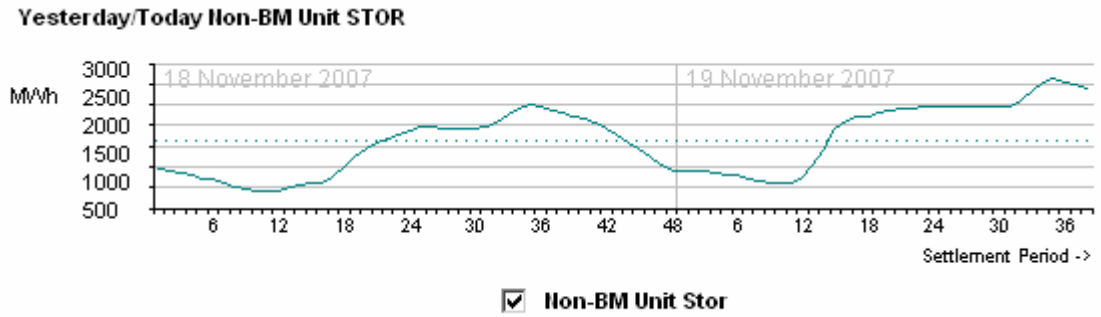
Table 9 – New Non-BM STOR data

Data Item	Time	Description
Non-BM STOR Instructed Volume	No later than 15 minutes following the end of each Settlement Period	The Non-BM STOR Instructed Volume for that Settlement Period.

The new data would be provided as a single value for each Settlement Period.

The Non-BM STOR data would not be published on the BMRS Summary Page. Instead, the BMRA would be required to create a separate new BMRS page containing the data. This page would include both a graph showing the Instructed Volume for each Settlement Period during the previous day and as much of the current day as was available, and a table containing the individual Settlement Period values underpinning this graph. The format of the new graph would be similar to that shown in Figure 10, and would show the dates associated with 'Yesterday' and 'Today'. The values given in the table would also be available as a .csv file download.

Figure 10 – Summary Page display for new Non-BM STOR data



(Please note that the above graph is indicative only, and has been produced using hypothetical data.)

Participants would be able to request historic Non-BM STOR Instructed Volume data for any past Settlement Day occurring after the P220 Implementation Date, in line with the process for other existing BMRS data.[13]

An explanation of the new data would be provided on the BMRS, including a definition of Non-BM STOR Instructed Volumes. The precise format and wording of this explanation would be agreed between the BMRA, the Transmission Company and BSCCo during the implementation period for P220.

5 DETAIL OF ALTERNATIVE MODIFICATION SOLUTION

This section details the solution requirements agreed by the Modification Group for the Alternative Modification. An explanation of the Group's rationale for developing these requirements can be found in Section 6.8 of this consultation document.

5.1 Outturn and reference temperatures

The requirements regarding the submission and publication of outturn and reference temperature data would be identical to those for the Proposed Modification, as outlined in Section 4.1 of this consultation document.

5.2 Wind generation forecast

The requirements regarding the submission and publication of wind generation forecast data would be identical to those for the Proposed Modification, as outlined in Section 4.2.

5.3 Instantaneous and half-hourly generation by fuel type

The requirements regarding the submission and publication of the 'instantaneous' and half-hourly generation outturn by fuel type data (including 'real-time' demand and half-hourly Interconnector flows) would be identical to those for the Proposed Modification, as outlined in Section 4.3.

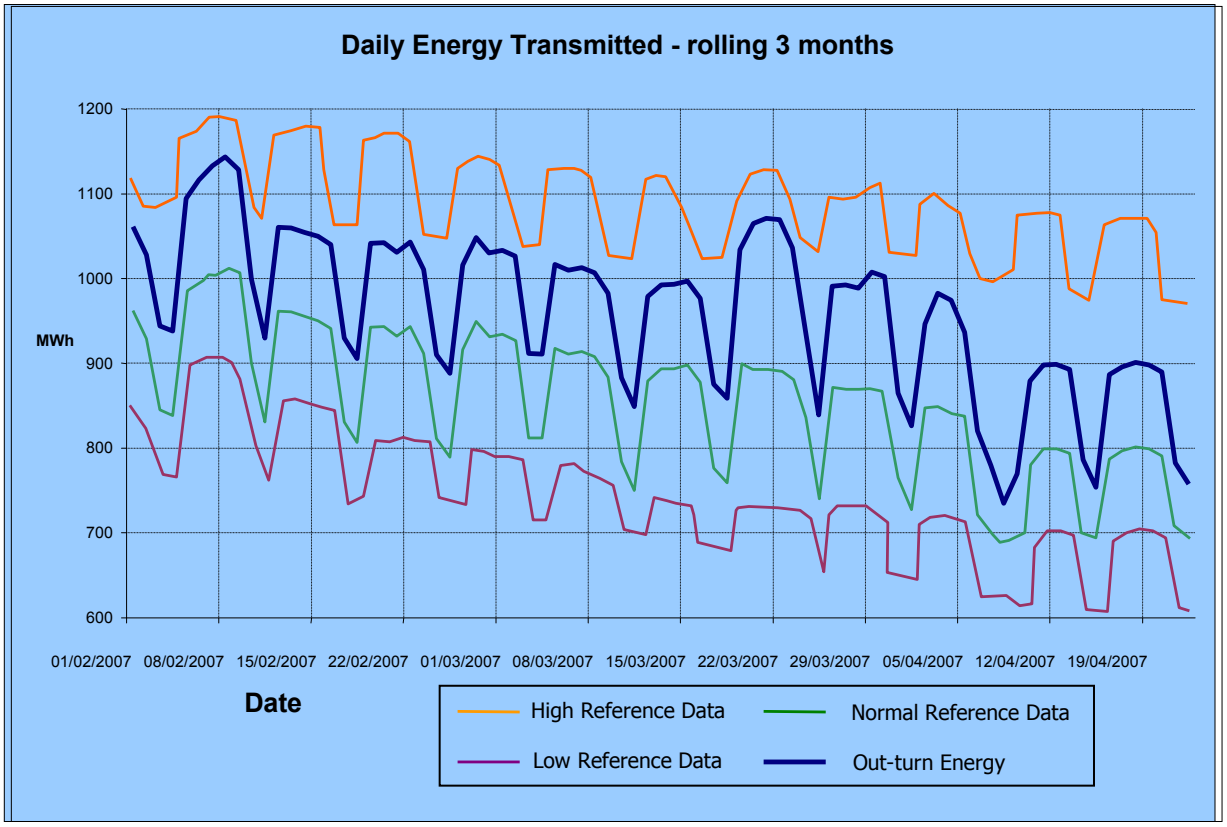
[13] The BMRA is required by its existing Service Description to make such historic data available for a minimum of one year, although in practice certain historic BMRS data is provided for longer periods.

5.4 Daily energy volumes

The requirements regarding the submission and publication of the daily energy volume data would be similar to those for the Proposed Modification, as outlined in Section 4.4. However, under the Alternative Modification, the Transmission System Energy data submitted by the Transmission Company would be based on INDO rather than Transmission System Demand. In addition, the Transmission Company would be required to submit additional new 'trend' data, containing details of the typical level of daily energy volumes transmitted across the Transmission System during 'normal', 'hot' and 'cold' years – such that these could be shown as 'tramlines' on the graph to compare against the current daily energy volumes.

This data would be published on a graph in a similar format to that shown in Figure 11.

Figure 11 – Summary Page format for additional new 'trend' energy volume data



(Please note that the above graph is indicative only, and has been produced using hypothetical data.)

The trend data would be submitted by the Transmission Company to the BMRA as standing data in a .csv file at the beginning of each calendar year for each day in that year. The format of this .csv file would be agreed between the BMRA and the Transmission Company. The BMRA would be required to manually extract and publish this data for each day.

The values underpinning the trend data 'tramlines' would also be included in the rolling 6-month history table for the daily energy volume data.

An explanation of the trend data and the derivation of the energy volumes (i.e. that they were based on INDO) would be provided on the BMRS. The precise format and wording of this explanation would be agreed between the BMRA, Transmission Company and BSCCo during the implementation period for P220.

5.5 Non-BM STOR Instructed Volumes

The requirements regarding the submission and publication of Non-BM STOR Instructed Volume data would be identical to those for the Proposed Modification, as outlined in Section 4.5.

5.6 'Real-time' Transmission System Frequency

The Alternative Modification would also include one additional data item of 'real-time' Transmission System Frequency, which would not form part of the Proposed Modification.

Under the Alternative Modification, the Transmission Company would be required to provide the BMRA with the new Transmission System Frequency data as shown in Table 10.

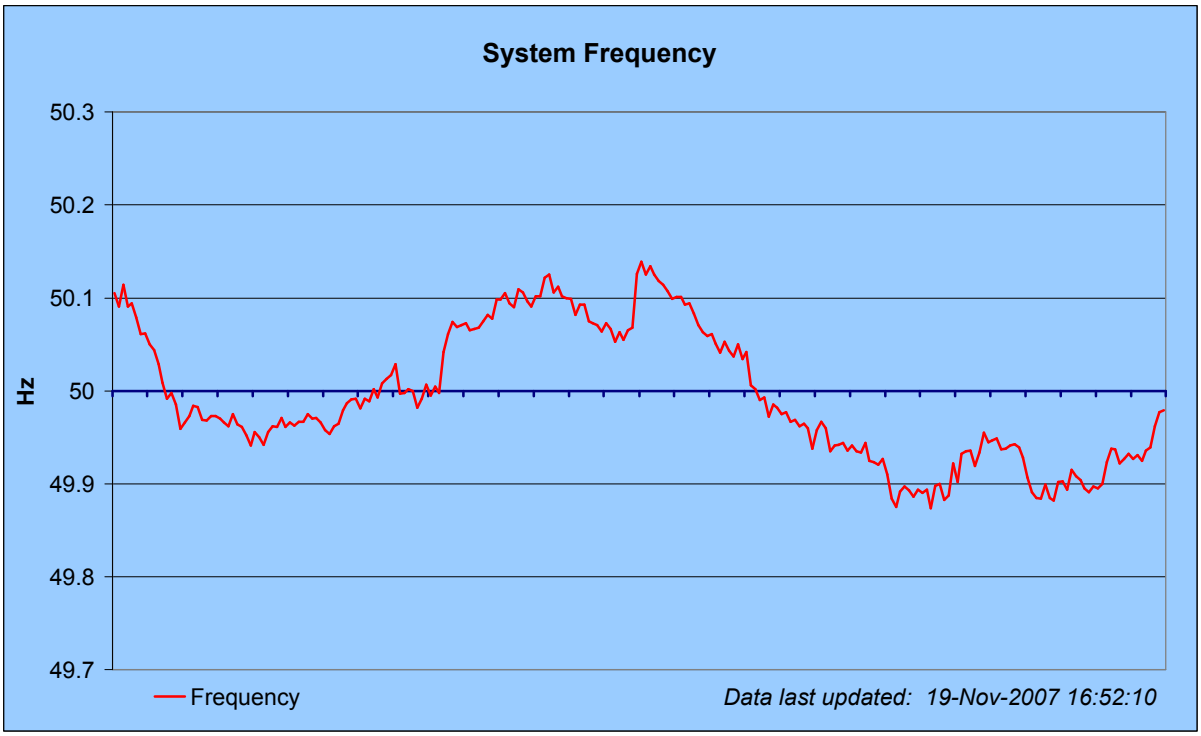
Table 10 – New 'real-time' Transmission System Frequency data

Data Item	Time	Description
Transmission System Frequency	Every 2 minutes	The Frequency of the Transmission System as measured by the Transmission Company.

Although a data file would only be provided by the Transmission Company every 2 minutes, each file would contain a 'package' of Frequency values as measured every 15 seconds within that 2-minute period. All of these Frequency values would be expressed as Hertz (Hz) figures.

The BMRA would be required to publish a new Summary Page graph showing the Frequency data provided by the Transmission Company for the past rolling 60-minute period. This graph would be published on the BMRS Summary Page in a similar format to that shown in Figure 12. Although the graph would only be updated every 2 minutes (each time a new data file was received from the Transmission Company), it would display the Frequency data at a 15-second granularity as provided in those data files. The graph would include a time stamp, showing when the data was last updated.

Figure 12 – Summary Page display for additional new 'real-time' Frequency data



(Please note that the above graph is indicative only, and has been produced using hypothetical data.)

The new graph would replace the 'real-time' Transmission System Frequency graph which is currently available on the BMRS Summary Page as a 'framed' link to National Grid's website. Although the P220 graph would be updated less frequently than the current National Grid graph (i.e. it would be updated every 2 minutes rather than every 15 seconds), it would continue to display frequency values for every 15 seconds in the past hour. National Grid would continue to separately publish its more-frequently-updated graph on its own website outside of the BSC, and a normal web link to the National Grid website (rather than the existing 'framed' version of the graph itself) would be provided from the BMRS Summary page under P220 for participants who wished to view this more-frequently-updated data.

In addition, the BMRA would be required to publish the historic values underpinning the new BMRA graph for every 15 seconds over the past rolling 48-hour period. This data would not be published on the Summary Page itself, but would be made available as a table on a separate new page of the BMRS as well as via a .csv file download from that page. A link to this new page would be provided on the Summary Page.

An explanation of the additional new 'real-time' Frequency data would be provided on the BMRS. The precise format and wording of this explanation would be agreed between the BMRA, the Transmission Company and BSCCo during the implementation period for P220.

6 GROUP'S DISCUSSION OF AREAS RAISED BY ITS TERMS OF REFERENCE

This Section 6 outlines the initial conclusions of the Modification Group regarding the areas set out in the P220 Terms of Reference.

6.1 Modification Group membership

The P220 Modification Group was formed from members of the Settlement Standing Modification Group (SSMG). Following a request from the Panel, an invitation to attend the P220 Group meetings was also extended to members of the DSWG. Two DSWG members representing customer organisations have attended the P220 meetings to date, although neither have elected to become full members of the Group. In addition, the Group has invited the DSWG to respond to the P220 Assessment Procedure consultation.

A full list of the P220 Group members and meeting attendees can be found in Appendix 2 of this consultation document.

6.2 Scope of Group's discussions

6.2.1 Proposed Modification

6.2.1.1 Proposer's indicative legal drafting

The Group noted that the 'Description of Proposed Modification' section of the Modification Proposal for P220 listed the data items which would be submitted by the Transmission Company to the BMRA under the Proposed Modification. Indicative legal drafting for Section Q and Annex X-2 of the Code had been provided as part of the Modification Proposal – covering respectively the submission of the new P220 data by the Transmission Company to the BMRA, and the definitions of each new data item. The Group noted BSCCo's advice that it was not bound by the suggested drafting, providing that any refinements which it might make to this text for the Proposed Modification remained consistent with the 'Description of Proposed Modification' contained in the Modification Proposal. The Group also noted that it would be within the scope of the Proposed Modification to develop any further legal drafting which might be required to other Code sections (e.g. Annex X-1) in order to give effect to the solution outlined in the Modification Proposal.

In particular, the Group noted that the Modification Proposal was silent on how the new P220 data should be published on the BMRS – and that indicative drafting had not been provided by the Proposer for the changes which would be required to Table 1 of Annex V-1 in order to codify the BMRA's publication requirements. It noted BSCCo's advice that the Modification Proposal therefore left it open to the Group to agree the format in which the new data would be published on the BMRS under the Proposed Modification, and that this formed part of the Terms of Reference set by the Panel.

6.2.1.2 National Grid's original BMRS 'straw man'

The Group noted that the Code requirements regarding the format for the submission and publication of the new P220 data would be relatively high level (for example, Table 1 of Annex V-1 only lists whether the publication format of each existing BMRS data item is graphic or tabular). The Group agreed that it did not wish the P220 Code legal drafting to be overly prescriptive regarding the format of the new data items, since this could be inflexible to future changes in BMRS technology and/or displays. The Group also supported BSCCo's suggestion that the precise file format in which the new data would be submitted to the BMRS should be agreed between the Transmission Company and the BMRA, since this would have no impact on any other participants.

However, the Group agreed that it was appropriate for it to develop detailed requirements for the new BMRS displays, even though these would not appear in the P220 Code legal text and would be located in lower-level BSC Agent documentation. The Group agreed that, as the aim of P220 was to improve market information for the benefit of participants, it was important to involve the industry in the development of the requirements for the new BMRS displays to ensure that these best met participant needs. The Group therefore agreed that its P220 solution should be as specific as possible regarding how each data item would be displayed on the BMRS.

The Group noted that National Grid's original consultation (issued prior to the raising of P220) had included a 'straw man', containing indicative graphs and tables for the Summary Page display. The Group agreed to use this as a starting point for its P220 discussions. However, it noted that it was not bound by the straw man, since the Modification Proposal itself was silent on the format of BMRS publication. The Group noted BSCCo's advice that it therefore had scope under the Proposed Modification to agree any changes to the straw man BMRS displays which the Group believed would better meet the needs of participants – providing that these changes were limited to refining the publication requirements for the original data items listed in the 'Description of Proposed Modification' section of the Modification Proposal.

During its discussions, a number of refinements to the original National Grid straw man were agreed by the Group for incorporation in the solution for the Proposed Modification. Details of the Group's discussions of, and rationale for, the changes to the original straw man can be found in Sections 6.3 - 6.7 below, whilst the Group's full solution requirements (including copies of the updated straw man graphs/tables which it developed) are contained in Section 4. Updated Code legal text for the Proposed Modification has not been provided at this stage, and will be consulted on separately during the Report Phase for P220.

