

## P220 TRANSMISSION COMPANY ANALYSIS AND IMPACT ASSESSMENT – RESPONSE PRO-FORMA

In accordance with paragraph F2.8 of the Code, please respond to the following questions concerning P220 (including the rationale for each response):

Q	Question	Response
1	Please outline any impact of the Proposed Modification and the Alternative Modification on the ability of the Transmission Company to discharge its obligations efficiently under the Transmission Licence and on its ability to operate an efficient, economical and co-ordinated transmission system.	The Transmission does not envisage any direct impact on the ability of the Transmission Company to discharge its obligations efficiently under the Transmission Licence.
2	Please outline the impact of the Proposed Modification and the Alternative Modification on the computer systems and processes of the Transmission Company, including details of any changes to such systems and processes that would be required as a result of the implementation of the Proposed Modification and the Alternative Modification.	<p>P220 seeks to provide a variety of additional information to the market. P220 will affect several Critical operational National Grid systems used to ensure security of supply for our customers: Balancing Mechanism (BM), Demand Forecasting (DEAF) and, other internal systems including Commercial Monitor (CM), Trading Support and the Integrated Energy Management System (IEMS).</p> <p>BM in particular is the cornerstone of National Grid's involvement in the Balancing Mechanism market. Changes are not made lightly to the BM systems and a significant degree of analysis, design, careful implementation and regression testing are undertaken.</p> <p>The P220 alternative relative to the proposed modification does not have a significantly different impact on our systems Any difference is likely to be of the order of under £20k</p> <p>The P220 modification and its alternative require the following additional data types:</p> <ul style="list-style-type: none"> <li>• Instantaneous System Generation by Fuel Type</li> <li>• Half hourly Generation by Fuel Type</li> <li>• System Frequency</li> <li>• Actual and Average Temperatures</li> <li>• Daily Energy Volumes</li> <li>• Wind Generation forecasts</li> </ul>

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		<ul style="list-style-type: none"> <li>• Non-BM instructed Usage</li> </ul> <p>Each of these affects the BM system. Wind Generation Forecasts, Daily Energy volumes and Temperatures will also affect DEAF.</p> <p>To accommodate P220 BM will be required to:</p> <ul style="list-style-type: none"> <li>• Amend the BM design documentation.</li> <li>• Amend the BMRA-BM interface documentation to reflect the changes to the interface.</li> <li>• Modify the BM application(s).</li> <li>• Construct a fixed-format ASCII flat file of a format to be defined in the BMRA-BM Interface Specification document. Data may be provided in separate files or as additional items within existing files – these details have not yet been decided.</li> <li>• Transmit these files at set intervals to the BMRA over the existing BM – BMRA circuits.</li> <li>• Undertake unit, system, integration and User Acceptance testing.</li> </ul> <p>To accommodate P220 DEAF will be required to:</p> <ul style="list-style-type: none"> <li>• Amend the DEAF design documentation.</li> <li>• Create additional views within the DEAF database</li> <li>• Create database links to the BM system.</li> <li>• Undertake unit, system, integration and User Acceptance testing.</li> </ul> <p>If quality flags are required on the fuel type data the IEMS system will also require modification.</p> <p>It is assumed that Central Services will make the additional TSD values available to the market through revised Tibco messages. Commercial Monitor (CM) receives INDO data through Tibco messages. CM will be required to:</p> <ul style="list-style-type: none"> <li>• Amend the CM design documentation to reflect this change.</li> <li>• Modify the Tibco software for the modified message structure</li> </ul>

