Prepared by: P224 Modification Group

ASSESSMENT CONSULTATION for Modification Proposal P224 'Reactive Power Flows Associated with Exemptable Generating Plant'

For attention of: BSC Parties and other interested parties
Responses due: **12.00pm** on **Thursday 17 July**
(to: **modification.consultations@elexon.co.uk**)

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This document has been distributed in accordance with Section F2.1.10 of the Balancing and Settlement Code.[1]

Proposed Modification P224 seeks to revise the Code to allow Reactive Power to be allocated to the Party responsible for the associated flow of Active Power (either Import or Export). The aim is to resolve anomalies in the allocation of Reactive Power flows where a Supplier and Exemptable Generating Plant (e.g. embedded wind powered generators) share a site. Presently the Supplier responsible for the Active Import of such a site is held responsible for some Reactive Power flows caused by operation of the Exemptable Generating Plant, because the Code assigns the Reactive Power to the Import MSID.

This issue does not directly affect Settlement but can materially impact Distributors' ability to implement appropriate Distribution Use of System (DUoS) charging. P224 would allow Reactive Power to be more appropriately allocated for shared sites, and permit Distributors to improve DUoS charging.

PURPOSE OF CONSULTATION

This consultation seeks respondents' views regarding P224 and, in particular:

- Whether the Proposed Modification would better facilitate the achievement of the Applicable BSC Objectives[2] when compared to the current Code baseline;
- Whether respondents agree that the solution should include exemption criteria (limited by maximum materiality thresholds) to provide for potential new technologies and future developments, for example in support of small scale shared Import/Export;
- The provisional Implementation Date and the feasibility of earlier Implementation;
- Whether there are any alternative solutions that the Modification Group has not identified and that should be considered; and
- Whether there are any substantive issues not considered by the Modification Group which should be brought to the Group's attention for inclusion in its assessment of P224.

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

Please send responses, entitled 'P224 Assessment Procedure Consultation', by **12.00pm** on **Thursday 17 July** to the following e-mail address: modification.consultations@elexon.co.uk.

Please address any queries on the consultation to Dean Riddell (0207 380 4366, dean.riddell@elexon.co.uk)

[1] The current version of the Code can be found at http://www.elexon.co.uk/bscrelateddocs/BSC/default.aspx.

[2] A copy of the Applicable BSC Objectives is provided in Appendix 1.

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 P224.

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

Parties		Party Agents		BSC Agents		Other Agents	
Distribution System Operators	☒	Data Aggregators	☐	SAA	☐	Supplier Meter Registration Agent	☐
Generators	☒	Data Collectors	☒	FAA	☐	Unmetered Supplies Operator	☐
Interconnectors	☐	Meter Administrators	☐	BMRA	☐	Data Transfer Service Provider	☐
Licence Exemptable Generators	☒	Meter Operator Agents	☒	ECVAA	☐		
Non-Physical Traders	☐	ECVNA	☐	CDCA	☐		
Suppliers	☒	MVRNA	☐	TAA	☐		
Transmission Company	☐			CRA	☐		
				SVAA	☐		
				Teleswitch Agent	☐		
				BSC Auditor	☐		
				Profile Administrator	☐		
				Certification Agent	☐		

Sections of the BSC	
A	☐
B	☐
C	☐
D	☐
E	☐
F	☐
G	☐
H	☐
I	☐
J	☐
K	☒
L	☐
M	☐
N	☐
O	☐
P	☐
Q	☐
R	☐
S	☐
T	☐
U	☐
V	☐
W	☐
X	☒

Code Subsidiary Documents		Core Industry Documents		BSCCo		BSC Panel/Panel Committees		Other	
BSC Procedures	☒	Ancillary Services Agreement	☐	Internal Working Procedures	☐	Working Practices	☐	Market Index Data Provider	☐
Codes of Practice	☒	British Grid Systems Agreement	☐					Market Index Definition Statement	☐
BSC Service Descriptions	☐	Data Transfer Services Agreement	☐					System Operator-Transmission Owner Code	☐
Party Service Lines	☐	Distribution Code	☐					Transmission Licence	☐
Data Catalogues	☐	Distribution Connection and Use of System Agreement	☐						
Communication Requirements Documents	☐	Grid Code	☐						
Reporting Catalogue	☐	Master Registration Agreement	☒						
		Supplemental Agreements	☐						
		Use of Interconnector Agreement	☐						

1 P224 SUMMARY

P224 solution

P224 will amend the Code so that Reactive Power is allocated to the Party responsible for the associated flow of Active Power. The Metering Systems of Half Hourly settled shared Import/Export sites will need to be capable of allocating Reactive Power to the Import or Export MSID on the basis of this methodology, though this requirement will not apply retrospectively. Configuration of Meter Registers in accordance with the P224 solution will allow the Reactive Power to be assigned to the appropriate Party.

LDSOs would not be obliged to make changes to their DUoS billing arrangements under P224, but it is anticipated that they would amend their charging systems to ensure that the appropriate Party receives accurate charges relating to Reactive Power.