The Group agreed that it was important that the BMRS should provide a detailed explanation of the content of each data item, to reduce the potential for data being misinterpreted by participants. For each data item, the Group therefore identified areas in which they believed explanatory text should be provided. Details of these areas are contained in Section 4, whilst the Group's rationale for its requirements can be found in Sections 6.3 - 6.7 below. The Group agreed that the exact wording of the new explanatory text should be agreed between the BMRA, the Transmission Company and BSCCo during the implementation period for P220.

6.2.2 Alternative Modification

The Group noted ELEXON's advice that the addition or removal of any data item from those listed in the 'Description of Proposed Modification' section of the Modification Proposal would need to be progressed as part of an Alternative Modification. The Group noted that the Assessment Procedure allowed it the scope to develop any Alternative Modification which it believed might better facilitate the achievement of the Applicable BSC Objectives when compared with the Proposed Modification, providing that this Alternative continued to address the issue or defect identified by the Proposer. The Group noted that the issue or defect identified within the Modification Proposal was broadly defined, in that it related to the current lack of a daily summary page and the Proposer's belief that existing market information does not fully meet the needs of the industry. The Group noted that, if it so wished, it could develop an Alternative Modification which varied from the Proposed Modification in more than one respect.

The Group also noted that the Panel had instructed it (via its Terms of Reference) to consider a specific Alternative option for P220, whereby the Panel would be able to agree future new BMRS data without the need for a Modification Proposal. The Group noted BSCCo's advice that consideration of this option fell within the scope of the defect identified in the Modification Proposal.

Details of the different options which were considered for inclusion in an Alternative Modification can be found in Section 6.8. The Group's full solution requirements for the Alternative Modification (including copies of the updated straw man graphs/tables developed by the Group) are contained in Section 5. Code legal text for the Alternative Modification has not been provided at this stage, and will be consulted on separately during the Report Phase for P220.

6.2.3 Implementation Approach

The Group agreed that the level of implementation costs would be a key factor in its view as to whether P220 would better facilitate the achievement of the Applicable BSC Objectives. The Group considered a variety of potential implementation approaches for P220 – and details of these, as well as the Group's recommended approach and resulting implementation costs, can be found in Section 6.9.

6.3 Outturn and reference temperatures

6.3.1 Modification Group's initial discussions

6.3.1.1 Derivation and submission of temperature data

The Group noted that the Modification Proposal proposed to publish daily outturn (i.e. actual) temperature data against 'Normal', 'High' and 'Low' Reference Temperatures for comparison. The Group noted that the outturn values would be published a day after the event, with the previous day's data being sent from the Transmission Company to the BMRA by 17:00 each day. The Proposer advised that it was their intention that the Transmission Company would provide the Normal, High and Low Reference Temperature values as standing data in a spreadsheet at the beginning of each calendar year, rather than sending separate data files each day – as this approach would have the least impact on the Transmission Company's systems and processes. The Group noted that no changes would be required to the indicative legal text for Section Q to reflect this clarification, as either approach was compatible with the proposed Code requirement for the data to be submitted 'no later than' 17:00 each day.

A member noted that the explanatory text in National Grid's original straw man referred to both UK and GB temperatures, and queried which was represented by the proposed new data items. The Proposer clarified that all the new temperature data would be GB values, and not UK values as had been originally stated in the indicative legal drafting in the Modification Proposal. The Group agreed that this clarification would need to be incorporated in the final legal text.

Another member noted that the indicative legal drafting did not specify whether single or multiple outturn temperature figures would be provided for an individual day, but that the original straw man explanatory text described this as being an 'average of all measured temperatures at 12:00 midday'. The Proposer clarified that a single outturn temperature value would be provided for each day, and that this would be expressed as a composite variable average value deemed to be representative of the temperature measured at midday. The Group agreed that this clarification would need to be incorporated in the final legal text.

The Proposer advised that, in reality, each daily outturn figure would be the average of a number of different data points (for example, these might be the temperatures measured at 09:00, 10:00, 11:00 and 12:00). However, the Proposer clarified that their intention was that the P220 Code legal text would not specify the exact data points, thereby leaving the flexibility for these to be amended by the Transmission Company in the future if required.

A member queried how the temperature data would be derived by the Transmission Company. The Proposer clarified that the Transmission Company currently uses data from the Met Office for a sample of weather stations, and that this was unlikely to change in the near future. However, the Proposer advised that their intention was that the method of derivation would not be specified in the legal text, thereby leaving the flexibility for the Transmission Company to use a different source in the future if required. The member questioned what would happen if data from one particular weather station was unavailable. The Proposer clarified that, in practice, an algorithm would be used by the Transmission Company to temporarily substitute this with data from an alternative weather station. The Proposer confirmed that a large sample of weather stations would be used.

The Group agreed that all of the above clarifications should be incorporated into its solution for the Proposed Modification.

6.3.1.2 BMRS display

The Group noted the proposed format of the new temperature Summary Page graph which had been set out in Section 11 of National Grid's original straw, and which showed this data for a rolling three-month period. The Group agreed that the labels of the lines on the Summary Page graph should be amended to more precisely match the proposed new BSC definitions, but did not identify any other required changes to the original straw man BMRS display. The Group agreed with the suggestion of the straw man that historic data should be provided for a rolling 6-month period, and agreed that this should be provided on a separate web page as well as via a .csv download for consistency with other existing BMRS data. Details of the Group's full solution requirements for the new temperature data can be found in Section 4.1, including a copy of the Group's updated straw man graph which is provided as Figure 1.

The Group agreed that the BMRS should provide guidance to participants on how the new temperature data was derived, to reduce any potential for misinterpretation. A list of the areas which the Group believed should be covered by this guidance can be found in Section 4.1.

A member queried what would happen if data was not received by the BMRA from the Transmission Company for a particular day. BSCCo clarified that, should this occur, no update would be published for that day and that the BMRS would continue to show the graph/values for the previous day. The member questioned whether, in these circumstances, a flag should be provided on the BMRS alerting participants to that fact that the data had not been received. However, it was noted that this would not be normal practice for other existing BMRS data, and the Group agreed that there was no reason to treat the new temperature data differently. It was noted that the graph and historic data would show the date range covered, and that participants would therefore be able to establish whether data had yet been published for the current day.

6.3.2 Areas arising from impact assessment and Modification Group's further discussions

No points regarding the proposed temperature data were raised during the impact assessment of P220, and the Group agreed that no further changes were required to its solution in this area.

6.4 Wind generation forecast

6.4.1 Modification Group's initial discussions

The Group noted that, for each day, the Modification Proposal proposed to publish:

- The forecast total 'peak' generation by Power Park Modules;
- The time associated with that 'peak' forecast; and
- The total Registered Capacity of Power Park Modules.

6.4.1.1 Wind generation covered by proposed data

A member queried whether the proposed forecast data covered all wind generation, since the indicative legal drafting provided in the Modification Proposal referred to the data being published for 'Power Park Modules'. The Proposer clarified that Power Park Module is already defined in the BSC (which refers to the Grid Code definition); however, not all Power Park Modules are metered by the Transmission Company. The Proposer advised that their intention was to only publish forecast data for those Power Park Modules which the Transmission Company metered, and that this would include some (but not all) embedded wind generation as well as all transmission-connected wind farms. The Group agreed that this was an important clarification which would need to be reflected in the final legal text for the Proposed Modification. The Group also agreed that it was essential that the BMRS display should carry a caveat that the data only represented a subset of total GB wind generation, to ensure that the data was not misinterpreted by participants who might use it as a basis for commercial decisions.

The Proposer also clarified their intention that the published forecast data would be a single MW figure across all Power Park Modules metered by the Transmission Company. The Group agreed to include this clarification in its solution for the Proposed Modification.

A member queried why it was not proposed to publish forecast data for all wind generation (including all embedded wind farms). The Proposer clarified that it would not be possible for the Transmission Company to provide forecast figures for any Power Park Modules which it did not meter. The Group noted that the British Wind Energy Association (BWEA) website provided details of the total GB wind capacity.[14] It agreed that, whilst capacity information was not the same as a generation forecast, the BMRS should provide a link to the BWEA site (although the Group agreed that a disclaimer should be added to the BMRS noting that the content of the BWEA site was outside the control of the BSC, and that the link was only provided for participants' information). BSCCo agreed to confirm with the BWEA that it would have no objections to the BMRS containing such a link, prior to it being published. One member noted that the Transmission Company now published an embedded generator MW register under the Connection and Use of System Code (CUSC) which contains capacity details for certain types of embedded generators,[15] and queried whether it would be more appropriate for the BMRS to link to this register. However, the Group concluded that this would not give a clear wind total – since the register was not limited to embedded wind generators, and the wind generation which it did include was only a subset of all embedded wind.

[14] See www.bwea.com.
[15] See http://www.nationalgrid.com/uk/Electricity/Codes/systemcode/tectrading/.

6.4.1.2 Clarification of National Grid's original straw man

The Group noted the proposed format of the new wind data Summary Page table which had been set out in Section 18 of National Grid's original straw man, and which is reproduced below as Figure 13.

Figure 13 – National Grid original wind forecast straw man table

Thursday 19/07/2007	Forecast Today	Forecast Tomorrow
	12:00	12:00
Peak (Max) MW	**24**	**27**
Total Metered Capacity (MW)	870	

The Group agreed that the new Summary Page table should show forecast figures for the current day and the following day, as suggested in the straw man. One member queried what was meant by 'peak' in the context of the proposed data. The Proposer clarified that the Transmission Company would not provide forecast data for each Settlement Period within a day, but only for a sample of Settlement Periods. The highest value within that sample would therefore be deemed to represent the 'peak' forecast for that day. In National Grid's original straw man table in Figure 13, the 'peak' generation for the current day and day ahead has been forecasted as occurring during the 12:00-12:30 Settlement Period on both days. A member commented that the table should label the times shown as 'time of maximum peak generation' to avoid the potential for confusion. The Group agreed to incorporate these clarifications in its solution for the Proposed Modification.

A member noted that the original indicative legal text provided in the Modification Proposal referred to 'Registered Capacity' (which is defined in the Grid Code), but that National Grid's straw man table used the term 'Total Metered Capacity' (which is not currently defined in either the Grid Code or the BSC). The member queried which was the most appropriate term. The Proposer clarified that it was their intention to publish the average MW value of the Registered Capacity of all Power Park Modules metered by the Transmission Company. It was agreed that, for the purposes of P220, this should be newly-defined in the legal text as Total Registered Capacity. The Proposer clarified that the Transmission Company would provide Total Registered Capacity figures in respect of each Settlement Period for which it submitted forecast data.

6.4.1.3 Derivation of forecast data

A member queried how the new wind forecast data would be derived. The Proposer clarified that the data would be based on the Transmission Company's operational metering. The member noted that this would therefore be different from the values which would be obtained by aggregating the Final Physical Notifications (FPNs) of wind generators, and suggested that it would be more appropriate to base the proposed BMRS data on FPNs. The Group noted BSCCo's advice that this change could be incorporated within the scope of the Proposed Modification, since aggregate FPNs could be derived using existing BMRS data and would therefore not require an additional data item to be submitted by the Transmission Company. However, the Proposer advised that many of the operationally-metered wind generators being forecasted did not submit FPNs. The Proposer believed that a comparison of metered output against FPNs would therefore not be meaningful, and that using FPNs as a forecast of output for all operationally-metered wind would not be accurate. On balance, the Group agreed that its preference was to keep to the original operational metering data as suggested in the Modification Proposal, and the FPN option was therefore not considered further.

The Group noted that it was a general feature of P220 that the proposed new data would be based on the Transmission Company's operational metering, and that – whilst this would be less final than BSC Settlement data – it had the advantage of being available closer to 'real time'. The member who had raised the suggestion of FPNs accepted this clarification, but noted that this would be a change from the historic purpose of the BMRS which has previously focused on the provision of Settlement data. The Proposer confirmed that it was their intention that the BMRS should become seen as the primary platform for the provision of close-to-real-time operational and commercial information relating to the Balancing Mechanism. The member supported this approach, but argued that it was important that the derivation of the data was made clear to participants in order to avoid any potential misinterpretation. The Group agreed that guidance in this area should be provided on the BMRS.

6.4.1.4 Initial consideration of displaying forecast v. outturn wind data

One member stated that they were uncertain of the benefits of publishing wind forecast data – since they believed that wind generation was by its nature extremely difficult to forecast, that any 'instantaneous' peak could be very transient, and the actual outturn was therefore likely to be very different. The member considered that the true peak outturn was even less likely to match the original forecast if that forecast had only been derived from a small number of Settlement Periods. However, other members believed that there was demand from customers for this data, and that wind forecast information would become increasingly important to the market given the government's environmental priorities. The Proposer also noted that publication of the proposed wind forecast data had been supported by all but one respondent to its original consultation, and commented that publishing the data would aid participants in understanding the inherent variability of wind generation. The member commented that, if this aim was to be achieved, they believed it would be more useful to show actual outturn data against the forecast values for comparison. Other members also agreed with this suggestion, and the Group therefore initially agreed that the BMRA should also be required to publish a 'history' table on a separate web page containing the following data for a rolling-seven-day period:

1) The Transmission Company's forecast of the total peak generation for each day across those Power Park Modules metered by the Transmission Company, expressed as an average MW value for the Settlement Period in which the peak generation was forecasted to occur;

2) The time of day (i.e. time of the Settlement Period) that the peak generation under 1) above was forecasted to occur;

3) The MW value of the actual level of generation across metered Power Park Modules during the time at which peak generation had originally been forecasted for that day (in order that this could be compared against the original forecast for that time); and

4) The actual time at which peak metered Power Park Module generation occurred during the day, as well as the MW value associated with that peak (noting that this time and value may be different from those under 3) above if the original forecast had been inaccurate).

The Group noted that 3) and 4) would not require new data items to be submitted to the Transmission Company specifically for the purposes of this data, since these items could be derived by the BMRA using the half-hourly outturn by fuel type data which was already proposed to be published under P220 (see Section 6.5). The Group noted that, as such, this change could be incorporated within the scope of the Proposed Modification. BSCCo subsequently developed a straw man version of this table for discussion by the Group, which is reproduced as Figure 14 below.

Figure 14 – BSCCo's straw man table for historic wind forecast/outturn

Wind Generation Seven Day History (Actual & Forecast)	Period with Maximum Forecast Wind Generation			Period with Maximum Actual Wind Generation		
	Time	Forecast MW	Actual MW	Time	Forecast MW	Actual MW
TUESDAY 2007-11-13	12:00	87	93	12:00	87	93
WEDNESDAY 2007-11-14	13:30	94	87	14:00	91	92
THURSDAY 2007-11-15	16:00	35	103	16:00	35	103
FRIDAY 2007-11-16	08:30	75	65	12:30	65	87
SATURDAY 2007-11-17	14:30	91	92	15:30	65	101
SUNDAY 2007-11-18	11:30	87	65	11:30	87	65
MONDAY 2007-11-19	12:00	85	77	14:00	77	83

6.4.1.5 Clarification of forecast data points and range

A member noted that the indicative legal drafting provided in the original Modification Proposal stated that the forecast data should be provided 'no later than 17:00 each day', and that this would contain figures for both the current day and the following day. Some members questioned the benefit of only providing the current day's forecast at 17:00 that day, when it would be too late for the market to act on that data. In addition, it was suggested that providing the next day's forecast at 17:00 on the previous day would also not leave much opportunity for the market to make any decisions on the basis of that forecast. The Group therefore queried whether it would be possible for the Transmission Company to provide the data at an earlier time each day, for example at 15:00 rather than 17:00.

The Proposer clarified that it might not be possible for the Transmission Company to provide each day's forecast data earlier than 17:00, although the proposed wording of the indicative legal drafting would allow it to do so if this subsequently proved feasible. However, the Proposer advised that, in practice, the Transmission Company would submit one data file each day, containing forecast figures for a number of data points within a rolling 48-hour period. This would avoid the need to send the data earlier in the day, since it would mean that the file would include figures for both the day ahead (D+1) and 2 days ahead (D+2) in addition to part of the current day. The Group noted that this clarification would need to be reflected in the final legal text. BSCCo advised that it believed this refinement to be within the scope of the Proposed Modification, since the reference to 'day and day ahead' forecast data in the Modification Proposal represented a suggestion only. The Group (including the Proposer) agreed with this view, and agreed to incorporate this clarification in its solution requirements for the Proposed Modification.

The Proposer clarified that it was their intention that the P220 legal text would not specify the exact data points which would be provided in the daily data file, thereby leaving the flexibility for these to be amended by the Transmission Company in the future if required. However, the Proposer advised that, in the period immediately following the implementation of P220, each daily data file would in practice contain forecast figures for the data points shown in Table 11 below – since these matched the data points for which the Transmission Company already holds wind forecast data within its own systems.

Table 11 – Wind forecast data points within each daily data file

Current day (D)	Day ahead (D+1)	2 days ahead (D+2)
-	00:00	00:00
-	05:00	05:00
-	08:00	08:00
-	12:00	12:00
-	17:00	17:00
21:00	21:00	21:00

The Group noted that each data point would represent an individual Settlement Period (e.g. the 21:00 data point would represent the Settlement Period from 21:00-21:30). The Group noted that, under this approach, each data file would contain 13 data points from 21:00 on D up to and including 21:00 on D+2. The Group noted that a consequence of this would be that more than one set of forecast values would be provided in respect of any given day, with the latest figures overwriting previous values in the BMRS Summary Page table (Figure 13).