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		<p><b>Response</b></p> <ul style="list-style-type: none"> <li>• Modify the CM database to include tables/columns/constraints for the TSD values.</li> <li>• Undertake unit, system, integration and User Acceptance testing.</li> </ul> <p>Our energy trading advice system (Trading Support) is based, in part, on the CM system. Trading Support will be required to:</p> <ul style="list-style-type: none"> <li>• Amend the Trading Support design documentation to reflect this change.</li> <li>• Modify the Trading Support database to amend views/tables/columns/constraints for the TSD values.</li> <li>• Modify Trading Support applications which utilise this data.</li> <li>• Undertake unit, system, integration and User Acceptance testing.</li> </ul> <p>Some elements of the data required for P220 including the “tramlines” for temperatures and potential “tramlines” for daily energy volumes will be calculated by National Grid and provided to Elexon in excel spreadsheets. The format of this will be agreed between Elexon and National Grid. We will also change our existing business processes to ensure that data such as wind forecasts is available in the DEAF system. We also expect, at least initially and to a lesser extent on an ongoing basis to provide some support to users of the new data being provided to help them understand it. Our intention is to make this resource available from within our current operational teams but we do not anticipate a significant enduring requirement.</p>
3	<p>Please provide an estimate of the development, capital and operating costs (broken down in reasonable detail) which the Transmission Company anticipates that it would incur in, and as a result of, implementing the Proposed Modification and the Alternative Modification.</p>	<p>National Grid’s Balancing Mechanism (BM), Demand Forecasting (DEAF), Commercial Monitor (CM) and Trading Support systems will require modifications to accommodate P220.</p> <p>The following is an estimate of the development, capital and operating costs for the P220 modifications the National Grid systems:</p> <p><b>Initiation Stage = £100k</b>, part of this cost has already been incurred by National Grid in undertaking feasibility assessment work for</p>

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		<p>improvements to information provision. We have initiated this work because of strong feedback from our customers and other stakeholders in order to be able to estimate the impact of the change more completely, given many of the changes are to our core operational security of supply critical systems and to enable us to move to a delivery phase more smoothly.</p> <p>Our high level activities in Delivering this project include: -</p> <ul style="list-style-type: none"> <li>• Project Management</li> <li>• Analysis/Design</li> <li>• Build the Solution</li> <li>• Test the solution</li> <li>• System Testing</li> <li>• Regression Testing</li> <li>• User Acceptance Testing</li> </ul> <p>We have estimated the costs for changes as follows: -</p> <p>Total for BM changes = £270K                      Total for DEAF changes = £40k                      Total for CM/Trading Support changes = £70k                      Risk Margin = £120k                      Initiation Phase = £100k  <b>Total Estimated Cost for P220 = £600k</b></p> <p><b>Total Estimated Time From Mod Approval = 6 months</b></p> <p>It is assumed that developments will take place on existing applications and infrastructure. Further, it is assumed that the existing infrastructure and support arrangements can support this incremental increase in functionality without incurring additional capital or operating costs.</p>

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		<p>It is assumed that developments will take place on existing applications and infrastructure. Further, it is assumed that the existing infrastructure and support arrangements can support this incremental increase in functionality without incurring additional capital or operating costs. We have also assumed that the costs above reflect placing P220 functionality into a planned release of our key Balancing Mechanism system, which takes place approximately every 6 months and for this reason the costs above do not include any element of general Balancing Mechanism release costs. We expect that a planned release will take place at a time consistent with our ambition to deliver P220 by Winter 2008.</p> <p>National Grid has already incurred a portion of the £100k initiation costs for both P219 and P220 and continues to be incurring initiation costs at this time.</p>
4	Please provide details of any consequential changes to Core Industry Documents and/or the System Operator Transmission Owner Code that would be required as a result of the implementation of the Proposed Modification and the Alternative Modification.	The Proposed Modification and the Alternative Modification either utilise existing terms that are already defined in other Codes, or define new terms within these Modifications. Consequently, the Transmission Company does not envisage any consequential changes to Core Industry Documents and/or the System Operator Transmission Owner Code.
5	Please provide details of the lead time required by the Transmission Company (from the point of an Authority decision to approve P220) to make the changes identified under Questions 2-4 above.	We have commenced work on the feasibility stage of a project to identify how P220 and P219 could be delivered. This feasibility work is not as yet completed. Our working assumptions are that we currently expect the Elexon process to run to the plan published and therefore an Authority decision could be made during March 2008 on P220, and as at March 2008 we will have already received a decision on P219. We are clear in making these assumptions that we cannot determine the timeline for this part of the governance process. Based on these assumptions, we would then initiate the delivery phase of the project we are currently specifying and this delivery phase would last 6 months, concluding during September 2008.