Arguments against the BSC Objectives

The Group established the following benefits against the Applicable BSC Objectives arising from P224:

- P224 allows for appropriate cost signals to be sent to participants regarding Reactive Power which will tend to ultimately facilitate efficient operation of the Transmission System - Objective (b)[3];
- P224 will promote competition between participants and Distributors by allowing more accurate and appropriate DUoS charges relating to Reactive Power - Objective (c)[4]; and
- P224 will rectify the inappropriate allocation of Reactive Power and associated DUoS charges and thereby remove a barrier to participation in the market - Objective (c)[4].

Identified Costs

The Group noted that the implementation costs for the Proposed Modification were estimated to be circa £71,000 (for changes required to Party Agent systems and Code amendments needed to give effect to P224).

Materiality

The Group determined an estimate of the current materiality associated with the issue of inappropriate allocation of Reactive Power to be:

- Export Parties may be undercharged by £1.7 - 3.3M per annum; and
- Import Parties may be overcharged by £113.5 - 219.7M per annum.

These estimates compare modelled current and P224 charging in relation to shared Import/Export sites, and assumes all charges are levied (i.e. LDSOs do not 'shield' Parties from Reactive Power related charges).

The Group highlighted that the amount of distributed generation could be assumed to increase eightfold by 2020, in line with targets for electricity generation using renewable sources.

Cost-Benefit

The Group estimated that the costs incurred by full progression of the P224 solution (i.e. including anticipated but non-mandatory changes to LDSO and Supplier charging systems) for Parties would be:

- Industry Implementation cost - **£335,000**; and
- Estimated potential ***increase*** of cost to Generators - **£1M** per annum (i.e. a year on year increase, spread over all Generators associated with materially affected shared sites) until 2020

[3] Applicable BSC Objective (b) - efficient, economic and co-ordinated operation of the GB transmission system
[4] 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 Group estimated that the costs saved by full progression of the P224 solution for Parties would be:

- Avoidance of single LDSO implementation of alternative Reactive Power solution - **£200,000**;
- Increased cost to LDSOs of workarounds - **£200,000** per annum; and

  (NB – based on IA response information and assuming all workarounds already in place would remain operational); and
- Avoidance of an estimated potential ***increase*** in the materiality of the P224 issue to Import Parties of **£75M** per annum (i.e. a year on year increase spread over all Import Parties associated with materially affected shared sites) until 2020 – assuming all charges are applied and LDSOs do not 'shield' Parties from Reactive Power related charges

A description of the P224 solution is provided in Section 2. Further information regarding the Group's initial discussions of the areas set out in the P224 Terms of Reference is contained in Section 3. See Section for more information on the cost-benefit assessment.

A summary of the Group's initial views regarding the merits of the Proposed Modification can be found in Section 3.9. A copy of the Group's full Terms of Reference can be found in Appendix 2, and a summary of the responses to the first Assessment Procedure consultation/impact assessment in Appendix 3.

2 DESCRIPTION OF MODIFICATION

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

For a full description of the original Modification Proposal as submitted by E.ON UK plc ('the Proposer'), please refer to the P224 Initial Written Assessment (IWA).

2.1 Proposed Modification

Code Changes

The Proposed Modification solution is that changes are made to the rules in the BSC which govern the allocation of volumes of Reactive Power. The problem arises when two Parties share the Metering System of an Import/Export site, and therefore different Parties are responsible for Import and Export, though complications can also arise due to allocation to the inappropriate MSID even where only one Party is associated with an Import/Export site. The aim is that responsibility for Reactive Power flows is allocated more appropriately, by associating it with the flow of Active Power occurring at the same time. This will be accomplished by configuring the Meter to allocate Reactive Power to one of four registers, on a moment by moment basis, depending on both the direction of the Active Power flow and whether the Reactive Power is conventionally labelled 'Import' or 'Export' (i.e. whether it is leading or lagging). This is a change from current arrangements, which require only two Reactive Power registers. These changes in the BSC (and associated metering arrangements) will necessitate consequential changes to metering Codes of Practice (CoPs) and other Code Subsidiary Documents (CSDs).

No Retrospection

It should be noted that the solution proposed is not retrospective and is intended to align with the approach applied to the metering CoPs, i.e. that Metering Systems have to comply with the requirements (i.e. the version of the relevant CoP) in place when the site is first registered and metering installed. Therefore existing shared Import/Export sites will not be required to comply with the P224 rules until such time as they undergo voluntary or mandatory re-registration. Mandatory re-registration could be triggered, for instance, by a material change to the Metering System (i.e. replacement of a significant part of the Metering System, e.g. current transformers).

A change of Party associated with the Import and/or Export MSID of a Metering System **would not** on its own trigger re-registration, and therefore *would not necessitate compliance with the P224 provisions*.

Availability of P224 compliant Meters

It is the understanding of the Group that a number of currently available Meters are capable of compliance with the P224 provisions, or can be made compliant with only minor changes to the Meter software to adjust how the Meter carries out allocation of Reactive Power to it registers. These registers are subsequently linked to the Import or Export MSID via the configuration of the Meter Technical Details (MTD). For any new registrations or re-registrations at shared Import/Export sites Parties will need to ensure that the site complies with P224, where applicable. The action required will depend on the capabilities of the Settlement metering in place at the time.

Configuration of Meter Registers

Currently four Measurement Quantity IDs are used for Meter Registers: Active Export (AE), Active Import (AI), Reactive Export (RE) and Reactive Import (RI). For shared Import/Export sites, the BSC prescribes that AE volumes are allocated to the Party associated with the Export of the site ('the Export Party') and AI volumes are allocated to the Party associated with the site's Import ('the Import Party').