For example, in relation to the wind forecast for a Wednesday, the figures submitted at 17:00 on the Monday would be overwritten by the revised forecast figures submitted at 17:00 on the Tuesday. The value for 21:00 on the Wednesday would then also subsequently be overwritten with the revised value for that data point submitted at 17:00 on that day. The Group agreed that it was therefore important that the BMRS Summary Page display should carry a time stamp, showing when the data was last updated. The Group also agreed that guidance should be provided on the BMRS, explaining the data points used to derive the figures.

A member noted the Proposer's preference that the exact data points should not be included in the P220 legal text, and agreed that hard-wiring these in the Code would be inflexible. This member queried whether it was likely that the range of data points might change in the future, noting that this could have cost impacts for the BMRA. The Proposer confirmed that it was possible that the Transmission Company might revisit the appropriate number and range of data points at a future time. BSCCo therefore suggested that the BMRA impact assessment could consider the feasibility and cost of designing the supporting BMRS system changes with the flexibility to deal with future amendments. The Group agreed to ask a specific BMRA impact assessment question in this area.

6.4.1.6 Further consideration of displaying forecast v. outturn wind data

Following the Proposer's clarifications regarding the contents of the proposed new wind forecast data files, the Group re-examined whether the historic forecast/outturn straw man table shown in Figure 14 remained the most appropriate display for the data. The Group initially considered developing a variation of this table containing the forecast and outturn figures for each data point; however, an attendee suggested that it would be more useful to display this comparison on a graph.

The Group agreed with this suggestion, and therefore subsequently replaced the suggested table in Figure 14 with a Summary Page graph developed by the Proposer which had not formed part of National Grid's original straw man. A copy of this graph (represented by Figure 3, and displaying both forecast and outturn wind data for a 3-day period) can be found in Section 4.2 of this consultation document, along with a detailed explanation of its derivation. The Group agreed that this graph would supplement the 'peak forecast' Summary Page table shown in Figure 13.

The Group agreed that the new graph should display both forecast and outturn data for the day preceding the current day (D-1), the current day (D) and the day ahead (D+1). Although the BMRA would also receive forecast data for 2 days ahead (D+2), it was noted that there would be little benefit in expanding the graph to include this – as the D+2 forecast data would only be published between 17:00 and 24:00, when participants were unlikely to be using the BMRS.

The Group considered whether to additionally display the Total Metered Capacity on the same graph for each forecast data point, but agreed on balance that this would overcomplicate the display since it would require the inclusion of a separate 'Y' axis with a different scale.

The Group agreed that the values underlying the new Summary Page graph should be published on a separate new BMRS web page, as well as being made available as a .csv file download. The Group agreed that, as 3 months' historic wind generation values would be published as part of the generation by fuel type data provided separately by the Transmission Company under P220 (see Section 6.5), it did not believe there to be any additional benefit in publishing the 7-day forecast/outturn history suggested in National Grid's original straw man. The Group noted that both the introduction of the graph and the removal of the 7-day history requirement were within the scope of the Proposed Modification, since the Modification Proposal was silent how the new data should be displayed on the BMRS. The Group agreed to incorporate these refinements into its Proposed Modification solution.

6.4.1.7 Other BMRS requirements

The Group noted that National Grid's original straw man had included a 'List of Scottish Metered Wind farms'. A member queried why this did not cover the whole of GB. The Proposer advised that their intention was that the BMRS would publish an up-to-date list of all GB Power Park Modules which were metered by the Transmission Company. The Proposer clarified that the straw man had referred to Scotland simply because all the wind farms which it listed had been located there. The Group agreed that the wording of the original straw man was confusing, and that revised wording should be implemented in the final BMRS display.

The Group noted that a new data item was not required for the Transmission Company to submit the list of metered Power Park Modules to the BMRA specifically for use in the wind data display, since this list would be taken directly from the generation by fuel type data which would be submitted separately by the Transmission Company under P220. Further details regarding the derivation of this data can be found in Section 6.5.

6.4.2 Areas arising from impact assessment and Modification Group's further discussions

The Group initially requested that the BMRA separately identify any additional costs which would be incurred by developing its systems with the underlying flexibility to handle future changes in the number of wind forecast data files or data points.

During the impact assessment, it was clarified between the BMRA and BSCCo that any future changes to this data would not exceed a maximum of one forecast value for every Settlement Period up to the end of D+2, and that any future data would be submitted at no less than 30-minute intervals. The BMRA confirmed that its system changes could easily be developed to contain these bounds.

As a result, the costs of developing this system flexibility were included in the overall costs provided for P220 and were not provided separately. Further details regarding the P220 costs can be found in Section 6.9.

The Group noted this clarification, and agreed that no further changes were required to its solution in this area. The Group's full solution requirements for the new wind data can be found in Section 4.2, including copies of its revised straw man Summary Page display and details of the aspects of the data which it agreed required guidance on the BMRS.

6.5 Instantaneous and half-hourly generation by fuel type

6.5.1 Modification Group's initial discussions

The Group noted that the Modification Proposal proposed to publish 'instantaneous' and half-hourly generation, broken down into totals for different fuel types.

6.5.1.1 Consideration of appropriate fuel-type categories

The Group noted that the following fuel-type categories were suggested in the indicative legal drafting which had been provided in the Modification Proposal:

- CCGT Modules;
- Oil Plant;
- Coal Plant;
- Nuclear Plant;
- Power Park Modules;
- Pumped Storage Plant;
- Cascade Hydro Scheme;
- Open Cycle Gas Turbine plant;
- External Interconnection flows from France to Scotland;
- External Interconnection flows from Ireland to Scotland; and
- Other.

The Group noted that these did not precisely match the list of categories included in the 'Description of Proposed Modification' section of the Modification Proposal form, which referred to 'wind' rather than Power Park Modules and 'Hydro' rather than 'Cascade Hydro'. BSCCo advised that it was within the scope of the Proposed Modification for the Group to refine these categories should it so wish, since those listed in the Modification Proposal represented suggestions only. The Proposer agreed with this view.

The Group noted that the proposed fuel-type categories represented types of generating plant which were either already defined in the Grid Code and/or BSC, or which were proposed to be newly-defined in the BSC under P220. A member queried whether the definition of 'Nuclear Plant' proposed by the indicative legal drafting ('a Power Station which uses nuclear energy to generate electricity') was technically accurate. The Proposer agreed to give further consideration to the most appropriate definition as part of the Transmission Company's impact assessment of P220.

Another member noted the variance between the 'Description of Proposed Modification' and indicative legal drafting in their use of categories relating to hydro generation. This member believed that, if the categories 'Pumped Storage Plant' and 'Cascade Hydro' were used as proposed in the indicative drafting, then this would mean that hydro generation which was not cascaded would only be captured in the 'Other' category along with very different types of generation such as biomass. However, if the categories 'Pumped Storage Plant' and 'Hydro' were used as suggested in the 'Description of Proposed Modification', this would effectively double-count Pumped Storage generation. The Group agreed that its preferred hydro categories would be 'Pumped Storage Plant' and 'Non Pumped Storage Hydro Plant', such that all hydro generation was reported separately to the 'Other' category without any double-counting. The Group agreed to include this refinement in its solution for the Proposed Modification, but noted that the term 'Non Pumped Storage Hydro' was not currently defined in either the BSC or the Grid Code and would therefore need to be defined in the P220 legal text. The Proposer agreed to provide a suggested definition as part of the Transmission Company's impact assessment response for P220.

The Group agreed with the other fuel-type categories suggested by the Modification Proposal. Neither the Proposer nor the Group anticipated that changes would be made to these eleven fuel-type categories in the foreseeable future. For this reason, the Group agreed that it should not be a requirement of the P220 solution for the BMRA to develop flexibility regarding the number of categories which could be held in its systems.

6.5.1.2 Frequency of 'instantaneous' data publication

The Group noted that the Modification Proposal proposed to publish generation by fuel type data both 'instantaneously' and half-hourly following the end of each Settlement Period. The Group noted that the indicative legal drafting contained in the Modification Proposal referred to the instantaneous data being published 'as close to real time as practicable'. The Proposer noted that National Grid's original straw man had proposed that the data would be updated every minute, but that it was for the Group to agree the most appropriate frequency as part of its development of the Proposed Modification solution.

Some members of the Group stated that they were unsure of the benefits of publishing the 'instantaneous' data, given that it was already proposed to be published every half hour at the Settlement Period level. These members believed that half-hourly updates would be sufficient, and that the instantaneous data – whilst a 'nice to have' – could result in additional BMRA costs at little extra benefit to participants. One of these members considered that the proposed instantaneous data was also unnecessary since this information could already be derived from changes in Maximum Export Limit (MEL). These members therefore suggested that the requirement to publish the instantaneous data should be removed from the scope of P220. However, other members believed that the proposed data could be of benefit to customers, small Parties or new entrants to the market, who they viewed as being less likely than bigger players to have the level of knowledge needed to derive the data from other existing sources. The Group noted BSCCo's advice that any removal of the instantaneous data requirement would need to be progressed as part of an Alternative Modification, since it would remove one of the data items listed in the 'Description of Proposed Modification' and would therefore fall outside the scope of the Proposed Modification solution. On balance, the Group agreed not to consider this further as a potential option for an Alternative Modification – although it noted that it could reconsider this position if required once the results of the impact assessment and consultation were known.

The Group noted that it therefore needed to agree the frequency of the 'instantaneous' generation by fuel type data for the Proposed Modification. Although it was noted that the Transmission Company's system received the operational metering data every 15 seconds, the Group agreed that 5-minute BMRS updates of this data would be sufficient. Members believed that any higher granularity might place a burden on the BMRS, whilst a lower granularity would leave little difference between the instantaneous and half-hourly data. An attendee noted that similar data files in the gas market are submitted and published every 6 minutes, containing three 2-minute values. However, for P220, the Group agreed that it would be sufficient for the Transmission Company to provide single 'snapshot' values every 5 minutes. The Group agreed that the table should contain a time stamp, showing when the data was last updated. These refinements were therefore incorporated into the Group's solution for the Proposed Modification.

6.5.1.3 BMRS display

a) Summary Page graph

The Group noted that Section 9 of National Grid's original straw man proposed to introduce a new Summary Page table containing the instantaneous generation by fuel type data, and a new Summary Page graph displaying the half-hourly data.

The Group agreed that the proposed graph should be revised in order to reflect its amendments to the fuel-type categories (see Section 6.5.1.1 above), and that the graph's scale should be in MW rather than GW in order to be more comparable with the instantaneous MW figures. Other than labelling the axes, the Group did not identify any further refinements which it believed were required to the graph. A copy of the Group's straw man graph is provided as Figure 5 in Section 4.3.1.2 of this consultation document.

The Group agreed with the suggestion of National Grid's original straw man that the values underlying the graph should be published for a historic rolling 3-month period, and agreed that these should be made available via a separate new BMRS page and .csv file download.

b) Summary Page table

With regard to the proposed format of the new Summary Page table for the instantaneous data, the Group noted National Grid's original straw man example as reproduced in Figure 15 below.

Figure 15 - National Grid original straw man table for instantaneous fuel-type generation

GB Generation (MW)	
Gas	**20167**
Oil	**0**
Coal	**15315**
Nuclear	**7308**
Renewables	**209**
Other	**-1443**
Interconnectors (MW)	
Ireland to Scotland	**-225**
France to England	**152**
GB Electricity Demand (MW)	**41483**
GB System Frequency (Hz)	**50.04**

The Group agreed that the table should be revised in order to reflect its agreed list of fuel-type categories against which the data would be published (see Section 6.5.1.1 above).

The Group noted that National Grid's original straw man table contained some negative generation values against the 'Other' and Interconnector categories. BSCCo queried whether it was the intention that these values should be published, since the straw man graph for the half-hourly data showed only positive values. The Proposer clarified that the negative values had been included in the original straw man in error, and that it was their intention to publish positive values only in both the 'instantaneous' table and half-hourly graph for the generation by fuel type data. The Group agreed to incorporate this refinement in its solution for the Proposed Modification.

An attendee commented that the proposed Summary Page table would be of benefit to the market, since they believed that (out of the proposed P220 data) this represented one of the more powerful additions to existing information. However, this attendee considered that the table would be even more beneficial if it was expanded to additionally show the generation of each fuel type as a percentage of total generation. The attendee suggested that, in addition to figures for the last 5 minutes, this information could be provided for both the last half hour and last 24 hours.

The Group noted that this change fell within the scope of the Proposed Modification, since the percentages and 24-hour information could be derived by the BMRA using the instantaneous and half-hourly MW values submitted by the Transmission Company. The Group agreed to include the suggested additional data in its Proposed Modification solution, and BSCCo subsequently developed an updated straw man table which was agreed by the Group. A copy of this table is provided as Figure 4 in Section 4.3.1.1 of this consultation document, along with a detailed explanation of how its contents would be derived.

The Group agreed with the suggestion in National Grid's original straw man that historic data for the 5-minute 'snapshot' values should be published for the past rolling 24-hour period, and agreed that these should be made available via a separate new BMRS page as well as a .csv file download. The Group noted that historic data for each half hour in the past rolling 24 hours would be provided separately in relation to the new Summary Page graph (see Section a) above).

c) 'Real-time' demand data

A member noted that National Grid's original straw man Summary Page table in Figure 15 above included a figure for 'GB Electricity Demand', and queried what this represented. The Proposer clarified that this represented the sum of the MW generation values across all fuel-type categories, and advised that this total would be equivalent to GB Transmission System Demand (which is already defined in the Grid Code, and which is proposed to be defined in the BSC under other P220 data items). The Group agreed that the BMRS display should refer to Transmission System Demand in order to reduce the potential for confusion, and that a definition of this term should also be provided on the BMRS.

The Proposer noted that it had been their original intention to include a graph showing 'real-time' Transmission System Demand on the BMRS Summary Page under P220. The Group noted that this was not mentioned in the Modification Proposal or the original straw man, and queried the rationale for its inclusion since the existing 'quick wins' summary on the BMRS already includes a real-time demand graph. The Proposer clarified that the existing BMRS graph is a 'framed link' to a graph which National Grid currently provides on its own website.[16] The Proposer advised that they believed the long-term maintenance of this framed link would not be robust, since there have been historic issues with the link failing or the data becoming unavailable due to a failure of National Grid's own systems. The Proposer stated that they therefore believed it would be preferable for the data to be provided directly to the BMRA by the Transmission Company, and for a BMRA graph to be published on the Summary Page as part of P220. It was noted that this would also allow participants to view the values underlying the graph, which are not currently published.

The Group noted BSCCo's advice that the publication of a 'real-time' Transmission System Demand graph fell within the scope of the Proposed Modification, since it could be derived by the BMRA using the fuel type generation data without requiring the submission of an additional data item. The Group therefore agreed to incorporate this refinement as part of its Proposed Modification solution.

[16] The existing 'framed link' to the real-time demand graph is available on the BMRS Data Summary Page at: http://www.bmreports.com/dsr.htm. The actual version of the graph to which the BMRS link relates is currently published on National Grid's website at: http://www.nationalgrid.com/uk/Electricity/Data/Realtime/Demand/Demand60.htm.

The Group noted that National Grid's 'real-time' demand graph is currently updated every 15 seconds. However, it considered that this frequency of data submission could place a burden on the BMRA, with a resulting negative impact on BMRS performance. In addition, the Group noted that the Transmission System Demand graph was intended to be derived from the 'instantaneous' generation by fuel type data, which it had agreed should be updated every 5 minutes (see Section 6.5.1.2). The Group therefore agreed that the graph should contain 5-minute-apart 'snapshot' MW values of Transmission System Demand (i.e. a single value for every 5 minutes in the period covered by the graph). The Group noted that National Grid's existing graph covered a rolling 60-minute period, and agreed that this approach was also appropriate for P220. A copy of the Group's straw man BMRS graph is included as Figure 6 in Section 4.3.1.1 of this consultation document. The Group agreed that historic 'snapshot' Transmission System Demand values would also be published for every 5 minutes over the past rolling 48-hour period, via a separate new BMRS web page and .csv file download.

The Group noted that, by agreeing to publish 5-minute snapshot values, the BMRA graph would show lower-granularity data than is currently available from the National Grid version. The Proposer clarified that National Grid would continue to separately publish the 15-second update graph on its own website outside of the BSC, and the Group agreed that a normal web link to the National Grid graph (rather than the existing 'framed' version of the graph itself) would be provided from the BMRS Summary Page under P220 for participants who wished to view this higher-granularity data. It was questioned whether it was still worthwhile publishing the data on the BMRS if National Grid would be continuing to publish its own higher-granularity graph; however, on balance the Group believed that there would be benefit in including this data as part of the P220 Proposed Modification.

The Group noted that National Grid's original straw man table in Figure 15 had also included a 'GB System Frequency' value. The Proposer clarified that it had been their intention to additionally include a 'real-time' Transmission System Frequency graph in the BMRS Summary Page under P220, such that this would replace the existing BMRS framed link to National Grid's Frequency graph in the same way as the 'real-time' demand data above. However, the Group noted that Transmission System Frequency data was not mentioned in the Modification Proposal, and that its inclusion fell outside the scope of the Proposed Modification since it would require an additional data item to be submitted by the Transmission Company. The Group therefore agreed to discuss the inclusion of 'real-time' Frequency data as a potential option for a P220 Alternative Modification. Further details of the Group's discussion of this option can be found in Section 6.8.