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6	Please provide an estimate of any cost savings which may result from implementing P220 in parallel with P219.	<p>A development cost saving of £200K from the total summated costs for P219 and P220 as estimated independently can be made provided that the delivery date for both modifications is synchronised.</p> <p>We also estimate the combined delivery timescales for P219 and P220 to be 6 months. The individual delivery timescales should not be added together.</p>
7	Please provide details of any additional costs and lead time which would be incurred by compiling and submitting all of the proposed P220 historic data to the BMRA for publication on the Implementation Date, compared with this data only being derived by the BMRA after the Implementation Date as it gradually becomes available.	<p>The focus of our modifications is to provide operational insights into the electricity market and activities of National Grid, such that the focus of much of the new data is over short timescales of hours, or at most two days. For this reason we are unsure as to the benefits of providing extensive historic data.</p> <p>Should historic data prior to go-live be a key requirement for users, then we have identified a number of ways this could be done: -</p> <ol style="list-style-type: none"> <li>1. Capture such data as is available through the testing phase we expect to do with Elexon and work with them to make this available in the live system. This will mean some additional costs for either us or Elexon in capturing and retaining data sent through testing and then migrating this to our respective live systems. Without concluding in consultation with Elexon how this could best be done we can only provide a broad estimate (£50k) assuming we capture the flat files generated while testing and retransmit these post go-live. Users should expect that some data gaps may be encountered through this approach, and also appreciate that we would not port any incorrect data over from the test system to the live system.</li> <li>2. Manually provide some data in spreadsheets where we have it reasonably at hand, from off line sources for some items as follows: <ul style="list-style-type: none"> <li>• Outturn temperatures;</li> </ul> </li> </ol>

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		<ul style="list-style-type: none"> <li>• Wind demand forecasts (assuming we provide ONLY the latest forecast made);</li> <li>• System frequency;</li> <li>• Daily energy volumes.</li> </ul> <p>We expect option 2 will have minimal cost implications for National Grid in providing spreadsheets of data to Elexon as we will provide data in standard excel format files.</p> <p>3. We believe that providing "full" history prior to go live in an economic and efficient manner will be best delivered by the IS systems changes we are considering. This effectively means commencing the "go-active" of the new data feeds prior to "go-live" and then waiting to "go-live" until our customers and other stakeholders consider that sufficient history is available to make go-live beneficial. We are unsure as to merits of this approach as we believe that once we and Elexon have built and tested the systems and processes needed to deliver P220 that go-live should happen as reasonably promptly as possible so customers may realise potential benefits.</p>

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8	<p>Please provide details of any additional costs and lead time which would be incurred by the inclusion of an additional requirement (over and above the solution set out in Sections 2-4 of the P220 Requirements Specification) to identify to the BMRA in 'real time' whether any of the submitted 'instantaneous' outturn generation by fuel type data is incomplete.</p>	<p>We have further investigated the quality of the operational metering feeds that we will use to provide the data for P220 for generation by fuel type since the discussions in the modification group. We expect that the base data quality will be reasonable and the data will reflect the output of generation by fuel type. Users of the data will of course need to develop their level of comfort with the data through experience and use this to inform the level of reliance they chose to place on it.</p> <p>Our main operational metering system is the IEMS which contains metering data at a detailed level of granularity and some data flags used by National Grid. We are unsure as to the usefulness of our flags to other users and would need to work with them to develop what flags and associated rules would deliver value for them. We are concerned that quality flagging a generation by fuel type number made up by the aggregation of many metered outputs has limited practical value itself because it may not be possible for users to know if the flagged issue is with one, two or more meters. IEMS is our singly most critical operational system and we have sought to manage this modification's impact upon it. Bringing data flags into P220 mean our complex IEMS system is brought into scope. Cost and time impacts on P220 delivery of around £500k and a further 6 months to develop the solution once user requirements have been established will be incurred. This time is in addition to the 6 months currently estimated for P220 giving a 12 month development time in total.</p> <p>We believe that progressing P220 without data quality flags is the best option because of the cost and time impact of providing data flags. Assuming P220 is delivered; the market will then have some experience of the data quality provided and then will be in an improved position to assess the value of this functionality which could be looked at as a future development.</p>