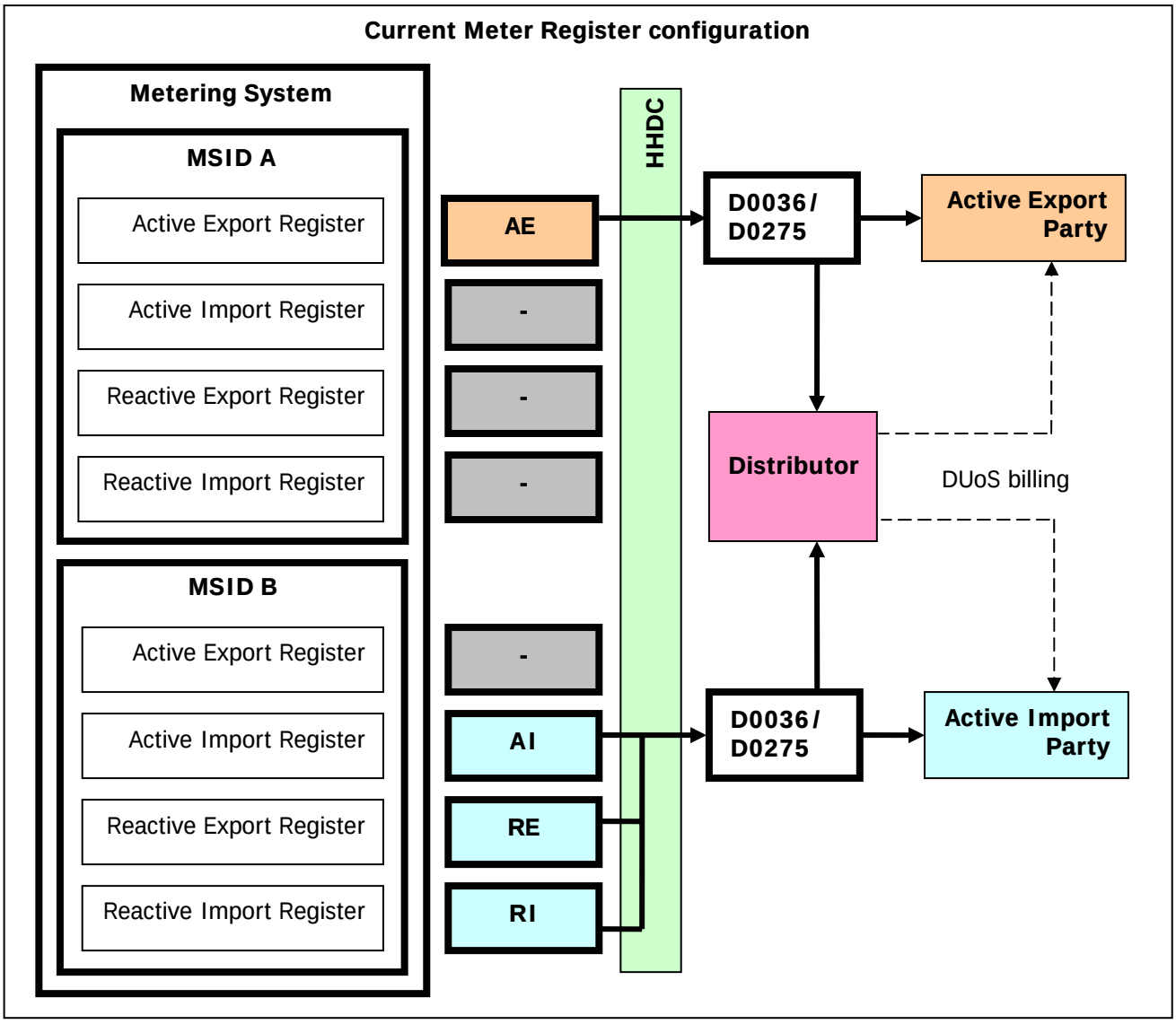

Figure 1: Current Meter Register configuration

With regard to Reactive Power, the current BSC baseline obliges the Import Party to be allocated the RI volumes for shared Import/Export sites, and permits either the Import Party or the Export Party to be allocated the RE volumes for such sites. In practice both the RE and RI volumes are normally allocated to the Import Party (irrespective of whether those Reactive Power flows are associated with Active Import or Active Export). These configurations of the Meter Registers are translated into the structure of the data flows from HHDCs (or as the case may be the CDCA) which report RE and RI volumes to the Party and the relevant Licensed Distribution System Operator (LDSO), as shown in figure 1.

Under the P224 Proposed solution the Meter Register Measurement Quantity IDs would not be changed. The Group considered arguments that an additional 4 Measurement Quantities should be introduced to reduce the risk of errors occurring in initial set up. Any amendment of the Meter Register Measurement Quantity IDs would significantly increase the impact of implementation of the P224 solution on a number of Parties. The Group concluded that it was not necessary to change or supplement the existing Meter Register Measurement Quantity IDs in order for the P224 solution to function.