6.5.1.4 Method for identifying BM Unit fuel types

A member queried how the fuel type of different generators would be identified, and whether this would apply at a station or BM Unit level. The Group noted that one option would be for BSCCo to obtain this information for all new BM Units by adding a new section to the registration form in Balancing and Settlement Procedure (BSCP) 15 'BM Unit Registration' – although it was noted that further one-off analysis would be required to determine the fuel type of existing BM Units.

However, the Proposer clarified that their intention was that the categorisation of each BM Unit's fuel type should be undertaken by the Transmission Company, using data provided to it by generators under the Grid Code and as part of the production of the SYS. The Proposer advised that this categorisation would be based on the primary fuel type of the power station to which each BM Unit related. The Group supported this approach, but agreed that an explanation of the categorisation should be provided on the BMRS in order to reduce any potential for confusion amongst participants. Further details of the guidance which the Group agreed should be published can be found in Section 4.3 of this consultation document.

The Group noted that National Grid's original straw man had suggested that the BMRS would publish a list of the BM Units which fell within each fuel-type category, and agreed that this would be useful to aid the market in understanding the data. The Group agreed with the suggestion of the Proposer that this should be provided by the Transmission Company in the form of a spreadsheet, as this would have less impact on National Grid's systems. The Group noted that generation values for individual BM Units would not be published.

The Group therefore agreed to incorporate the above refinements into its solution for the Proposed Modification.

6.5.1.5 Derivation of generation data

A member queried how the generation values for each fuel-type category would be derived. The Proposer clarified that this data would be based on the Transmission Company's operational metering. The member noted that this would therefore be different from the values which would be obtained by aggregating BM Unit Metered Volumes. The Group noted that, whilst less final than BSC Settlement data, operational metering had the advantage of being available closer to 'real time'. As with the proposed P220 wind data (see Section 6.4.1.3 above), the Group agreed that guidance concerning the derivation of the data should be published on the BMRS.

The Proposer also suggested that National Grid could use its Operational Forums to educate participants in how to interpret the new P220 data. The Group agreed that such education would be valuable.

6.5.1.6 Consideration of potential confidentiality issues

A member queried whether there might be any confidentiality issues if the Transmission Company was to use data provided to it under the Grid Code/SYS for purposes other than which it was originally intended – and, specifically, whether there would be any conflict with the provisions of Sections 57 and 58 of the Electricity Act 1989. The Group agreed to seek the views of the Transmission Company in this area as part of its impact assessment of P220.

Another member queried whether the use of fuel-type categorisations could give rise to wider confidentiality issues if it became possible to work out other Parties' positions from the data. For example, if only one of a small number of plants in a given fuel category was running, participants might be able to work out the position of that one plant. Similarly, if all but one of a small number of plants in a category were owned by the same organisation, then it could be possible for that organisation to establish the position of the remaining plant. The member considered that the only category in which this was likely to be a risk was that of Oil Plant, and suggested that this could be addressed by aggregating Oil Plant into the 'Other' category. The member also noted that potential confidentiality issues would only arise from the 'instantaneous' data, since the half-hourly values would be provided following the end of each Settlement Period and thereby too late for other participants to take actions based on that data.

An attendee commented that similar data had been published in the gas market under Uniform Network Code (UNC) modification proposal 0006 'Publication of Near Real Time Data at UK Sub-Terminals'. The attendee therefore suggested that any views which had been expressed by the gas industry and the Authority regarding the confidentiality of this data might serve as a precedent for P220. BSCCo agreed to research the discussions under the UNC, and provide any relevant comparisons to the Group. Another member of the Group believed that the ability to derive the positions of others from publicly-available data was not necessarily inappropriate, since this could be taken to be a sign of a well-functioning competitive market.

The Group agreed to keep to its agreed set of fuel-type categories for the time being (including a separate category for Oil Plant). However, it agreed to include a specific question in the P220 industry consultation, seeking participant views on whether the publication of any of the proposed P220 data could have implications for confidentiality.

6.5.1.7 Treatment of missing data and suggestion of real-time data completeness flag

A member queried what would happen if data from an individual plant or BM Unit was not available to the Transmission Company on a given day, or contained errors. The Proposer clarified that, as with the other P220 data items, it was their intention that in such circumstances the Transmission Company would simply send the operational metering data which was available to them at the time – and that this would not be subsequently corrected if it was later found to contain errors or missing values. The Proposer noted that any missing data would not be shown as a shortfall against demand, since its demand data is also based on operational metering.

However, the member considered that this involved the risk that participants would make decisions on the basis of the data without being aware that it was incomplete. This member therefore believed that a 'data incomplete' flag should be published on the BMRS in such circumstances. It was noted that any such flag would need to be based on real-time information provided by the Transmission Company, and that the 'general message' page of the BMRS was therefore unlikely to be sufficient for this purpose.

Other members of the Group and attendees remained unconvinced that such a flag was necessary. These members believed that the risk of missing/incomplete data was an inherent feature of using operational metering, which would be offset by the benefit of this data being available close to real time. These members considered that guidance should be provided on the BMRS regarding the derivation of the data, such that it would be for participants to take their own view as to the reliance which could be placed on that data. The Proposer suggested that the Transmission Company could provide the BMRA with some one-off statistics regarding the historic reliance of operational metering as part of the consideration of the modification to inform the discussion on the need for data flagging, and that these could be published on the BMRS in order to help participants make this judgement. A member agreed with this approach and considered that, providing participants were aware of the probability and nature of data errors, any decisions which they might on the basis of this data would be based on their own risk aversion and expectations of associated costs and benefits. The Group also noted the Proposer's advice that the Transmission Company would be unable to identify which specific data was missing (e.g. which BM Units were affected within a particular fuel-type category, and the volume of the 'missing' or erroneous generation), and believed that any flag would therefore be of limited usefulness to the market.

However, the Group agreed to explore the likely costs to the BMRA and Transmission Company of including a requirement for a real-time 'data incomplete' flag, before making a definite decision as to whether to progress this as part of P220. The Group therefore agreed to ask a specific impact assessment question in this area.

6.5.2 Areas arising from impact assessment and Modification Group's further discussions

6.5.2.1 Fuel-type category definitions

The Proposer clarified that, following the Transmission Company's impact assessment of P220, they continued to believe that the proposed definition of Nuclear Plant was appropriate. The Proposer suggested that the new definition of Non Pumped Storage Hydro should be 'a Power Station which uses water to generate electricity but does not include Pumped Storage Plant'.

The Group agreed with these proposed definitions, noting that they would need to be included in the final legal text. The Group noted that Pumped Storage Plant was already defined in the Grid Code.

6.5.2.2 Consideration of additional Interconnector graphs & interaction with negative data

During the impact assessment of P220, the Proposer clarified to BSCCo that, although only positive generation values would be published for the outturn by fuel type data, its intention was to submit its 'raw' operational metering data to the BMRA containing a mixture of positive and negative values. Under this approach, the BMRA would be required to filter out any negative values. Where Interconnector Exports, station load or pumping resulted in the overall MW for a category being a negative 'demand' value, these negative values would therefore not be published on the Summary Page display or additional web pages for the 'instantaneous' and half-hourly generation by fuel type data – and would instead be shown as zero. The Group noted this clarification.

The Proposer also advised that their original intention had also been to include some additional BMRS Summary Page graphs under P220, showing the half-hourly average flows over the French and Moyle Interconnectors for the previous day and as much of the current day as was available. It was noted that these flows might be positive (where the Interconnector was Importing) or negative (where the Interconnector was Exporting). The Proposer provided the Group with some indicative graphs showing how this data might be displayed. The Proposer clarified that a similar graph had been included in Section 16 of National Grid's original straw man, but that as an oversight they had omitted to raise this during the Group's initial discussions. It was noted that National Grid's original straw man had only contained one Interconnector graph and had included 'winter peak day transfers' in addition to half-hourly flows. The Proposer clarified that they did not wish to progress the option of showing winter peak Interconnector transfer data under P220, but did wish to publish two graphs – one for each Interconnector.

The Group noted that the Modification Proposal was silent on the publication of this additional data. However, the Group noted that the publication of this data would not require the submission of a new data item – since it could be derived from the 'raw' half-hourly generation by fuel-type data submitted by the Transmission Company, providing that the raw data contained a mix of positive and negative values. Under this approach, negative values would be filtered out by the BMRA for the 'instantaneous' and half-hourly generation by fuel-type data, but would be published as part of the separate Interconnector flow data. The Group noted BSCCo's advice that, as no new data item would be required, the additional Interconnector data could therefore be included within the scope of the Proposed Modification as a refinement to the BMRS display. The Group noted the advice of the BMRA and the Transmission Company that the inclusion of this data would not materially affect their implementation costs, and agreed that no further impact assessment of this option was therefore required. The Group agreed that there would be benefit in including the additional Interconnector data, and agreed to incorporate this in its solution for the Proposed Modification.

The Group agreed with the suggestion in National Grid's original straw man that historic half-hourly Interconnector flows (whether positive or negative) should be made available for a rolling 30-day period, via a separate BMRS web page as well as a .csv download. The Group discussed the most appropriate format for the High Grade Service TIBCO messages, agreeing that it would be efficient to have one set of TIBCO messages covering both the generation by fuel-type data and the Interconnector flows. The Group agreed that a mixture of positive and negative values should be provided through TIBCO messages for the two Interconnector fuel-type categories (French and Moyle), but that only positive or zero values should be provided through TIBCO for the other fuel types.

Details of the Group's full solution requirements for the Interconnector flow data, including copies of the two proposed Summary Page graphs, can be found in Section 4.3.3 of this consultation document.

6.5.2.3 Clarification of BM Unit details in fuel-type spreadsheet

BSCCo queried the most appropriate BM Unit details to provide as part of the BMRS spreadsheet showing which BM Units fell within which fuel type. It was noted that the list of Power Park Modules in Section 18 of National Grid's original straw man (which would be taken from the fuel-type spreadsheet) had appeared to include National Grid's ID for the BM Unit and the name of the power station to which it related.

However, the Group considered that it would be difficult for participants to make use of the data unless the BSC BM Unit ID was also provided. The Group therefore agreed to refine its solution for the Proposed Modification such that the spreadsheet included the BSC BM Unit ID, National Grid's BM Unit ID, the name of the associated power station, and the primary fuel type of that power station.

6.5.2.4 Further consideration of confidentiality issues

The Proposer advised that, as part of its impact assessment of P220, the Transmission Company had investigated whether it might be in breach of Sections 57 and 58 of the Electricity Act 1989 in using fuel-type data provided to it by generators for purposes other than that for which the information had originally been envisaged.

The Proposer clarified that Section 57 of the Electricity Act 1989 has been repealed by the Utilities Act 2000 (Section 108, Schedule 8). The Utilities Act contains general provisions regarding confidentiality of data, and allows disclosure of information under certain circumstances (e.g. if this disclosure is made by a licence holder as a condition of its licence). The Transmission Company has a licence obligation to comply with the provisions of the BSC. Since the submission and publication of the proposed P220 data would be specified in the BSC through the legal text (which the Transmission Company would be obliged to comply with under its licence, as stated in the Utilities Act), the view of the Transmission Company is that publication of the data would not constitute a breach of the Utilities Act. The Group noted this view.

Whilst the Group agreed that there did not appear to be any confidentiality restrictions on making the data available *per se*, one member reiterated their view that the proposed format of the instantaneous generation by fuel-type data might make it possible to work out the commercial positions of other market players – specifically in the case of Oil Plant. BSCCo noted that similar confidentiality issues did appear to have been raised under the gas market during the consideration of UNC modification proposal 0006, although the gas changes had ultimately been approved by the Authority (suggesting that these issues had been resolved). BSCCo advised that, due to the volume of paperwork associated with UNC modification proposal 0006, and its lack of familiarity with the gas data involved, it was difficult for it to make any direct comparisons with P220 – and suggested that it would be more appropriate for participants to identify any potential parallels as part of their responses to the P220 consultation.[17] The Group agreed with this approach.

The Group also noted that a specific question would be included in the consultation, seeking participants views as to whether any of the proposed P220 data could have confidentiality implications. The Group noted that it would therefore be able to consider whether any changes were required to the proposed fuel-type data following its consideration of the consultation responses at its next meeting on 23 January 2008.

6.5.2.5 Further consideration of potential 'data incomplete' flag

The Group noted the advice of the BMRA in its impact assessment that a requirement to publish a real-time 'data incomplete' flag on the BMRS for the generation by fuel type data would have only a minor impact on its development work – increasing its implementation costs by around 1-2% and its lead time by around one week. However, the Group noted the advice of the Transmission Company impact assessment that a requirement to develop such a flag would add to the Transmission Company's implementation costs by around £500,000 (an increase of over 80%) and would extend its required implementation timescales by 6 months. Further details regarding the BMRA and Transmission Company implementation costs can be found in Section 6.9 of this consultation document.

[17] Documentation relating to UNC modification proposal 0006 can be found on the Joint Office of Gas Transporters website at: http://www.gasgovernance.com/Code/Modifications/ClosedMods/CM001_010/.

A member queried the drivers behind the significant increase in Transmission Company costs and lead time if the flag were to be included. The Proposer clarified that the inclusion of the flag would impact a different National Grid system to the other data, thereby requiring a separate piece of development work. In addition, the impact would be on one of the Transmission Company's most critical systems and would therefore involve some complex testing.

This member stated that they believed the inclusion of such a flag to be crucial, and reiterated their views that without it participants might base commercial decisions on misinterpreted data. The member commented that, if the instantaneous figure for a particular fuel type was inconsistent with the aggregate MEL figures of the BM Units in that fuel type, this might naturally lead participants to infer that one or more units was not running – when in fact the discrepancy could be due to an operational metering failure. Other members were sympathetic to this view, believing that the lack of a flag might make participants less prepared to use the data. Another member and an attendee disagreed, reiterating their belief that it was for participants to judge how much reliance to place upon the data. The Proposer advised that they were confident that the data would be 99% accurate. However, the member who had originally raised the concern believed that 100% data accuracy would be needed if participants were to make commercial decisions on the basis of the information.

The Proposer also advised that, in the event of an operational metering failure for a particular BM Unit, it was unlikely that zero figures would be entered into its systems since National Grid's control room would manually substitute the missing data with an estimated figure. A member expressed concern that the Transmission Company might be overwriting operational data. The Proposer clarified that this already happens under the existing arrangements – since the data feeds through into other key systems such as demand forecasting, and it is therefore important that realistic figures are used. In practice, any substituted estimates are based on discussion between the control room and the generator concerned. An attendee commented that they found this a very reasonable approach and that, if the data was robust enough for the Transmission Company to balance the Transmission System, they believed it should be reliable enough for participants' purposes. The Proposer advised that such manual substitution would be a very rare event – and that, out of 200 BM Units, there might be 1 or 2 (<1%) with estimated figures at any time. Following the Group's discussions, the Proposer has subsequently provided further details of the reliability of, and substitution process for, operational generation metering. A copy of this analysis is included as Appendix 4 of this consultation document.

A member queried whether there could be an alternative way of adding the flag without incurring such a high cost and lead time. For example, it was suggested that, if the Transmission Company was already substituting estimates in such circumstances, it might be possible for control room staff to insert a manual flag. The Proposer clarified that they had considered several difference approaches, and that it was unlikely that a less-impact solution could be found.

BSCCo noted that, in addition to the likely increased cost, any additional lead time resulting from the inclusion of the 'data incomplete' flag would mean that it would not be possible to implement P220 until June 2009. It was noted that the timetable for a November 2008 implementation was very tight (see Section 6.9) – and that, even if the development time for the flag was reduced to an additional month, this extra lead time would still make a target of November 2008 unachievable. BSCCo therefore advised that, should the Group wish to include a requirement for a real-time flag, members would therefore need to justify the benefits of this flag against both any increased costs and the delay to the implementation of P220.

On balance, the Group agreed not to include the flag requirement in its P220 solution for the time being, but to include a specific consultation question in this area. The Group noted that it would be able to reconsider whether to include the flag at its next meeting on 23 January 2008, following its consideration of the consultation responses and the Proposer's analysis of the reliability of operational metering. BSCCo noted that, if the Group did ultimately decide to progress the flag option, members would need to decide whether to include this in the Proposed Modification, Alternative Modification or both. BSCCo suggested that, whilst its inclusion could be argued to fall within the scope of the Proposed Modification, it believed it would be more appropriate to only add the flag to the Alternative solution due to its material impact on implementation costs and timescales – and since some Group members (including the Proposer) did not support its inclusion. The Group noted that this approach would allow the Authority the option to approve a less-cost solution for an earlier implementation if it believed that the inclusion of the flag was inappropriate. The Group agreed to consider this further at its next meeting, should it agree to progress the real-time flag. The Proposer considered that it would not be appropriate to progress the flag as part of P220, since they believed that it would not be in keeping with the original intention of the Modification Proposal. However, the Proposer suggested that this option could be considered as a separate change in the future, if it proved that there was significant value to be derived from such a flag following the implementation of P220 – and once participants had begun to use and understand the data in more detail.

The Group's full solution requirements for the new generation by fuel-type data can be found in Section 4.3, including copies of its revised straw man Summary Page display and details of the aspects of the data which it agreed required guidance on the BMRS.