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9	Please provide details of the feasibility, and any difference in costs and lead times, of the two trend data options for daily energy volumes under the Alternative Modification (as set out in Section 4.4 of the P220 Requirements Specification).	<p>National Grid has looked into the feasibility of providing the daily energy information. Providing TSD-based data for the reference conditions would require corrections to be applied to the ND-based data for interconnector demand energy and pumping and station demands. Interconnector demand is a highly volatile variable which is driven by market prices and generally unrelated to weather conditions, or GB energy consumption.</p> <p>For this reason, we do not consider that it is meaningful to produce a TSD-based set of reference daily energy curves for normal, cold and warm conditions as we cannot identify how to do this other than take some kind of long run average for particularly interconnectors. A reasonable weather-based interconnector energy correction is not possible.</p> <p>However, it is feasible to provide ND-based reference energy volume data based on historical data for the reference normal, cold and warm conditions, and should our customers and other stakeholders wish to have this reference data then an ND basis is what we propose is used on the graph for the summary page along with displaying actual energy volumes on an ND basis.</p> <p>At this stage our costs and lead times are largely unaffected by opting for TSD with no normal reference data or alternatively ND with reference curves. We are assuming that the energy volumes reference data, as for temperature reference curves will be provided to Elexon in excel spreadsheet format. If reference energy lines are needed then these would need to be reflected in the modification drafting.</p>
10	Please provide the Transmission Company's view as to whether there would be any confidentiality issues in using Grid Code/SYS data to categorise BM Unit fuel types (and, in particular, that there would be no conflict with the provisions of Sections 57 and 58 of the Energy Act in using this data for	<p>Sections 57 and 58 of the Energy Act are not relevant. Following clarity from Elexon, these references are to the Electricity Act 1989.</p> <p>National Grid does not believe that there are any confidentiality issues</p>

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	purposes other than which it was originally intended).	<p>regarding generation data by fuel type, as explained below.</p> <p>Section 57 of the Electricity Act 1989 has been repealed by the Utilities Act 2000 (section 108, schedule 8). A more relevant section on disclosure of information is Section 105 of the Utilities Act 2000. Subsection 3(c) of this section states that restrictions on disclosure of information do not apply if "it is made by a licence holder and is required to be made by a condition of his licence". Condition C3 paragraph 10a) of National Grid' Electricity Transmission Licence states that the licensee shall comply with the BSC. If the proposed data provisions in P220 become part of the BSC, National Grid will be obliged to comply with these provisions, as required by its licence and as stated in the Utilities Act 2000.</p>
11 <del>12</del>	Please provide the Transmission Company's view as to the most appropriate definitions of 'Non Pumped Storage Hydro Plant' and 'Nuclear Plant' to be used for the purposes of the P220 outturn by fuel type data.	<p>The Transmission Company proposes the following definitions for the 'Non Pumped Storage Hydro Plant':</p> <p>Non Pumped Hydro Storage Plant is "a Power Station which uses water to generate electricity but does not include Pumped Storage Plant".</p> <p>With regard to the definition of Nuclear Plant, the Transmission Company believes that the definition proposed by the Transmission Company in the Proposed Modification is appropriate. This definition states that nuclear Plant is "a Power Station which uses nuclear energy to generate electricity".</p>
12	Please outline any potential issues relating to the security of supply arising from the Proposed Modification and the Alternative Modification.	<p>The Transmission Company does not envisage any issues relating to the security of supply arising from the Proposed Modification or the Alternative Modification.</p> <p>However, during the development and implementation phase, there could be security of supply implications as IS changes would be necessary to the Transmission Company's core operational security of</p>

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		supply critical systems e.g. the real-time BM system. Given the critical nature of the BM system and its impact on the security of supply, the changes to the BM system would need to be robust and would require sufficient time to carry out a significant degree of analysis, design, careful implementation and regression testing. Consequently, the changes to this system are only made when absolutely necessary and even then any changes are only made during set releases in the year. The Transmission Company would ensure that the changes to the BM system are made in such a way that these do not compromise the security of supply.
13	Please outline the views and rationale of the Transmission Company as to whether the Proposed Modification would better facilitate the achievement of the Applicable BSC Objectives.	<p>Provision of more consistent and transparent information should improve self-balancing by the market participants which should, in turn, improve the efficient, economic and co-ordinated operation of the GB transmission system (Applicable BSC Objective (b)).</p> <p>Increase in information transparency and availability of improved market information to all participants should promote effective competition in the generation and supply of electricity (Applicable BSC Objective (c)).</p>
14	Please outline the views and rationale of the Transmission Company as to whether the Alternative Modification 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.	The Transmission Company believes that the provision of additional data under the Alternative Modification would better facilitate the Applicable BSC objectives (b) and (c) outlined in item 13 above, compared with the Proposed Modification.
15	Any other comments on the Proposed Modification and Alternative Modification?	No

Please send your response by **5pm** on **Wednesday 12 December 2007** to [modifications@elexon.co.uk](mailto:modifications@elexon.co.uk). Any queries regarding the analysis should be addressed to Kathryn Coffin on 020 7380 4030 or email address [kathryn.coffin@elexon.co.uk](mailto:kathryn.coffin@elexon.co.uk).