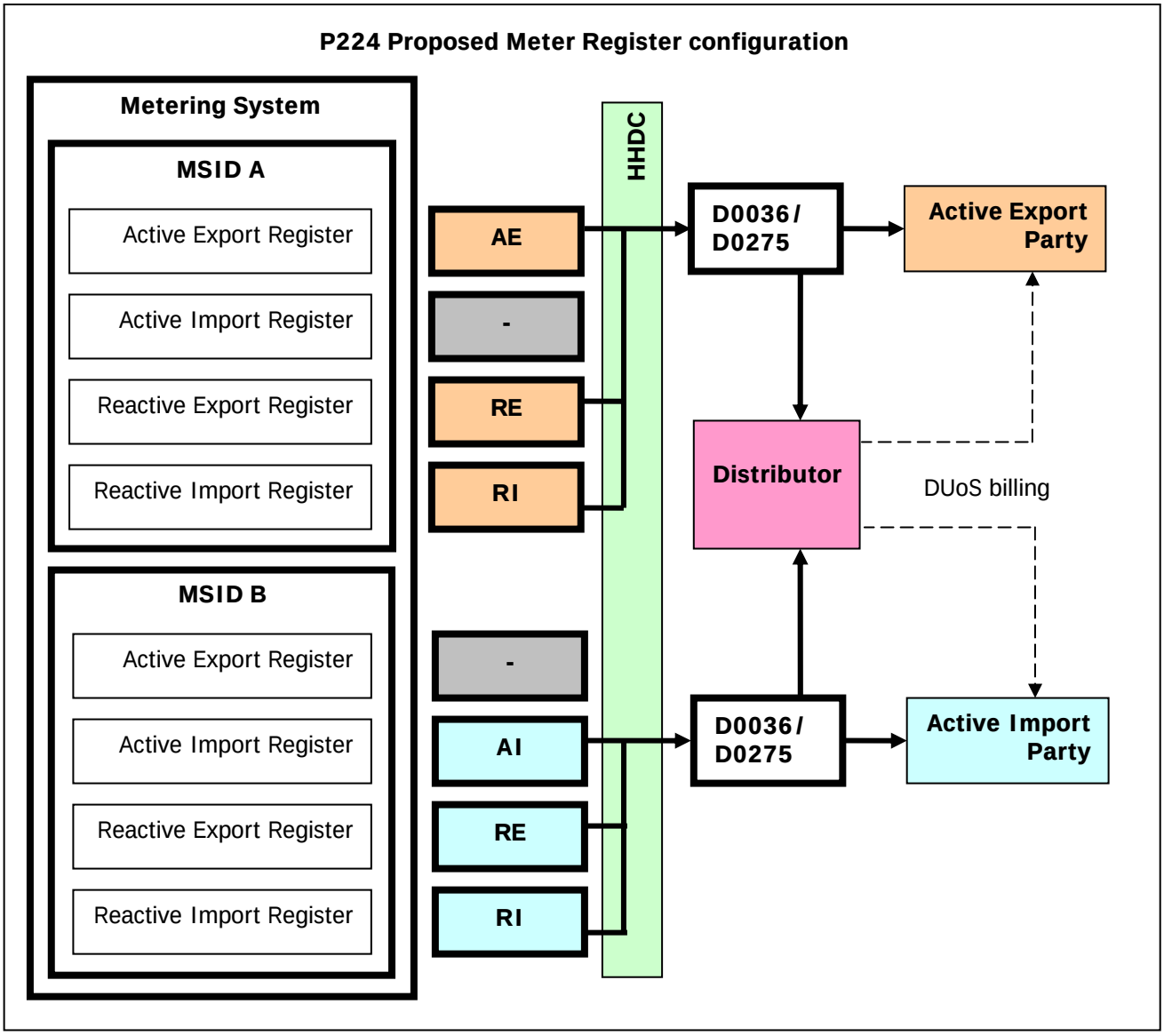

Figure 2 P224 Proposed Meter Register configuration

The proposed configuration of Meter Registers under P224 is illustrated in figure 2. Note that under P224 the existing Measurement Quantities will be used as follows:

- Measurement Quantity 'RI' (Reactive Import) on the Export MSID for leading power flows associated with Active Export;

- Measurement Quantity 'RE' (Reactive Export) on the Export MSID for lagging power flows associated with Active Export;
- Measurement Quantity 'RI' (Reactive Import) on the Import MSID for lagging power flows associated with Active Import;
- Measurement Quantity 'RE' (Reactive Export) on the Import MSID for leading power flows associated with Active Import.

If registers are configured as intended and Meter software is appropriately amended then the Metering Systems of shared Import/Export sites can allocate Reactive Power to the appropriate MSID as determined by the allocation methodology of the P224 solution. Guidance would be added to Annex C of the MRA Data Transfer Catalogue regarding the new register configuration (see section 3.3).

Exemption from P224

The reasoning behind the following criteria, and the related discussions of the Group, are detailed in section 3.5 below. The provisions of the P224 solution apply to shared Import/Export sites that are settled on a Half Hourly basis unless such a site meets both of the following criteria:

- Its use of Half Hourly metering is not mandatory (i.e. its Import is below the threshold for mandatory Half Hourly metering, currently 100kW, and its Export is below the microgeneration limit, currently set at 30kW); **and**
- There is specific provision for exception from the P224 provisions in the applicable metering CoP.

It is not proposed that such an exception provision be included in any of the existing Half Hourly CoPs. This option is intended for future CoPs that may be created for smart metering (or other similar applications).