6.6 Daily energy volumes

6.6.1 Modification Group's initial discussions

6.6.1.1 Derivation of daily energy volumes

The Group noted that the Modification Proposal proposed to publish the 'daily energy volumes' (defined as daily outturn Transmission System Energy) transmitted across the Transmission System. The Group noted that this data would be published a day after the event, with the previous day's data being sent from the Transmission Company to the BMRA by 17:00 each day.

A member queried how the Transmission System Energy values would be derived by the Transmission Company. The Proposer clarified that they would be based on Transmission System Demand as defined in the Grid Code, which is derived using the Transmission Company's operational metering and would therefore be less final than BSC Settlement data.

6.6.1.2 BMRS display

The Group noted the proposed format of the new daily energy volume Summary Page graph which had been set out in Section 17 of National Grid's original straw man, and which showed this data for a rolling three-month period. The Group noted that an additional graph had also been included in Section 17 of National Grid's original straw man, showing the daily energy volumes over the past month and the energy/temperature difference from 'normal' values for that period. The Group noted that this additional data was not mentioned in the Modification Proposal, and the Proposer clarified that it had not been their intention to include it in the P220 solution. However, some members suggested that it would be useful to add trend data to the daily energy volumes graph as 'tramlines', comparing the actual volumes with the typical volumes transmitted across the Transmission System during 'normal', 'hot' and 'cold' years. It was noted that this would require the Transmission Company to submit additional data items which were not specified in the Modification Proposal, and as such would be outside the scope of the Proposed Modification. The Group therefore agreed to consider this suggestion as a potential option for an Alternative Modification. Details of the Group's further discussions of this option can be found in Section 6.8.

For the Proposed Modification, the Group therefore did not amend the proposed Summary page graph from that contained in National Grid's original straw man. The Group agreed with the suggestion of the straw man that historic data should be provided on a separate BMRS web page for a rolling 6-month period, and agreed that this should be provided on a separate web page as well as via a .csv download for consistency with other existing BMRS data. Details of the Group's full solution requirements for the new daily energy volume data under the Proposed Modification can be found in Section 4.4, including a copy of the straw man graph which is provided as Figure 9.

The Group agreed that the BMRS should provide guidance to participants on how Transmission System Demand is derived, to reduce any potential for misinterpretation. Details of the areas which the Group believed should be covered by this guidance can be found in Section 4.4.

6.6.2 Areas arising from impact assessment and Modification Group's further discussions

No points regarding the daily energy volume data were raised during the impact assessment of the Proposed Modification, and the Group agreed that no further changes were required to its Proposed Modification solution in this area.

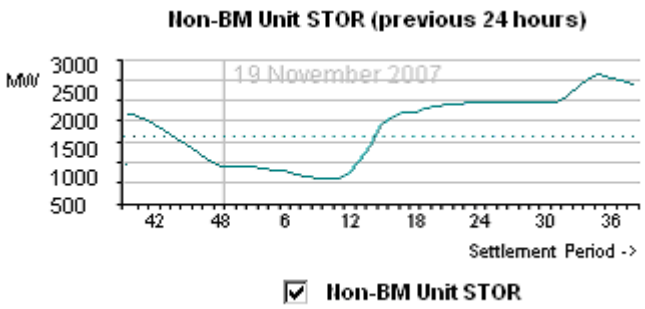
6.7 Non-BM STOR Instructed Volumes

6.7.1 Modification Group's initial discussions

The Group noted that the Modification Proposal proposed to publish Non-BM STOR Instructed Volumes for each Settlement Period. The Group noted that the Modification Proposal stated that the Non-BM STOR Instructed Volumes would not be published on the Daily Summary Page, and that this data had therefore not formed part of National Grid's original straw man. The Group noted that, other than specifying that it would not form part of the Summary Page, the Modification Proposal was silent as to how the data should be published on the BMRS.

BSCCo initially proposed that the new Non-BM STOR Instructed Volume data should be published in tabular form with an accompanying .csv file download, either on the existing Balancing Services Adjustment Data (BSAD) web page or via a new BMRS web page. The Group's preference was for the data to be published on a new page. The Group also considered that there would be benefit in publishing the data in graphic and well as tabular/.csv form. The Group subsequently developed a straw man graph showing Non-BM STOR Instructed Volumes for a rolling 24-hour period, which is reproduced as Figure 16 below.

Figure 16 – BSCCo's original straw man graph



One member stated that they were uncertain of the benefit in publishing the Non BM-STOR Instructed Volume data. The Proposer noted that all but one respondent to National Grid's original consultation had supported its publication, and other members believed the data would give the benefit of increased transparency of the demand-side actions taken by the Transmission Company. However, this member considered that it might be of more use to participants if the Non-BM STOR Instructed Volumes were shown against actual settled/historic outturn for comparison. Another member similarly suggested that the Non-BM STOR data could be shown against a trend line representing how much Instructed Volume had historically been used. It was noted that either of these approaches would require the Transmission Company to submit additional data items which were not specified in the Modification Proposal, and as such would be outside the scope of the Proposed Modification. The Group therefore agreed to consider these suggestions as a potential option for an Alternative Modification. Details of the Group's further discussions of this option can be found in Section 6.8.

The Group agreed that no separate history page was required, and that participants should be able to request historic Non-BM STOR Instructed Volume data for any past Settlement Day in line with the process for other existing BMRS data. The Group agreed that the BMRS should provide guidance to participants on how the new Non-BM STOR data was derived, to reduce any potential for misinterpretation. Details of the areas which the Group believed should be covered by this guidance can be found in Section 4.5.

6.7.2 Areas arising from impact assessment and Modification Group's further discussions

During the impact assessment of P220, both the Transmission Company and the BMRA clarified to BSCCo that they believed it would be more appropriate for the Non-BM STOR Instructed Volumes graph to display data for a fixed 2-day period (i.e. the previous day and as much of the current day as was available) rather than a rolling 24-hour period. The BMRA and Transmission Company believed that, since the Non-BM STOR data would not be published on the Summary Page, this would give consistency with the format of other non-Summary Page BMRS data.

The Group noted this advice, and agreed to update its straw man graph and its solution requirements to include this refinement. Details of the Group's full solution requirements for the new Non-BM STOR Instructed Volume data can be found in Section 4.5, including a copy of the updated graph which is provided as Figure 10.

6.8 Options considered for an Alternative Modification

6.8.1 Modification Group's initial discussions

The Group considered the following potential options for inclusion in an Alternative Modification:

1) The addition of the ability for the Panel to agree new BMRS data items without requiring a Modification Proposal;

2) The addition of new data items to the proposed daily energy volume data, showing 'tramline' trend data for 'normal', 'hot' and 'cold' years for comparison with the daily outturn volumes;

3) The addition of new data items to the proposed Non-BM STOR Instructed Volume data, showing the Non-BM STOR data against either:

   a) Actual settled/historic outturn; or

   b) A trend line representing how much Instructed Volume had historically been used, and

4) The addition of a new data item to the scope of P220, such that 'real-time' Transmission System Frequency data would also be published on the BMRS.

All of these options were considered as potential additions to the 'base' solution already developed by the Group for the Proposed Modification. The Group's discussions of each of these potential Alternative options are detailed in Sections 6.8.1 and 6.8.2 below. Following its discussions, the Group has agreed to progress options (2) and (4) only as part of an Alternative Modification for P220.

6.8.1.1 Panel ability to agree future BMRS data

a) Background

The Group noted that it had been requested by the Panel to consider a potential Alternative Modification for P220 which would allow the Panel to agree future BMRS data items without requiring a Modification Proposal.

The Group noted that, during discussions at the DSWG prior to the raising of P220, it had been questioned whether a Modification Proposal was necessary to deliver new data items on the BMRS. However, the Proposer and BSCCo had considered that, under the current BSC governance arrangements, progressing the delivery of new data items via a Modification Proposal could have the following advantages compared to delivering these changes outside of the Code:

- The Code is silent as to whether data other than that already set out in Section V could be made available on the BMRS. However, making additional data available outside of the Code could be considered to be contrary to the intention of Section V, since this explicitly lists all the data which is currently published on the BMRS.
- The Code contains provisions to the effect that:
  - Each Party irrevocably and unconditionally consents to the publication on the BMRS of the data set out in Section V;
  - No warranties or representations are given in respect of the accuracy or completeness of such data; and
  - No Trading Dispute can be raised as a result of the provision of the data.

  These protections would not be afforded to any additional data which might be published on the BMRS outside the Code.
- Making additional data available on the BMRS outside the Code would not provide Parties, the Panel or the Authority with a formal opportunity to consider the costs of the required BMRS changes and whether the benefits of publishing such data would outweigh these costs (i.e. whether the changes would better facilitate the achievement of the Applicable BSC Objectives).

The Group noted that some Panel Members had expressed frustration at what they perceived as the inefficiencies of sending the changes proposed by P220 through the BSC's Modification Procedures – and that the Panel had therefore suggested that the BSC governance arrangements as set out in the Code should be changed, in order to allow the Panel to agree future BMRS data items without a Modification Proposal. In accordance with its Terms of Reference, the Group therefore considered whether to progress the introduction of such revised governance arrangements as part of a P220 Alternative Modification.

b) Group's discussion

The Group agreed that it would not be appropriate for the Panel to agree changes to the BMRS without first establishing the implementation costs of such changes. The Group also agreed that it was essential that any new BMRS data was only implemented following a consultation with Parties on the merits of the changes – as Parties would pay the resulting implementation costs, and any BMRS changes could also impact Parties' own systems.

The Group also agreed that the Panel would be likely to need support from BSCCo, the Transmission Company, the BMRA and wider industry experts in developing the precise submission and publication requirements for any new BMRS data (for example, to establish the most appropriate file formats and BMRS display). The Group agreed that, as BMRS data is provided for the benefit of market participants, it was important to keep participants involved in the development of the solution to ensure that this best met BMRS users' needs.

Given this, the Group believed that any process which was developed for the Panel to agree new BMRS data without a Modification Proposal would need, as a minimum, to include:

- Development of the solution (potentially including the convening of an 'expert group');
- An impact assessment (to establish costs); and
- An industry consultation.

On balance, the Group was of the view that the duration of this process was unlikely to be materially shorter or more efficient than the normal Modification Procedures, noting that the maximum time saving was likely to be around one month.

Moreover, there was a view from some members that the BSC's Modification Procedures remained the most appropriate way in which to consider potential new BMRS data. These members argued that these procedures allow full transparency in the development of any solution, and in the assessment of the costs and benefits of new data against the Applicable BSC Objectives. One member noted that allowing the Panel to agree new BMRS data could remove the Authority from its current decision-making role, depending on the precise process which was developed. An attendee commented that, in the gas market (which the Panel had suggested was more efficient in its reporting arrangements) all material reporting changes are routed through the formal modification process. Some members highlighted the refinements which the Group had been able to develop for the P220 Proposed Modification to better meet the needs of BMRS users, and believed that these justified the decision to send P220 through the Assessment Procedure.

The Group regarded the introduction of new BMRS data as being more material than simple 'housekeeping' changes, since it could result in costs and impacts for Parties. However, the Group noted that changes to the way in which existing BMRS data (i.e. that already set out in Section V) is displayed on the BMRS did not require a Modification Proposal, as had been demonstrated in the work that was being undertaken on 'Phase 1' of the BMRS Summary Page by BSCCo, the BMRA and the Transmission Company. The Group noted that there was therefore an existing ability to progress more minor BMRS changes efficiently and expeditiously.

The Group noted that there were also other options which it was considering including in an Alternative Modification for P220, and which sought to 'fine-tune' the way in which the proposed P220 data would be published on the BMRS such that the new display would be the optimal one to meet participant needs. Again, some members believed that the fact that the Group had been able to identify such improvements justified the use of the Assessment Procedure. The Group was also of the view that including the option for the Panel to agree new BMRS data in its P220 Alternative Modification could detract from what the other Alternative options were trying to achieve, and noted that (if this new ability was not supported by the industry or the Authority) this ran the risk that the whole Alternative might be rejected. However, this was a secondary argument against progression of such a Panel ability, since members generally believed that the Modification Procedures continued to be the most appropriate route for considering new BMRS data. The Group noted that, if any Party felt strongly about the issue, they would have the ability to raise a new Standing Issue or Modification Proposal to consider alternative BMRS governance arrangements.

6.8.1.2 Additional daily energy volume data

The Group considered a potential option for an Alternative Modification which would publish some additional trend data associated with the daily energy volumes. The Group agreed that, as well as displaying the daily energy volumes transported across the Transmission System, it would be useful to include additional 'tramlines' on the BMRS Summary Page graph – comparing the actual volumes with the typical volumes transmitted across the Transmission System during 'normal', 'hot' and 'cold' years. The Group noted that additional legal text would need to be developed for this aspect of the Alternative Modification, including definitions of the trend data items. The Group agreed that historic figures for the trend data should be included in the rolling 6-months' history for the daily energy volumes.

The Group agreed with the Proposer's suggestion that the additional trend data should be submitted to the BMRA as standing data in a spreadsheet, since this would have least impact on the Transmission Company's systems and processes. BSCCo developed a straw man graph showing the additional tramlines against the daily energy volumes. This graph was subsequently agreed by the Group, and can be found as Figure 11 in Section 5.4 of this consultation document.

The Proposer advised that the Transmission Company might have difficulty in providing the trend data in respect of Transmission System Demand (which was the original basis for the daily energy volumes under the Proposed Modification), and suggested that an alternative solution would be to provide the trend data against INDO instead. The Group agreed that its preference was for the data to be based on Transmission System Demand, but agreed that the Transmission Company should explore the feasibility of both options further as part of its impact assessment of P220.

6.8.1.3 Additional Non-BM STOR data

The Group considered a potential option for an Alternative Modification whereby the Non-BM STOR Instructed Volume data would be shown against either actual settled/historic outturn or a trend line representing how much Instructed Volume had historically been used. However, the Transmission Company advised that it would only be able to provide this additional outturn/trend data to the BMRA eight weeks in arrears, and the Group agreed that this would significantly diminish its usefulness to the industry.

On balance, the Group therefore agreed not to progress this option further under P220. However, it agreed with the Proposer's suggestion that National Grid should consider other ways of making such data available outside of the BSC.

6.8.1.4 Additional Transmission System Frequency data

The Group considered a potential option for an Alternative Modification which would publish an additional graph on the BMRS Summary Page showing 'real-time' Transmission System Frequency data, as measured by the Transmission Company in Hertz. The Proposer advised that such a graph had been included in Section 10 of National Grid's original straw man, but clarified that they had inadvertently omitted to reference this additional data item in the Modification Proposal.

The Group queried the rationale for including this requirement, noting that the existing 'quick wins' summary on the BMRS already includes a real-time Frequency graph. The Proposer clarified that the existing BMRS graph is a 'framed link' to a graph which National Grid currently provides on its own website.[18] The Proposer advised that they believed the long-term maintenance of this framed link would not be robust, since there have been historic issues with the link failing or the data becoming unavailable due to a failure of National Grid's own systems. The Proposer stated that they therefore believed it would be preferable for the data to be provided directly to the BMRA by the Transmission Company, and for a BMRA graph to be published on the Summary Page as part of P220. It was noted that this would also allow participants to view the values underlying the graph, which are not currently published.

The Group noted that National Grid's 'real-time' Frequency graph is currently updated every 15 seconds. However, it considered that this frequency of data submission could place a burden on the BMRA, with a resulting negative impact on BMRS performance. Some members initially suggested that it would be sufficient for the BMRS to publish single 'snapshot' Frequency values which were submitted by the Transmission Company every 5 minutes, for consistency with the 'real-time' demand data included in the Proposed Modification. Other members suggested that this would be too infrequent, and suggested the use of 2-minute snapshots. However, the Proposer noted that this would still be lower-granularity data than is currently available from the National Grid graph, and believed that 2-minute snapshots might not give a meaningful picture of Frequency changes. The Proposer therefore suggested a compromise solution, whereby data files would only be sent and published every 2 minutes (to avoid overloading the BMRS) but would contain a 'package' of Frequency figures which were 15 seconds apart (thereby preserving the current granularity of data although updating it less frequently). The Group agreed with this suggestion. The Group noted that National Grid's existing graph covered a rolling 60-minute period, and agreed that this approach was also appropriate for P220. A copy of the Group's straw man BMRS graph is included as Figure 12 in Section 5.6 of this consultation document.

The Proposer clarified that National Grid would continue to separately publish its own version of the graph on its own website. The Group agreed that a normal web link to the National Grid graph (rather than the existing 'framed' version of the graph itself) would be provided from the BMRS Summary Page for participants who wished to view this more-frequently-updated data. It was questioned whether it was still worthwhile publishing the data on the BMRS if National Grid would be continuing to maintain its own graph, and one member also queried the benefit of the data if it was not provided instantaneously. However, on balance, a majority of members believed that there would be benefit in including this data in an Alternative Modification for P220. The Group noted that additional legal text would need to be developed for this aspect of the Alternative Modification.

The Group agreed that historic Transmission System Frequency values should also be published for every 15 seconds over the past rolling 48-hour period, via a separate new BMRS web page and .csv file download. Further details regarding the Group's solution requirements can be found in Section 5.6.

6.8.2 Areas arising from impact assessment and Modification Group's further discussions

The Group noted the impact assessment responses for the Alternative Modification, including the required implementation costs and lead time as set out in Section 6.9 of this consultation document.