The applicability of a CoP to a site is determined by the characteristics of that site, not by the Meter installed. This means even if the Meter installed on a site can measure Reactive Power, it is not required to do so unless the CoP applicable to the site requires that it must.

In light of arguments put forward by respondents to the P224 industry Impact Assessment, the Group agreed that P224 should include a materiality threshold and criteria to determine whether the P224 provisions should apply. The Group were primarily concerned with ensuring the solution did not create a potential barrier to competition by preventing the utilisation of future technology that may provide for small scale generation and Import, but not have any material issue relating to Reactive power allocation. The criteria detailed above are believed to accomplish this, as they allow the CoPs to be revised through the BSC Change Proposal (CP) process to accommodate any such technology, while maintaining an obligation on mandatory Half Hourly metered sites which can't be changed by a CP.

Respondents to the P224 consultation are invited to comment as to whether they agree with the chosen criteria or believe that no criteria or threshold should be applied. Alternatively, respondents may wish to suggest for consideration other criteria not yet discussed by the Group.

3 AREAS RAISED BY THE TERMS OF REFERENCE

This section outlines the conclusions of the Modification Group regarding the areas set out in the P224 Terms of Reference.

3.1 Implications for parties affected by the issues caused by Reactive Power flows associated with Exemptable Generating Plant

The Group considered the implications of the P224 Proposed Modification for Parties affected by the issues around Reactive Power raised by P224. This includes Licence Exempt Generators (and Parties associated

with them), Generators, Suppliers and LDSOs. The Group also considered the implications for Reactive Power charging.

The Group conducted analysis of a sample of shared Import/Export sites currently experiencing issues related to inappropriate allocation of Reactive Power (see Attachments 2 and 3). The analysis estimated the materiality of the issues for the Import and Export Parties associated with the affected sites. This was done by comparing the allocation of the Reactive Power and Capacity Charges under current arrangements with those under the P224 solution.

The analysis indicates that the Import Parties associated with the sites would experience a significant reduction in the DUoS charges they incur collectively for excess Reactive Power and for excess Distribution Capacity requirements. The analysis indicates that Import Parties could potentially benefit by a reduction in charges in the order of 90% (assuming these have been levied by the Distributor). Associated Export Parties could, as a whole, experience the reverse, with an increase in their Reactive Power and Excess Capacity charges, though this would be smaller in comparison with the magnitude of the decrease in the Import Parties' collective charges. See section 3.7 on cost-benefit for details.

This apparent discrepancy is due to the way Reactive Power charges are calculated and the different Import and Export maximum capacities for these sites. Though the way LDSOs calculate DUoS charges varies, they generally set Reactive Power charges on the basis of the power factor of the Active Power flow. A unity Power Factor represents zero Reactive Power, and is ideal. LDSOs usually impose charges for Power Factors lower than 0.95 (leading or lagging), though this varies between LDSOs. In terms of volumes of energy this translates to charging for volumes of Reactive Energy in excess of 33% of the volume of Active Energy. Since the Active Import of shared Import/Export sites is often much less than the Export (and even if the Active Import is zero the present allocation method still assigns all Reactive Power to the Import MSID) the Reactive Energy of a shared site is much more likely to exceed the 33% threshold in relation to the site's Active Import than its Active Export. Under P224, the Reactive Power would be allocated to either the Import or Export MSID depending on whether Active Import or Active Export is occurring. Because this means the Reactive Power is often allocated to the Export MSID, the 33% threshold is less likely to be exceeded, and hence the total amount of 'chargeable' Reactive Power for a shared Import/Export site is likely to be reduced under P224.

A similar effect exists in relation to DUoS charges for use of excess Distribution System capacity. Shared Import/Export sites have agreed maximum capacities for Import and Export of power, the magnitude of which are based on the expected capacity requirement due to planned generation activities (Export) or anticipated supply activities (Import). Shared Import/Export sites often have a maximum Export capacity which is significantly greater than the maximum Import capacity. Currently, Reactive Power which the Import Party does not cause and has no control over is allocated to the Import MSID. This contributes to the Distribution Capacity regarded as used by the Import Party, and can contribute to the Import Party exceeding its agreed Maximum Capacity and thereby incurring Excess Capacity DUoS charges.

3.2 System impacts

The Group considered the possibility of impacts on the systems of participants, Party Agents and BSC Agents due to P224. The Group also considered the potential impact of implementation of P224 on metering and data flows. Respondents to the P224 industry IA identified system impacts with a range of materiality.

LDSOs

LDSOs identified significant impacts on DUoS billing systems following implementation of the P224 Proposed solution. However, the Group considered that the majority, if not all, of the impacts on DUoS billing were due to changes that LDSOs (and Suppliers) would voluntarily make to improve their charging systems to benefit from P224 (especially in relation to no longer having to maintain workarounds), rather than changes that were necessary for implementation of the Proposed solution. The Group considered that the timescales associated with these impacts did not need to be taken into account when planning the implementation

timetable for P224. However, the costs should be taken into account when considering the cost-benefit of the solution, as the impacts would be incurred in realising the benefit of P224, i.e. improved DUoS charging in relation to Reactive Power. The costs of LDSO system changes ranged from £20 - £100,000 depending on the current structure of each LDSO's billing system.