[18] The existing 'framed link' to the real-time Frequency graph is available on the BMRS Data Summary Page at: http://www.bmreports.com/dsr.htm. The actual version of the graph to which the BMRS link relates is currently published on National Grid's website at: http://www.nationalgrid.com/uk/Electricity/Data/Realtime/Frequency/Freq60.htm.

The Group noted the advice of the Transmission Company in its impact assessment response that it would not be feasible to provide trend data against daily energy volumes based on Transmission System Demand. The Proposer clarified that this was because it would not be able to undertake a meaningful weather correction for Interconnectors under Transmission System Demand, since Interconnector flows are not weather-correlated. However, the Proposer clarified that the Transmission Company would be able to provide the trend data if the daily energy volumes were based on INDO, since this does not include Interconnectors. The Group therefore agreed to base its solution for the Alternative Modification on the INDO approach – noting that the Proposed Modification would still show volumes based on Transmission System Demand without any trend lines. The Group noted that this would need to be reflected in the legal text for the Alternative Modification.

The Group briefly considered showing two sets of volumes on the Alternative Modification graph in addition to the trend data: one set based on INDO, and one based on Transmission System Demand for comparison. BSCCo queried whether this might overcomplicate the display. It was also noted that this suggestion would require an additional data item to be submitted by the Transmission Company containing volumes based on Transmission System Demand. BSCCo advised that, providing the data item submitted contained only one set of volumes, the choice of whether these were based on INDO or Transmission System Demand would not make a difference to the BMRA or Transmission Company's implementation costs. However, if two sets of volumes were required to be submitted and published, this had the potential to increase costs. On balance, the Group therefore agreed not to progress this suggestion further. Instead, the Group agreed that the BMRS should contain an explanation of the derivation of the data to avoid the potential for misinterpretation by participants.

The Group noted that no points regarding the proposed 'real-time' Transmission System Frequency data were raised during the impact assessment of P220, and the Group agreed that no further changes were required to its Alternative Modification solution in this area.

The Group noted that it was possible that respondents to the Assessment Procedure consultation might identify further data items which had not been considered by the Group or by National Grid in its previous consultation, but which respondents believed should be included in P220. The Group noted that it was scheduled to discuss the consultation responses at its final meeting for P220 on 23 January 2008, after which the Assessment Report would be prepared for submission to the Panel on 8 February 2008. The Group therefore agreed that it would have very limited scope to consider the potential inclusion of any additional data without seeking an extension to the Assessment Procedure from the Panel, and noted that the Panel had expressed its desire for P220 to be progressed expeditiously.

The Group therefore agreed to restrict its assessment to those data items upon which the consultation was conducted, noting that the aim of P220 was to implement the data which had originally been the subject of National Grid's own consultation and discussion by the DSWG. However, the Group agreed with the view of the Panel that it should not prevent participants from highlighting any additional data which they believed should be published – so that any such suggestions, whilst outside the scope of its P220 assessment, could be noted by the Panel. The Group also noted that participants could use the Standing Issue process to give consideration to any further data items if appropriate.

One member queried whether it would be possible for additional information on Interconnector trades to be published as part of the Alternative Modification. However, the Proposer and other members of the Group believed that this would be outside the scope of P220 – since such data would be commercial rather than operational in nature, would impact different Transmission Company systems (potentially requiring a longer implementation), and would therefore require a different scope of assessment by the Group. On this basis, and by majority, the Group therefore agreed not to progress this suggestion further under P220.

6.9 Implementation approach and costs

6.9.1 Modification Group's initial discussions

6.9.1.1 Potential Implementation Dates

The Group noted the desire of the Proposer that P220 should be implemented as expeditiously as possible. The Group accepted BSCCo's advice that, as the final Modification Report for P220 would not be submitted to the Authority until the beginning of the third week of March 2008, it would not be possible to include the modification as part of the June 2008 Release. The Group noted that the first standard release in which P220 could be implemented would be November 2008, with the following available release then being June 2009 (since the Panel has noted that only critical changes will be delivered in the February 2009 Release due to its interaction with Project Isis).[19]

However, BSCCo suggested that, given the desire of the Proposer and the Panel to expedite P220 as far as possible, consideration should be given in the impact assessment to the feasibility of implementing P220 earlier than November 2008 as a stand-alone release. The Group noted that, in practice, this approach would mean that implementation would take place on a date some time between July-October 2008. The Group considered that the costs of a stand-alone implementation were likely to be higher, and questioned whether these additional costs would outweigh the savings of a few months in lead time. It was also noted that the feasibility of a stand-alone implementation approach would be dependent on the development timescales required by the BMRA and the Transmission Company to make the necessary changes to their systems. However, the Group agreed to explore the implications of this approach in more detail through the impact assessment.

6.9.1.2 Interaction with Modification Proposal P219

The Group noted that P219 had also been raised by National Grid in the area of BMRS reporting. The Group noted that the two modifications were not contingent upon each other, and could be implemented separately if required. However, the Group agreed that there were likely to be savings in implementation costs for the BMRA and the Transmission Company if the modifications were implemented in parallel. The Group therefore agreed that any such cost savings should be identified as part of the P220 impact assessment.

6.9.1.3 Approach to provision of historic P220 data

The Group noted that P220 proposed to provide 'history' pages on the BMRS containing historic values for the new data items introduced by the modification. The Group noted the advice of the BMRA that all of the P220 historic data requirements could be met through existing BMRS functionality. However, it was noted that there were two options regarding how the historic data could be provided, as follows:

1) Full historic data would be provided from the Implementation Date onwards (e.g. for a data item with a rolling 6-months history under a 6 November 2008 implementation, historic data would be provided on the Implementation Date for the period 6 May – 6 November 2008);

2) Historic data would not be provided on the Implementation Date itself, and would only be compiled gradually from that date onwards as the data became available (e.g. for a data item with a rolling 6-months history under a 6 November 2008 implementation, the full range of 6 months' data for this item would only become available on 6 May 2009).

[19] The existing contracts for the operation and development of the Central Volume Allocation (CVA), Supplier Volume Allocation (SVA) and Funds Administration Agent (FAA) expire at the end of March 2009. The procurement of ongoing BSC Agent services from April 2009 is the subject of BSCCo's Project Isis. Further information regarding the interaction between Isis and the standard BSC release timetable for Modification Proposals and CPs can be found in Panel paper 130/13 at: http://www.elexon.co.uk/documents/BSC_Panel_and_Panel_Committees/BSC_Panel_Meetings_2007_-_130_-_Papers/130_13_Isis_impact_on_BSC_Releases_v1.0.doc.pdf.

The Group agreed that the P220 impact assessment should explore the relative costs and efficiencies of these approaches to the BMRA and the Transmission Company.

6.9.1.4 Interaction with CP1217

The Group noted that CP1217 separately proposed to remove the BMRS High Grade Service website such that the same public website would be used for both Low Grade Service Users (via the normal internet) and High Grade Service Users (via the private High Grade network). The Group noted that CP1217 did not propose to remove the existing TIBCO functionality for High Grade Service Users, which would continue if the CP was approved.

For the purposes of the P220 impact assessment, the Group agreed that the BMRA should estimate the costs of the modification based on the assumption that the new data would still be published on the High Grade Service website (since this represented the existing baseline). However, the Group agreed that the BMRA should separately estimate any cost savings which might be achieved if the requirement to publish the P220 data on the High Grade site was removed.

6.9.1.5 Format of P220 TIBCO messages

The Group noted that the new P220 data items would be published via TIBCO messaging for High Grade Service users as well as via the Summary Page and other new BMRS web pages. The Group agreed that, as part of its impact assessment for P220, the BMRA should indicate how comparable these new messages would be to the existing TIBCO functionality.

6.9.2 Results of impact assessment

6.9.2.1 Central implementation costs

The tables on the following page show the central costs to the BMRA and BSCCo of implementing P220 in the November 2008 Release or the June 2009 Release. Separate tables are provided for the Proposed Modification and the Alternative Modification. Note that the costs shown in these tables exclude any cost savings which would be achieved by implementing P220 in parallel with P219. An explanation of the cost terms used in these tables can be found on the BSC Website.[20]

If P219 and P220 were implemented in the same release, it is estimated that this would deliver a 20% reduction in the combined central costs of the two modifications.[21] Further information on these costs savings can be found in Section 6.9.3. Note that there would be no difference in the required P220 implementation lead time were it to be delivered in the same release as P219.

There would be no ongoing operational costs for either the BMRA or BSCCo as a result of P220.

Note that, due to the implementation lead times required by both the BMRA and the Transmission Company, it is not believed to be feasible to implement P220 prior to November 2008. For this reason, 'stand-alone' costs are not provided in the tables. Further details of the required lead times can be found in Section 6.9.3.

The central costs and lead times are based on the assumption that an additional requirement for the BMRA to publish a real-time 'data incomplete' flag for the outturn by fuel type data would not be included in the P220 solution. Further details regarding the Group's consideration of this option can be found below and in Section 6.5 of this consultation document.

[20] http://www.elexon.co.uk/documents/Change_and_Implementation/Modifications_Process_-_Related_Documents/Clarification_of_Costs_in_Modification_Procedure_Reports.pdf. The term 'service provider' relates to both BSC Agent and non-BSC Agent service provider and software costs.

[21] Note that details of the P219 implementation costs will be provided in the P219 Assessment Report, which will be published on 11 January 2008.

PROPOSED MODIFICATION CENTRAL IMPLEMENTATION COSTS

		November 2008 Release	June 2009 Release	Tolerance
Service provider cost				
	Development, testing & deployment	£107,600	£121,700	+/- 30%
	Porting	£19,400	N/A	+/- 30%
	Total service provider cost	£127,000	£121,700	+/- 30%
Implementation cost				
	External audit	Nil	Nil	N/A
	Design clarifications	Nil	Nil	N/A
	Additional resource costs	Nil	Nil	N/A
	Additional testing & audit support costs	Nil	Nil	N/A
Total demand-led implementation cost		£127,000	£121,700	+/- 30%

ELEXON implementation resource cost		57 man days £12,540	57 man days £12,540	+/- 10%
Total implementation cost		**£139,540**	**£134,240**	**+/- 30%**

ALTERNATIVE MODIFICATION CENTRAL IMPLEMENTATION COSTS

		November 2008 Release	June 2009 Release	Tolerance
Service provider cost				
	Development, testing & deployment	£129,250	£144,800	+/- 30%
	Porting	£20,150	N/A	+/- 30%
	Total service provider cost	£149,400	£144,800	+/- 30%
Implementation cost				
	External audit	Nil	Nil	N/A
	Design clarifications	Nil	Nil	N/A
	Additional resource costs	Nil	Nil	N/A
	Additional testing & audit support costs	Nil	Nil	N/A
Total demand-led implementation cost		£149,400	£144,800	+/- 30%

ELEXON implementation resource cost		57 man days £12,540	57 man days £12,540	+/- 10%
Total implementation cost		**£161,940**	**£157,340**	**+/- 30%**

6.9.2.2 Explanation of BSCCo impacts, costs and lead times

The impact on BSCCo would be limited to project-managing the required BSC System and documentation changes for P220. In addition to general project administration, this would include:

- Overseeing integration testing by the BMRA and Transmission Company (requiring additional lead time over and above that required by the BMRA and the Transmission Company to undertake their own development and testing);
- Overseeing any required participant testing (to be undertaken following integration testing and therefore requiring additional lead time); and
- Providing any other necessary support to participants, the BMRA and the Transmission Company during the implementation period.

The costs to BSCCo would be identical regardless of whether the Proposed Modification or Alternative Modification was approved, or whether P220 was implemented in the November 2008 or June 2009 Release.

Details of BSCCo's required lead time can be found in Section 6.9.3. This lead time would be identical for both the Proposed and Alternative Modifications, and would also be the same regardless of whether the P220 was implemented in parallel with P219.

Further details of the documentation changes which would be required to support P220 can be found in Appendix 3.

6.9.2.3 Explanation of BMRA impacts, costs and lead times

a) Impact

The BMRA would be required to amend and test its systems in order to publish the new P220 data. This would include amendments to the BMRS Summary Page display, the creation of supporting new BMRS pages, amendments to the underlying BMRA system functionality, and the creation of new TIBCO messages.

The BMRA has confirmed that the new TIBCO messages would be comparable in structure and style to other existing TIBCO messages, and that no new TIBCO functionality would be required.

b) Costs

Ongoing BSC Agent services are currently the subject of a procurement exercise through BSCCo's Project Isis. It should be noted that the targeted release dates for P220 interact with the cutover to both new BMRA systems and the service provider chosen through the procurement.

Of the BMRA testing, deployment and development costs shown in the 'central costs' tables above, £25,000 of the November 2008 figure and £50,000 of the June 2009 figure therefore represent BSCCo's estimates of the chosen service provider costs. The tolerance given in the tables reflects the degree of uncertainty associated with these costs.

The difference between the costs for November 2008 compared with June 2009 is due to the different interaction of these releases with the Isis project timescales. A November 2008 implementation would require the P220 changes to be implemented in existing BMRA systems and then ported to the new system. For June 2009, the changes would be implemented directly into the new system and thus no porting costs would be incurred. However, as a result there is greater uncertainty regarding the June testing, deployment and development costs, since more of these activities would be undertaken by the chosen service provider. This is reflected in the higher estimate for these costs in June.

The existing service provider implementation costs for the Alternative Modification would be approximately 15% higher than those of the Proposed Modification, due to the inclusion of the additional Transmission System Frequency data item and the requirement to display additional daily energy volume trend data under the Alternative.

The BMRA confirmed that the two potential approaches to the provision of historic data under P220 would not materially affect its implementation costs.

c) Costs by data item

Table 12 provides a high-level breakdown of the P220 BMRA costs, showing the proportion of costs which would be attributable to each group of data items under the Proposed and Alternative Modifications.

It should be noted that, as the BMRA's testing and release costs would be spread over the entire solution, removal of one or more data items would increase the cost of the remaining items. The figures contained in the table are therefore purely indicative, and were provided to aid the Group in understanding the relative effort for each group of data.

Table 12 – BMRA cost breakdown

P220 data item	% of Proposed Modification costs	% of Alternative Modification costs
Outturn & reference temperatures	22%	17%
Wind generation forecast	17%	14%
Instantaneous and half-hourly generation by fuel type	21%	17%
Daily energy volumes	17%	19%
Non-BM STOR Instructed Volumes	23%	18%
'Real-time' Transmission System Frequency	N/A	15%

The above breakdown demonstrates that the BMRA implementation costs would be fairly evenly split across the proposed P220 data items.

d) Lead time

The BMRA would require a maximum of 5.5 months' implementation lead time from the point of Authority decision to the beginning of integration testing with the Transmission Company and BSCCo, in order to develop the required BMRA system changes and carry out its own testing. This BMRA development and isolated testing would be conducted in parallel with the Transmission Company's own system development and testing.

The lead times provided by the existing service provider varied slightly according to the choice of release or whether the Proposed or Alternative Modification was chosen, and are shown in Table 13. The required BMRA lead time would be identical regardless of whether P220 was implemented in parallel with P219.

Table 13 – BMRA lead time (from Authority decision to start of integration testing)

Required BMRA lead time for:	November 2008 Release	June 2009 Release
Proposed Modification:	20 weeks	13 weeks
Alternative Modification:	24 weeks	18 weeks

e) Interaction with CP1217

The BMRA confirmed that, if CP1217 was approved such that the separate High Grade Service website was discontinued, this would save between 6-7% of the P220 costs and around 2 weeks of lead time.

The potential for cost savings in this area would be small, since the majority of the P220 data would be published on the Low Grade Service website (noting that the Electricity Data Summary Page would be available only from the Low Grade site).

f) Interaction with real-time 'data incomplete' flag

The BMRA confirmed that, if a requirement for a real-time 'data incomplete' flag was added to the solution for the generation by fuel type data, this would increase its implementation costs by 1-2% from those shown in the tables above and would extend its required lead time by around one week.

The requirement for such a flag does not form part of the Group's agreed solution at this time. Specific views on the appropriateness of including the flag are sought as part of this consultation, and further information can be found in Section 6.5.

6.9.2.4 Explanation of Transmission Company impacts, costs and lead times

The P220 implementation costs and lead time which would be incurred by the Transmission Company are shown in Table 14.

Table 14 – Transmission Company costs and lead time

Transmission Company:	Proposed Modification	Alternative Modification
Costs:	£600,000*	Any difference in cost is likely to be in the order of under £20,000
Lead time (from point of Authority decision to start of integration testing):	5.5 months	5.5 months

** £100,000 of this cost is already being incurred by the Transmission Company in initiating feasibility assessment work for P220 and P219, and the Transmission Company continues to be incurring initiation costs at this time.*

The Transmission Company's costs and lead times would include the development and testing of amendments to several of the Transmission Company's operational systems, as well as required documentation changes. These Transmission Company changes would be conducted in parallel with the BMRA's own system development and testing. Note that the lead time shown in Table 14 was clarified from that provided in the Transmission Company's original impact assessment response, following further discussion with BSCCo regarding the required testing activities for P220.

The required Transmission Company lead time would be identical regardless of whether the Proposed Modification or Alternative Modification was approved, or whether P220 was implemented at the same time as P219. However, were P220 to be implemented in parallel with P219, this would deliver a saving of 22% (£200,000) off the combined costs to the Transmission Company of the two modifications. Further detail regarding these cost savings can be found in Section 6.9.3.

Note that the above costs and lead times are based on the assumption that an additional requirement for the Transmission Company to provide a real-time 'data incomplete' flag for the outturn by fuel type data would not be included in the P220 solution. The Transmission Company confirmed that the inclusion of a requirement for such a flag would increase its implementation costs from those shown above by £500,000 (80%) and its required lead time by 6 months. Specific views on the appropriateness of including the flag are sought as part of this consultation, and further information can be found in Section 6.5.

The Transmission Company advised that providing full historic data for P220 prior to the Implementation Date (for publication on that date) would be an onerous requirement with associated cost implications. The Transmission Company suggested that either that all historic data should only be completed after the Implementation Date as it became available, or that (as a compromise) only full historic values for the standing data such as Reference Temperatures would be made available at the point of deployment.

A copy of the full Transmission Company impact assessment is provided as Attachment 1 to this consultation document.

6.9.2.5 Explanation of participant impacts, costs and lead times

Six responses were received to the Party and Party Agent impact assessment of P220. Of these, three respondents indicated that the introduction of the new BMRS data items would have an impact on their systems.

Two of these three respondents stated that the impact and any resulting cost would be minor. The other respondent advised that its costs would be in the region of £30,000. The implementation lead times requested by impacted respondents ranged from one to three months from the point of Authority decision, and were therefore well below the lead times required by the BMRA and the Transmission Company.

Copies of the full participant impact assessment responses are provided as Attachment 2 to this consultation document.

6.9.3 Modification Group's further discussions and recommended Implementation Date

6.9.3.1 Participant impact assessments

The Group noted the responses received to the impact assessment of P220. An attendee expressed surprise that P220 would have an impact on participants. BSCCo advised that it was likely that those participants who loaded BMRS data into their own systems (either through website 'data scraping' or TIBCO) would need to amend these systems in order to use the P220 data. The attendee requested this be clarified with the respondents who had noted a system impact. The attendee also suggested that such changes to participant systems were optional, and should therefore not be counted as a P220 cost.

Following the Group's meeting on 17 December 2007, the respondent who had indicated a cost of £30,000 to amend their systems clarified to BSCCo that they would need to 'warehouse' the new P220 data as it was received through TIBCO feeds, and then adapt it into a format in which it could be used within their own systems. This respondent noted that, whilst they would not be required to do this by the Code, they would be unable to use the new P220 data unless these activities were undertaken. The respondent therefore believed that it was appropriate to record the costs of their system changes as part of the P220 implementation costs.

6.9.3.2 Approach to historic data

The Group agreed that providing full historic data on the P220 Implementation Date would be an onerous requirement on the Transmission Company, and would give rise to practical difficulties as the systems which the Transmission Company would use to accumulate this historic data would not go live until the Implementation Date. BSCCo queried whether there might also be issues of retrospectivity in publishing historic data for days prior to the Implementation Date, since the Code ability to publish the data would not come into force until that day.

The Group agreed that there would be little additional benefit in publishing full historic data on the Implementation Date, and agreed that such data would therefore only be published gradually after implementation as it became available.

6.9.3.3 Lead time and Implementation Date

The Group noted that the lead time required by the Transmission Company to develop its system changes from the point of an Authority decision to the start of integration testing was 5.5 months. The Group noted that the lead time required by the BMRA for the same activities varied according to the solution and release, but agreed to use the maximum BMRA lead time of 5.5 months for simplicity in its consideration of Implementation Dates (given that this was no longer than the Transmission Company lead time, and since the BMRA's and Transmission Company's system development would be undertaken in parallel).

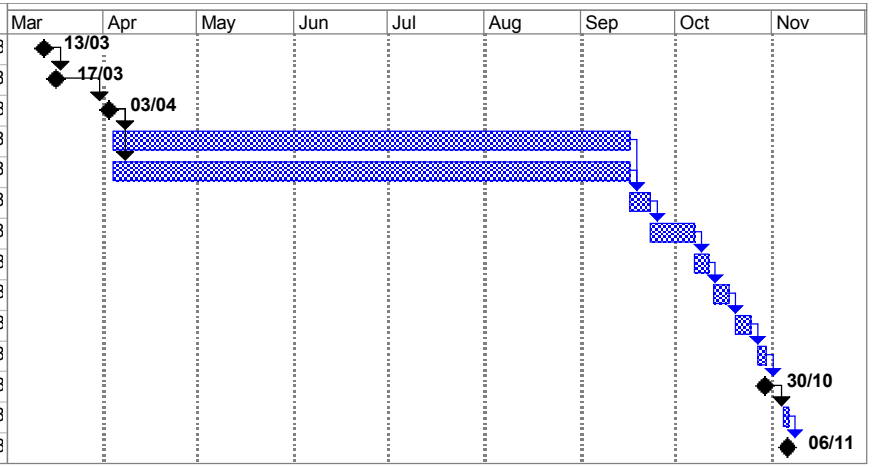
BSCCo clarified that these lead times would include 'isolated' testing by the BMRA and the Transmission Company of their own system changes. However, the Group noted that, once this isolated testing had been completed, further integration testing managed by BSCCo would be required in order to confirm whether the two sets of systems were able to communicate correctly with each other (i.e. whether the new P220 data items could be transmitted from the Transmission Company's systems, successfully received by the BMRA systems, and correctly displayed on the BMRS). Following this integration testing, BSCCo clarified that it would use a small sample of participants to test the new TIBCO functionality. The Group noted BSCCo's advice that the P220 implementation period needed to allow sufficient lead time to fix and retest any bugs which might be found during the integration and/or participant testing.

The gantt chart in Figure 17 on the following page shows the critical path for a November 2008 implementation. The Group noted BSCCo's advice that the crucial date in this plan is 16 September 2008, when BSCCo would need to begin integration testing. The Group noted that the proposed implementation period for a November 2008 deployment would allow only a short period of time (around 11-12 Working Days) for the Authority to make its decision on P220. However, the Group noted BSCCo's advice that it had compressed its integration/participant testing timescales into a shorter period than it would usually allow – and that it would not be possible to reduce these further, as doing so would not allow adequate time to address any bugs which might arise from the testing.

The Group noted that the required lead time would be identical regardless of whether the Proposed Modification or Alternative Modification was approved, or whether P220 was implemented in parallel with P219.

Figure 17 – Critical path for November 2008 implementation

ID	Task Name	Duration	Start	Finish
1	P220 draft Modification Report presented to Panel	0 days	Thu 13/03/08	Thu 13/03/08
2	P220 final Modification Report submitted to Authority	0 days	Mon 17/03/08	Mon 17/03/08
3	Cut-off date for Authority decision	0 days	Thu 03/04/08	Thu 03/04/08
4	Transmission Company system development and isolated testing	117 days	Fri 04/04/08	Mon 15/09/08
5	BMRA system development and isolated testing	117 days	Fri 04/04/08	Mon 15/09/08
6	Integration testing between Transmission Company and BMRA systems - managed by BSCCo	5 days	Tue 16/09/08	Mon 22/09/08
7	Contingency for developing fixes to any bugs identified during integration testing	10 days	Tue 23/09/08	Mon 06/10/08
8	Contingency for re-testing of bug fixes	4 days	Tue 07/10/08	Fri 10/10/08
9	Participant testing (e.g. of new BMRS display / TIBCO messages) - managed by BSCCo	5 days	Mon 13/10/08	Fri 17/10/08
10	Contingency for addressing any issues raised by participant testing	5 days	Mon 20/10/08	Fri 24/10/08
11	Contingency for re-testing by participants	3 days	Mon 27/10/08	Wed 29/10/08
12	Final date for go-live decision by Project Board	0 days	Thu 30/10/08	Thu 30/10/08
13	Deployment	2 days	Tue 04/11/08	Wed 05/11/08
14	Implementation Date	0 days	Thu 06/11/08	Thu 06/11/08



Taking into account the required lead times, the Group therefore provisionally agreed to recommend the following Implementation Dates for both the P220 Proposed Modification and Alternative Modification:

- 6 November 2008 if an Authority decision is received on or before 3 April 2008; or
- 25 June 2009 if an Authority decision is received after 3 April 2008 but on or before 23 October 2008.

The Group agreed that it was not necessary to compress the testing activities for a June 2009 implementation in the same way as for November 2008, since the Authority would have much longer to make a decision for implementation in the June 2009 Release. The Group noted that a slightly longer implementation lead time had therefore been allowed for June 2009.

6.9.3.4 Interaction with P219

The Group noted that the following Implementation Dates are being recommended separately by the P219 Modification Group for P219:

- 6 November 2008 if an Authority decision is received on or before 29 May 2008; or
- 25 June 2009 if an Authority decision is received after 29 May 2008 but on or before 15 January 2009.

The Group noted that the longer Authority decision-making timescales for P219 reflected its shorter implementation lead time, and gave the potential for the modifications to be implemented in different releases should the Authority consider this to be appropriate (or should the Authority be unable to make its P220 decision by 3 April 2008).

However, BSCCo advised that, if the Authority wished to achieve the 20% cost savings of implementing P219 and P220 in parallel, it would need to make its decisions on both modifications by the P220 cut-off dates.

The Group noted that if either the P219 or P220 decisions were received after 3 April 2008 for the November 2008 Release, or after 23 October 2008 for the June 2009 Release, these cost savings would be lost. The Group agreed that, in practice, the Authority would therefore need to make simultaneous decisions on both modifications if it wished to achieve the savings. The interaction between the proposed P219 and P220 Implementation Dates is shown in more detail in Table 15 below.

Table 15 – Interaction between P219 and P220 Implementation Dates

Authority decision cut-off date for:	P220 in isolation	P219 in isolation	P220 and P219 in parallel (to achieve cost savings)
November 2008 implementation:	3 April 2008	29 May 2008	3 April 2008
June 2009 implementation:	23 October 2008	15 January 2009	23 October 2008

The Group noted that, to achieve the cost savings, simultaneous decisions on both modifications should be issued either:

- By 3 April 2008; or
- After 29 May 2008 but before 23 October 2008,

in order to ensure that both P219 and P220 were implemented in parallel in the same release.

6.9.3.5 Interaction with 'real-time' flag option

The Group noted that its recommended Implementation Dates had been agreed on the basis that an additional requirement for a real-time 'data incomplete' flag for the generation outturn by fuel type data would not be included in the P220 solution. The Group noted that including this additional requirement would mean that a November 2008 Implementation Date was no longer feasible.

Specific views on the appropriateness of including the flag are sought as part of this consultation, and further information can be found in Section 6.5 of this consultation document.

7 ASSESSMENT OF MODIFICATION AGAINST APPLICABLE BSC OBJECTIVES

This section outlines the initial views of the Group regarding the merits of P220 against the Applicable BSC Objectives.

A majority of members believed that neither the Proposed Modification nor the Alternative Modification would better facilitate the achievement of the Applicable BSC Objectives when compared with the existing Code baseline. **The initial MAJORITY view of the Group is therefore that both the Proposed Modification and the Alternative Modification SHOULD NOT be made.**

The arguments of members in respect of the Alternative Modification were identical to those for the Proposed Modification, though on balance the Group unanimously believed that the Alternative Modification would better facilitate the achievement of the Applicable BSC Objectives when compared with the Proposed Modification.

A summary of the Group's views can be found in Table 16 below, whilst further details on its views in relation to the specific Applicable BSC Objectives are provided in Sections 7.1 and 7.2.

Table 16 – Summary of Group's views of P220 against Applicable BSC Objectives

View as to whether P220 better facilitates:	Yes	No	Neutral
Applicable BSC Objective (a):	-	-	**Unanimous**
Applicable BSC Objective (b):	**Majority**	-	Minority
Applicable BSC Objective (c):	**Majority**	-	Minority
Applicable BSC Objective (d):	-	**Split**	**Split**
Proposed Modification overall compared with existing baseline:	Minority	**Majority**	Minority
Alternative Modification compared with Proposed Modification:	**Unanimous**	-	-
Alternative Modification compared with existing baseline:	Minority	**Majority**	Minority

7.1 Proposed Modification

Applicable BSC Objective (a) – The efficient discharge by the Transmission Company of the obligations imposed upon it by the Transmission Licence

The **UNANIMOUS** initial view of the Group was that the Proposed Modification would have a **NEUTRAL** effect on the achievement of Applicable BSC Objective (a), since members believed that P220 would have no impact on the ability of the Transmission Company to discharge its licence obligations.

Applicable BSC Objective (b) – The efficient, economic and co-ordinated operation of the GB Transmission System

The initial **MAJORITY** view of the Group was that the Proposed Modification **WOULD** better facilitate the achievement of Applicable BSC Objective (b).

The Proposer argued that, by providing improved market information, P220 could lead to better self-balancing by participants – thereby reducing the amount of residual balancing required from the Transmission Company and leading to more efficient market operation. In support of this view, the Proposer cited the proposed outturn and reference temperature data as an example. The Proposer considered that the provision of this data would lead to an improved market understanding of the link between temperature and demand.

However, other members believed that the benefit under Objective (b) would be small, or that it represented only a consequential positive impact as a result of participants having better information. One of these members commented that they could not see how to quantify the benefits of improved market data, but that as a general principle they believed that Objective (b) would be better facilitated. Another member argued that it was difficult to know how the new P220 data would specifically benefit the market until participants began using it and the effect on their behaviour could be seen.

The initial **MINORITY** view of one member was that the Proposed Modification would have a **NEUTRAL** impact on the achievement of Applicable BSC Objective (b). This member stated that they had yet to be convinced of the benefits of P220 in respect of the operation of the Transmission System, since no quantified arguments had been put forward.

Applicable BSC Objective (c) – Promoting effective competition in the generation and supply of electricity, and (so far as consistent therewith) promoting such competition in the sale and purchase of electricity

The initial **MAJORITY** view of the Group was that the Proposed Modification **WOULD** better facilitate the achievement of Applicable BSC Objective (c).

The Proposer argued that P220 would increase competition in the market by increasing information transparency and the availability of improved market information to all participants. The Proposer also considered that, by providing key operational data in a single location (the BMRS Summary Page), P220 would especially benefit smaller participants or newer entrants to the market who would not have the resources or experience to derive the data from other existing sources. Another member suggested that P220 could benefit smaller demand-side players, energy consultancies, and areas of the industry (e.g. those operating in management, finance or risk) who might use the BMRS as a general information tool to help them gain an understanding of general market trends and conditions.

An attendee agreed with this view, and argued that P220 would reduce the effort and time spent by participants in trying to locate data. This attendee believed that the primary beneficiaries of the new Summary Page data would be consumers, who would not have the knowledge of the BMRS needed to derive key operational market data through other means. The attendee considered that the new P220 data would allow consumers to take a more informed view of the market, and thereby of the potential for savings through changing Suppliers and tariffs. The attendee suggested that P220 therefore had the potential to deliver total savings to consumers which were in the region of millions of pounds.

However, other members believed that the benefit under Objective (c) would be small, or that it represented only a consequential positive impact as a result of participants having better information. One of these members believed that there would be a minor accessibility gain as a result of P220.

The initial **MINORITY** view of one member was that the Proposed Modification would have a **NEUTRAL** impact on the achievement of Applicable BSC Objective (c). This member stated that they had yet to be convinced of the benefits of P220 to competition, since no detailed or quantified arguments had been put forward. They commented that, whilst the additional P220 data might be a 'nice to have', they struggled to see how it would alter market behaviour.

In support of this view, the member argued that they did not believe the proposed temperature or daily energy volume data would add any advantage over and above the data that is already available in the market – and that, though the proposed wind forecast data might be useful, they did not believe that participants would base commercial decisions on this data due to the likely inaccuracy of the forecast. The member considered that the most potentially useful data item under P220 would be the proposed generation outturn by fuel type, which they believed could be used to give a competitive advantage. However, they believed that this data would only be beneficial to the larger market players. On balance, this member remained unpersuaded of the potential benefits of P220 to competition.

Applicable BSC Objective (d) – Promoting efficiency in the implementation and administration of the balancing and settlement arrangements

The Group was **SPLIT** over whether the Proposed Modification would better facilitate the achievement of Applicable BSC Objective (d), with equal numbers of members believing either that P220 would have a neutral or a negative impact on the efficiency of the balancing and settlement arrangements.

Those members who believed that P220 would have a negative impact on Objective (d) argued that the implementation costs would decrease efficiency.

Summary

Overall, a **MAJORITY** of members believed that any benefits under Applicable BSC Objectives (b) and (c) would be limited and would be outweighed by a negative impact on Applicable BSC Objective (d). On cost-efficiency grounds, the initial majority view of the Group was therefore that the Proposed Modification **SHOULD NOT** be made.

These members commented that it was difficult to assess whether the benefits under Objectives (b) and (c) would justify the implementation costs under (d), since no quantified arguments had been expressed in relation to the benefits. These Group members agreed that respondents to the Assessment Procedure consultation should be invited to provide detailed (and, where possible, quantified) arguments in respect of the perceived benefits, such that it could consider these when making its final recommendation at its meeting on 23 January 2008. The Group also agreed to invite the DSWG to respond to the consultation, since it noted that this group had believed there to be benefits from the proposed data.