Party Agents

There were less significant impacts on HHDCs and MOAs, with process and system changes forming part of impacts which amounted in total to an estimated at £5,000 cost per participant with timescales ranging from 2 – 6 months.

One HHDC respondent identified a greater impact due to requirements to upgrade and test its data management system if the P224 solution is introduced, with an estimated cost of £60,000 and a timescale of 12 - 18 months. It is understood that this impact relates to the particular structure of the respondent's systems, and the changes that are therefore necessary.

BSC Agent (CDCA)

The Group considered that there was a potential impact on the CDCA, due to the possibility of the Export of a generator being registered in CVA while its Import is registered in SVA. However the CDCA service provider did not identify any impact. The service provider noted that the proposed new Meter Register configuration implies that both the reactive import and export channels can be registered against the export channel of an MSID and against the import channel of a different MSID in CVA. The current CDCA system will allow this configuration if CVA registration details are received showing this configuration.

3.3 Impacts on any other codes or documentation (e.g. BSCPs, CoPs);

BSC documentation

ELEXON's internal Impact Assessment identified impacts on various BSCPs and CoPs; these are detailed in Appendix 3 below.

MRA products

It was identified that P224 would necessitate changes to Annex C of the MRA Data Transfer Catalogue regarding the specific scenarios and examples for sending a D0268 for Import and Export MPANs. The Group agreed this would be necessary and noted that this update would assist MOAs and HHDCs to understand and implement the operation of the P224 solution with regard to the proposed new configuration of Meter Registers.

3.4 Impact on CVA metering arrangements

There is only a minor potential impact on CVA metering. In the scenario noted previously, with a generator's Export registered in CVA and its Import in SVA, the Metering System would need to be compliant with the P224 provisions (i.e. unless it is an existing shared Import/Export site that has not been re-registered). The Group did not envisage any particular issues in relation to this requirement.

3.5 Implications and implementation of proposed materiality threshold

The P224 Proposed solution includes criteria for exception from the provisions proposed, as described in section 2. The Group decided on these criteria after initially considering that no materiality threshold or other criteria was necessary, and then considered several potential alternatives for P224 exception criteria. This section outlines the Group's considerations and describes the alternative criteria the Group considered and the reasons for their selection.

Initial Group Discussions and IA Responses

A materiality threshold of 100kW was included as part of the P224 Modification Proposal. The P224 Group initially determined that a threshold was not necessary, on the basis that the provisions of the P224 solution would apply only to shared Import/Export sites settled on a Half Hourly basis. Therefore the Group was comfortable that the P224 solution should encompass all shared Import/Export sites settled on a Half Hourly basis, regardless of whether Half Hourly Settlement was mandatory for the site (i.e. due to its associated Import/Export) or was due to the Party (or Parties) associated with the site voluntarily electing to engage in Half Hourly Settlement. The Group's view was that Parties choosing to undergo Half Hourly Settlement must derive some advantage from doing so, that it was appropriate that they should be subject to the same rules and obligations as other Parties settling on a Half Hourly basis, and that all such requirements could be taken into consideration when making a business decision whether to register for Half Hourly Settlement.

A majority of respondents to the P224 industry IA agreed with this view. Of 13 respondents, eight agreed that there should be no threshold, three were neutral or did not respond to the question and two disagreed and believed there should be some sort of threshold. Respondents supporting a no-threshold approach felt that a clear and consistent approach for all Half Hourly Metering Systems would be desirable. Some respondents noted that additional alternative arrangements would be necessary if a threshold is introduced, as all Half Hourly settled shared Import/Export sites would not be subject to the same requirements.

One respondent favoured dual threshold levels for Import and Export to determine whether a site must be P224 compliant. They supported an option considered by the Group of a materiality threshold for Import of greater than 100kW (aligning with the current Import level for Mandatory Half Hourly metering) and a 30kW minimum Export materiality level (aligning with the current Microgeneration limit for mandatory Half Hourly metering).

One respondent believed that a threshold was necessary and proposed an alternative approach. The respondent argued that mandating Reactive Power metering for small loads did not appear to be economic. They argued that applying a materiality threshold of a minimum kW or KWh would cause boundary and definition issues, and proposed applying the provisions on the basis of the CoP applicable to the Metering System concerned. The respondent suggested that the P224 solution should apply to customers equipped with CoP5 and CoP3 metering only, i.e. effectively incorporating the solution into CoP5 and CoP3. Several reasons were stated in support of this approach, as follows:

- Effectively targeting of those Import/Export sites that are the source of the issue;
- Avoids placing an enduring obligation on all future elective HH settled Import/Export sites – such an obligation could be a barrier to the roll out of smart metering and microgeneration; and
- More economic approach.

Further Group Discussions

The Group noted the responses to the P224 industry IA and noted that it was important that their consideration of P224 should consider any interaction with the work on smart or 'Half Hourly capable' metering. Despite the majority support for a solution without a materiality threshold, the Group was persuaded that further consideration should be given to the inclusion of a threshold or criteria of some kind in P224.

Some members of the Group believed that they should solve the existing problem and not seek to 'future proof' the P224 solution, and believed that it was appropriate that all Half Hourly Settlement metering should be subject to the same requirements. They also noted that it was potentially possible that technical issues could arise if the P224 provisions did not apply to all Half Hourly Settlement metering, because 2 different streams of data may be necessary, which would be likely to increase the impact on participants' billing systems.

However, the Group noted that the Energy Retail Association (ERA) had produced a smart Meter specification, which does not include measurement of Reactive Power. The aim is to make smart metering feasible and cost-effective. The Group also noted that it is not necessary to measure Reactive Power for very small sites, as the quantities involved are not material from a Distribution System perspective.

The Group considered that it was difficult to predict the effect of smart metering in future, but believed that it was a real possibility that Half Hourly Settlement of smart-metered sites with Import/Export is a likely development. The Group agreed that they should avoid causing any unnecessary impact on smart metering or creating a barrier to increased Half Hourly Settlement.

The Group agreed that the provisions of the P224 solution apply to shared Import/Export sites unless such a site meets both of the following criteria:

- Its use of Half Hourly metering is not mandatory (i.e. its Import is below the threshold for mandatory Half Hourly metering, currently 100kW and its Export is below the microgeneration limit, currently set at 30kW); **and**
- There is specific provision for exception from the P224 provisions in the applicable metering CoP.

These criteria are also set out in section 2 above. The Group believed that these criteria had the advantages that they ensured that all mandatory Half Hourly metered sites must comply with the P224 provisions, which the Group believed was appropriate, while allowing the flexibility in the individual CoPs to create specific exception for sites, providing they are not obliged to have Half Hourly metering.

Note that the Group does not propose that such an exception provision be included in any of the existing Half Hourly CoPs. This option is intended for future CoPs that may be created for smart metering (or other similar applications).

The Group also considered three other options which they rejected in favour of the criteria above:

1. No threshold – this approach would be clear and consistent, and the simplest to implement in billing systems, but has negative implications for smart metering and increased Half Hourly Settlement;
2. Threshold levels of 100kW Import and 30kW Export – this approach aligns with the Import/Export thresholds for mandatory Half Hourly metering of sites, but the Group believed it would be inappropriate for any Parties that choose to Settle on a Half Hourly basis to do so without being obliged to meet all requirements relating to Half Hourly Settlement (except in the case that this is considered appropriate for a particular CoP); or
3. Make the P224 solution CoP specific – avoids using a threshold and is relatively flexible (changes to the CoPs do not require Modifications); however this may give rise to other concerns about when a site should be compliant.

3.6 Evidence and analysis regarding the defect

The Group examined a number of examples of sites where issues have arisen regarding allocation of Reactive Power. The Group were satisfied that these examples were representative of the materiality of the P224 issue, and used these examples to analyse the average materiality for affected sites and to model the anticipated impact of introduction of the P224 solution in relation to current sites.

The Group noted that the examples submitted and analysed included sites with wind generation, landfill gas generation and hydroelectric generation. The information submitted in relation to the example sites is provided as Attachment 2, and the analysis conducted using these examples and information provided by P224 IA respondents is included as Attachment 3.

3.7 Cost-benefit of P224

Overall Cost-Benefit

Cost incurred by implementing P224:

- Industry Implementation cost - **£335,000**; and
- Estimated ***increase*** of cost to Generators - **£1M** per annum (i.e. a year on year increase, spread over all Generators associated with materially affected shared sites) until 2020

  (NB – calculated by applying the Group's *conservative* charge estimate, assuming a linear increase in Distributed Generation to meet energy targets set and assuming no change to how generators operate due to P224).

Costs saved by implementing P224

- Avoidance of single LDSO implementation of alternative Reactive Power solution - **£200,000**;
- Increased cost to LDSOs of workarounds - **£200,000** per annum; and

  (NB – based on IA response information and assuming all workarounds already in place would remain operational); and
- Avoidance of an estimated ***increase*** in the materiality of the P224 issue to Import Parties of **£75M** per annum (i.e. a year on year increase spread over all Import Parties associated with materially affected shared sites) until 2020

  (NB – calculated by applying the Group's *conservative* charge estimate, assuming a linear increase in Distributed Generation to meet energy targets set and assuming all charges are applied and LDSOs do not 'shield' Parties from Reactive Power related charges, and that no other response to inappropriate Reactive Power allocation is progressed).

See below for details of the analysis conducted by the Group.

Implementation Impact

Respondents to the P224 IA identified a total cost impact associated with implementing P224, and making other voluntary changes, of **£335,000**. This figure is composed of £65,000 direct implementation costs (HHDCs, MOAs) and £270,000 voluntary impact (LDSOs, Suppliers). Further details on this can be found in Appendix 3, part c).

Cost of Workarounds

LDSOs and Suppliers have indicated they employ a variety of 'workarounds' in relation to Reactive Power issues. These workarounds include calculating charges using data relating to another Party, billing using approximated data and absorbing costs (i.e. not passing costs on to the Party or customer). Respondents to the P224 IA identified a cost impact associated with their workarounds of **£335,000** per annum (NB this is *not* related to the £335,000 implementation impact noted above).

Costs related to Metering

There would not be a significant cost on metering going forward. Modern Meters can be made P224 compliant by adjustment/software upgrade combined with the necessary Meter Register configuration. However, there would be a cost associated with the adjustment/update and reconfiguration of Meters, and associated site visits, for Meters on existing sites (if such sites are re-registered and therefore need to become P224 compliant). A respondent to the P224 IA estimated that the cost of a visit and reconfiguration by the MOA would be £250 - £400 per CoP 5 Meter and £450 - £600 per CoP 3 Meter.