The overall view of a **MINORITY** of members (including the Proposer) was that the Proposed Modification **WOULD** better facilitate the achievement of Applicable BSC Objectives (b) and (c) (these members were neutral on Objective (d)). These members considered that the benefits of data transparency did not lend themselves easily to a simple cost-benefit analysis – believing that such benefits (e.g. the promotion of market understanding and the interaction of smaller demand-side players) were by their nature difficult to quantify. One of these members considered that it would not be possible for participants to properly value the benefits of the P220 data until it was made available to the market. This member commented that, whilst asking for examples of specific benefits would add to the case for implementation, the absence of such examples could not be construed as representing the absence of an overall benefit. The member suggested that even small information benefits (in terms of man hours saved and better understanding) were likely to outweigh the one-off cost of implementation when applied to large numbers of participants throughout the industry.

Finally, the **MINORITY** view of one member was that the Proposed Modification would have a **NEUTRAL** effect on the Applicable BSC Objectives overall. This member stated that they remained unconvinced of the benefits to market efficiency or competition of the proposed P220 data.

7.2 Alternative Modification

7.2.1 Alternative Modification compared with Proposed Modification

The initial **UNANIMOUS** view of the Group was that the Alternative Modification **WOULD** better facilitate the achievement of the Applicable BSC Objectives when compared with the Proposed Modification, due to its inclusion of additional data items. The Group considered that the implementation costs of the Alternative were not significantly higher than those of the Proposed Modification.

7.2.2 Alternative Modification compared with existing Code baseline

Despite believing that the Alternative Modification was preferable to the Proposed Modification, the initial view of a **MAJORITY** of members was that the Alternative Modification **WOULD NOT** better facilitate the achievement of the Applicable BSC Objectives when compared with the existing Code baseline. These members believed that any benefits under Objectives (b) and (c) would be limited, and would be outweighed by a negative impact on Objective (d). The arguments expressed by these members in support of this view were identical to those set out for the Proposed Modification in Section 7.1 above.

The initial view of a **MINORITY** of members (including the Proposer) was that the Alternative Modification **WOULD** better facilitate the achievement of Applicable BSC Objectives (b) and (c) when compared with the existing Code baseline (these members were neutral on Objective (d)). The arguments expressed by these members in support of this view were identical to those set out for the Proposed Modification in Section 7.1 above.

Finally, the initial **MINORITY** view of one member was that the Alternative Modification would have a **NEUTRAL** effect on the Applicable BSC Objectives overall. As for the Proposed Modification, this member stated that they remained unconvinced of the benefits to market efficiency or competition of the proposed P220 data. In addition to the arguments expressed by this member in respect of the Proposed Modification, they believed that (of the additional data included in the Alternative Modification) the daily energy volume trend data was a 'nice to have' which would not alter market behaviour. The member noted that Transmission System Frequency is already available on the BMRS as a 'framed link' to the graph on National Grid's own website, and was unconvinced that the replacement of this with a full BMRS graph would therefore increase competition.

8 TERMS USED IN THIS DOCUMENT

Other acronyms and defined terms take the meanings defined in Section X of the Code.

Acronym/Term	Definition
Coal Plant	A Power Station which uses coal as the primary source of fuel.
CP	Change Proposal.
Combined Cycle Gas Turbine (CCGT)	Has the meaning as defined in the Grid Code (Reference 6).
CUSC	Connection and Use of System Code.
DSWG	Demand Side Working Group.
External Interconnection	Has the meaning as defined in the Grid Code.
Frequency	Has the meaning as defined in the Grid Code.
Gas Turbine Unit	Has the meaning as defined in the Grid Code.

Acronym/Term	Definition
High Reference Temperature	The daily average UK temperature which was exceeded on 12% of days during a 30 year historic period.
ISG	Imbalance Settlement Group.
IWA	Initial Written Assessment.
Low Reference Temperature	The daily average UK temperature which was exceeded on 88% of days during a 30 year historic period.
Non-BM STOR Instructed Volume	Volume of Short Term Operating Reserve instructed outside of the Balancing Mechanism in order to increase generation or reduce demand.
Non Pumped Storage Hydro Plant	A Power Station which uses water to generate electricity but does not include Pumped Storage Plant.
Normal Reference Temperature	The daily average UK temperature which was exceeded on 50% of days during a 30 year historic period.
Nuclear Plant	A Power Station which uses nuclear energy to generate electricity.
Oil Plant	A Power Station which uses oil as the primary source of fuel.
Open Cycle Gas Turbine Plant (OCGT)	Plant consisting of one or more Gas Turbine Units which are not part of a Combined Cycle Gas Turbine Module.
P219	Modification Proposal P219 'Consistency between forecast and outturn demand'.
Power Station	Has the meaning as defined in the Grid Code.
Pumped Storage Plant	Has the meaning as defined in the Grid Code.
Registered Capacity	Has the meaning as defined in the Grid Code.
Short Term Operating Reserve (STOR)	A balancing service procured by the Transmission Company and which has the meaning as defined in National Grid's Procurement Guidelines (Reference 7).
SSMG	Settlement Standing Modification Group.
SYS	National Grid's Seven Year Statement.
Total Metered Capacity	The average MW value of the Registered Capacity of all Power Park Modules metered by the Transmission Company.
Transmission System Demand	Has the meaning given to the term GB Transmission System Demand in the Grid Code.
Transmission System Energy	The integral with respect to time of Transmission System Demand (Proposed Modification) or Initial National Demand Out Turn (Alternative Modification).
UNC	Uniform Network Code.

9 DOCUMENT CONTROL

9.1 Authorities

Version	Date	Author	Reviewer	Reason for Review
0.1	11/12/07	Kathryn Coffin	Richard Clarke, Justin Andrews, John Lucas	For review
0.2	20/12/07	Kathryn Coffin	P220 Modification Group, Richard Clarke, John Lucas	For review
1.0	07/01/08	P220 Modification Group		For industry consultation

9.2 References

Ref.	Document Title	Owner	Issue Date	Version
1	Assessment Consultation for Modification Proposal P219 'Consistency between forecast and outturn demand' http://www.elexon.co.uk/changeimplementation/ModificationProcess/ModificationDocumentation/modProposalView.aspx?propID=239	BSCCo	27/11/07	1.0
2	Electricity Market Information: Consultation on Potential Developments http://www.nationalgrid.com/uk/Electricity/Data/electricitymarketinfo/	National Grid	01/08/07	N/A
3	Electricity Daily Summary Page Strawman development http://www.nationalgrid.com/uk/Electricity/Data/electricitymarketinfo/	National Grid	N/A	N/A
4	National Grid Electricity Market Information Consultation: Conclusions Report http://www.nationalgrid.com/uk/Electricity/Data/electricitymarketinfo/	National Grid	15/10/07	N/A
5	Initial Written Assessment for Modification Proposal P220 'Provision of new data items for improving market information' http://www.elexon.co.uk/changeimplementation/ModificationProcess/ModificationDocumentation/modProposalView.aspx?propID=240	BSCCo	02/11/07	1.0
6	Grid Code: Glossary and Definitions http://www.nationalgrid.com/NR/rdonlyres/5DFDEFEB-DDBC-4381-8DE5-4B2087AC6AC8/18438/GD_i3r21_entire.pdf	National Grid	20/12/06	Issue 3
7	Procurement Guidelines http://www.nationalgrid.com/NR/rdonlyres/2643DEB7-377B-41F3-93C7-3AB85E729507/16053/PGsv80effectivefrom01apr07final.pdf	National Grid	01/04/07	8.0

APPENDIX 1: COPY OF APPLICABLE BSC OBJECTIVES

For reference the Applicable BSC Objectives, as contained in the Transmission Licence, are:

(a) The efficient discharge by the licensee [i.e. the Transmission Company] of the obligations imposed upon it by this licence [i.e. the Transmission Licence];

(b) The efficient, economic and co-ordinated operation of the GB transmission system;

(c) Promoting effective competition in the generation and supply of electricity, and (so far as consistent therewith) promoting such competition in the sale and purchase of electricity;

(d) Promoting efficiency in the implementation and administration of the balancing and settlement arrangements.

APPENDIX 2: PROCESS FOLLOWED

Copies of all documents referred to in the table below can be found on the BSC Website at: ELEXON - Modification Proposal P220.

Date	Event
26/10/07	Modification Proposal raised by National Grid
09/11/07	IWA presented to the Panel
13/11/07	First Assessment Procedure Modification Group meeting held
20/11/07	Second Assessment Procedure Modification Group meeting held
28/11/07	Requirements Specification issued for BSC Agent impact assessment
29/11/07	Request for Party/Party Agent impact assessments request issued
29/11/07	Request for Transmission Company analysis issued
29/11/07	Request for BSCCo impact assessment issued
12/12/07	BSC Agent impact assessment response returned
12/12/07	Party/Party Agent impact assessment responses returned
12/12/07	BSCCo impact assessment returned
13/12/07	Transmission Company analysis returned
17/12/07	Third Assessment Procedure Modification Group meeting held
07/01/08	Assessment Procedure consultation issued

ESTIMATED COSTS OF PROGRESSING MODIFICATION PROPOSAL[22]

Meeting Cost	£1,750 (based on sharing one meeting with P219)
Legal/Expert Cost	Nil
Impact Assessment Cost	£12,000
ELEXON Resource	56 man days £16,170

These costs are unchanged from those provided in the P220 IWA.

MODIFICATION GROUP MEMBERSHIP

Member	Organisation	13/11	20/11	17/12
Richard Clarke	ELEXON (Chair)	Y	N	Y
Justin Andrews	ELEXON (Alternate Chair)	N	Y	N
Kathryn Coffin	ELEXON (Lead Analyst)	Y	Y	Y
Shafqat Ali	National Grid (Proposer's Representative)	Y	Y	Y
Bill Reed	RWE npower	Y	Y	Y
Ben Sheehy	E.ON	Part	N	Y
Stephen Carter	EDF Energy	Y	Y	Y
Laura Jeffs	Centrica	Y	Y	Y
Gary Henderson	Scottish Power	N	☎	Y
Garth Graham	SSE	Y	N	N

Attendee	Organisation	13/11	20/11	17/12
John Lucas	ELEXON (Technical Support)	Y	Y	N
Jamie Anavi	ELEXON (Technical Support)	Y	N	Y
Paul Auckland	National Grid	Y	Y	Y
Chris Rogers	National Grid	Y	N	N
Richard Price	National Grid	N	Y	Y
Andy Howden	LogicaCMG	Y	Y	Y

[22] Clarification of the meanings of the cost terms in this appendix can be found on the BSC Website at the following link: http://www.elexon.co.uk/documents/Change_and_Implementation/Modifications_Process_-_Related_Documents/Clarification_of_Costs_in_Modification_Procedure_Reports.pdf.

Attendee	Organisation	13/11	20/11	17/12
Mark Gribble	LogicaCMG	Y	N	Y
Andrew Wallace	Ofgem	Y	Part	Y
Irene Babs-Jonah	Ofgem	Y	N	N
Paul Savage*	energywatch	Y	Part	N
Eddie Proffit*	Major Energy Users Council	Part	N	Y

**Member of Demand Side Working Group*

MODIFICATION GROUP TERMS OF REFERENCE

Modification Proposal P220 will be considered by the P220 Modification Group (which will be formed from the Settlement Standing Modification Group, with an invitation for attendance also extended to the Demand Side Working Group), in accordance with the SSMG's Terms of Reference and this Appendix.

P220 – Provision of new data items for improving market information

Assessment Procedure

1.1 The Modification Group will carry out an Assessment Procedure in respect of Modification Proposal P220 in accordance with Section F2.6 of the Code.

1.2 The Modification Group will produce an Assessment Report for consideration at the BSC Panel Meeting on 14 February 2008.

1.3 The Modification Group shall consider and/or include in the Assessment Report as appropriate:

- The appropriate submission format and times for each proposed new data item, and whether the data would be compiled by the Transmission Company or BSCCo (to be established prior to requesting any BMRA impact assessment);
- The appropriate format – e.g. graphic or tabular – in which each proposed new data item would be published on the BMRS (both for the proposed summary page and for any individual supporting web pages or TIBCO messages which may be required);
- The central implementation costs of P220 to the Transmission Company, BMRA and BSCCo – including any potential cost savings which might arise from a parallel implementation with Modification Proposal P219 (to be established via impact assessment prior to issuing the industry consultation);
- Any Alternative Modification which (in the majority view of the Modification Group) would better facilitate the achievement of the Applicable BSC Objectives in relation to the issue or defect identified in the Modification Proposal, when compared with the Proposed Modification – including consideration of:
    - An Alternative Modification which would allow the BSC Panel to agree future changes to BMRS data without requiring a Modification Proposal;
- Recommended Implementation Date(s) for P220, taking into account any potential interaction with (and cost implications resulting from) Project Isis; and

- Recommended legal drafting for P220 - having reviewed the suggested drafting included in the Modification Proposal for Section Q and Annex X-2 of the Code, and having developed any additional/amended drafting which may be required (e.g. for Section V or Annex X-1).

APPENDIX 3: RESULTS OF IMPACT ASSESSMENT

An impact assessment has been undertaken by BSCCo in respect of all BSC systems, documentation and processes. The following have been identified as being impacted by P220.

a) Impact on BSC Systems and processes

BSC System / process	Potential impact of P220
BMRS	Changes will be required to the system interfaces that transmit data from the Transmission Company to the BMRA, in order to send and receive the new data items proposed by P220. Changes will also be required to the BMRS display and underlying BMRA systems in order to make the new data items available to participants via the website and (for High Grade Service users) the TIBCO messaging service.

Further details regarding the BMRA impacts, costs and lead times can be found in Section 6.9.2 of this consultation document.

b) Impact on BSC Agent contractual arrangements

None anticipated, since the provisions of new data items would be covered by the terms of the existing BMRA contract.

c) Impact on Transmission Company

Changes to Transmission Company systems and processes would be required in order that the new data items could be developed and submitted to the BMRA. Changes would also be required to National Grid's 'BMRS & SAA Interface Specification', which sets out the format in which data is provided by the Transmission Company to the BMRA.[23] The new file formats for P220 would need to be agreed between the Transmission Company and the BMRA.

A more detailed summary of the costs and lead time of P220 to the Transmission Company can be found in Section 6.9.2. A full copy of the Transmission Company's impact assessment is attached as a separate document, Attachment 1.

d) Impact on BSC Parties and Party Agents

Parties and non-Parties who currently use the BMRS High Grade Service would be able to receive the new P220 data items via the BMRS website and/or TIBCO messaging. Parties and non-Parties using the BMRS Low Grade Service would be able to access the new data via the public website. Parties who feed BMRS data into their own systems may therefore need to amend these systems to take account of the new P220 data items.

[23] The BMRA & SAA Interface Specification is not a BSC Configurable Item, but is owned by the Transmission Company and is published on the National Grid website at: http://www.nationalgrid.com/uk/Electricity/Codes/gridcode/associateddocs/.

Further details regarding the costs and lead times of P220 to participants can be found in Section 6.9.2. Copies of the individual Party and Party Agent impact assessment responses are attached as a separate document, Attachment 2.

e) Impact on BSCCo

Area of business	Potential impact of P220
Change implementation management	BSCCo would be required to manage the implementation of P220, including: • Overseeing the BMRA's System development/testing and documentation changes; • Overseeing integration testing of the BMRA and Transmission Company's amended systems; • Conducting participant testing of the new BMRS functionality (e.g. the new TIBCO messages); and • Updating the Code and impacted Code Subsidiary Documents/Configurable Items.
BM Unit registration	There would be no ongoing operational impact on BSCCo's working procedures, as the identification of the fuel type of each generator BM Unit would be undertaken by the Transmission Company prior to sending the new outturn generation data to the BMRA.

Details of the costs and lead time of P220 for BSCCo can be found in Section 6.9.2.

f) Impact on Code

Code Section	Potential impact of P220
Section Q 'Balancing Mechanism Activities'	New provisions would be required to describe the new data items submitted by the Transmission Company to the BMRA, and the timings of these submissions.
Section V 'Reporting', Annex V-1 'Reports': Table 1 'BMRS'.	The new data items would need to be added to this table, which lists all data published on the BMRS along with the frequency and format of this data.
Annex X-1 'General Glossary'	New defined terms may need to be added to this section.
Annex X-2 'Technical Glossary'	The new data items would need to be defined in this section.

g) Impact on Code Subsidiary Documents

Document	Potential impact of P220
BMRA Service Description	Changes to the BMRA Service Description would be required to reflect the BMRA's receipt and publication of new data items under P220.

There would be no impact on any BSCPs, as the identification of the fuel type of each generator BM Unit would be undertaken by the Transmission Company prior to sending the new outturn generation data to the BMRA.

h) Impact on Core Industry Documents and other documents

P220 would have no impact on any Core Industry Documents – since it seeks to use terms which are either already defined in the BSC or the Grid Code, or which would be newly-defined in the BSC only.

i) Impact on other Configurable Items

Document	Potential impact of P220
Logica Interface Definition and Design (IDD) Part 1	Changes to these documents would be required to reflect the BMRA's receipt and publication of new data items under P220.
Logica IDD Part 2	
BMRA Design Specification	
BMRA Manual System Specification	
BMRA Operating Services Manual	
BMRA System Specification	
BMRA User Requirements Specification (URS)	

j) Impact on BSCCo Memorandum and Articles of Association

No impact.

k) Impact on governance and regulatory framework

No impact.

APPENDIX 4: ANALYSIS OF OPERATIONAL METERING RELIABILITY

In response to a request from the Group (see Section 6.5), National Grid has undertaken analysis into the reliability of generation operational metering. A note containing the findings of this analysis is attached as a separate document, Attachment 3.