For older sites, replacement of the Metering System may be required, i.e. if it does not have the necessary capabilities for compliance with P224. This would significantly increase the cost.

Assessed Impact of not implementing P224

Respondents to the P224 IA identified various impacts or P224 not being implemented. Several stated that the materiality of the issue would increase but could not quantify this increase or its effect.

Respondents assessed that their costs in terms of implementing increased workarounds, and the consequential 'lost' income, would increase to **£535,000** per annum.

One respondent identified confidentially that if P224 was not implemented they would need to implement a solution that would cost them more, and would not be as effective as the P224 solution. The cost of this solution would be **£200,000**.

Increase in the materiality of the P224 issue

The Group agreed that the likely increase in the materiality of the P224 issue could be extrapolated from the targets for increasing the amount of the UK's energy delivered by renewable sources. The increase in the UK's electricity is anticipated to come from increased Distributed Generation, such as wind farms, which are affected by the P224 issue.

The UK is committed to increasing its total energy drawn from renewable sources from 1.4% currently to 15% by 2020. For the electricity sector this means around an eightfold increase in energy from renewable sources. This is anticipated to come from increased amounts of Distributed Generation such as wind, hydro and biomass. The Renewable Energy Association (REA) referred the Group to documentation which breaks down the renewable targets (Business Council for Sustainable Energy UK document) and illustrates how they may be achieved (REA/BERR Future Energy System slides).

The Group therefore concluded that in assessing the future increase of the materiality of the P224 issue, the assumption could be made that Distributed Generation would increase by eight times by 2020, in line with the targets set. The further assumption was made that there would be a corresponding increase in the materiality of the P224 issues relating to inappropriately allocated Reactive Power over this 12 year period.

Analysis of current materiality

The analysis conducted indicates that, in relation to all shared Import/Export sites confirmed (via the P224 IA) to currently experience a material issue due to inappropriate allocation of Reactive Power:

- Export Parties may be undercharged by £1.7 - 3.3M per annum; and
- Import Parties may be overcharged by £113.5 - 219.7M per annum.

This assumes that the P224 methodology achieves correct charging, which the Group believes to be true, and compares the charges under the baseline methodology with what the charges calculated using P224 allocation. Note that the apparent discrepancy in these figures is largely due to the fact that the Export Parties (the Generators) have higher Maximum Capacity (kVA) limits, so allocation of Reactive Power volumes to these Parties rather than the Import Party does not result in them (the Export Party) incurring the same high charges.

For an average shared site:

- The Export Party may be undercharged by £3,500 to £6,700 per annum; and
- The Import Party may be overcharged by £230,000 to £446,000 per annum.

Note on analysis:

Example Import/Export sites supplied by Group members (Attachment 2) were used in the Group's analysis (Attachment 3). The Group examined these examples and concluded that they are representative of the issues raised by P224 in regarding inappropriate allocation of Reactive Power. Therefore daily average figures were calculated for Excess Capacity (kVA) and Reactive Power (kVARh) usage for the Import Party and Export Party for each of the example Import/Export sites. These were then used to find an overall

average daily figure for the excess kVA and Reactive Power usage for a 'typical' shared Import/Export site, both under the current baseline and also under P224 Reactive Power allocation.

Representative Reactive Power charges and Capacity charges were extracted from an Energy Networks Association (ENA) spreadsheet showing the current DUoS tariffs (GB DNO DUoS and G-DUoS Final tariff tables April 2008.xls). LDSO respondents to the P224 IA provided information on the number of shared Import/Export sites in their Distribution Network areas, and the number of these affected by material P224-type issues. This information was used to scale up the average charges calculated to model the impact on all the LDSOs which identified materially impacted sites. By scaling the daily figure up to a year, a per annum figure for all confirmed affected sites was calculated.

Because the charges for Reactive Power and Excess Capacity vary between LDSOs, the Group agreed to calculate upper and lower materiality estimates by using the 75% percentile and 25% percentile of the charges respectively.

The following assumptions were made in analysing the Reactive Power and Capacity usage:

- Reactive Power charges are applied only when Reactive Power exceeds 33% of the Active Power (and the Reactive Power is summed, rather than Reactive Export and Import being netted off) – in reality the methods used by LDSOs to calculate chargeable Reactive Power vary;
- 'Transition' Settlement periods in the example data, with both Active Import and Export, had associated capacity/Reactive Power allocated to the Import and Export Party proportional to the Active Import and Export in the Period; and
- Conversely, periods with zero Active Export and Import (NB this would not arise under the P224 solution as moment by moment the metered volume would be either Import or Export) had associated quantities allocated to the Import and Export Party equally.

3.8 Assessment of the means of Reactive Power allocation

The Group considered the means of allocating responsibility for Reactive Power volumes in practice, and concluded that there were no practical or theoretical issues which would prevent the P224 Proposed solution from operating as intended.

The Group considered the impact of the need for compliant metering, and concluded that adequate metering was available to meet the requirements of the solution. A number of Meters currently in use have the necessary capabilities, though some may require software updates to carry out the allocation of Reactive Power prescribed by the P224 solution. In light of the fact P224 is not proposed to be retrospective, and would therefore only apply to new shared Import/Export sites and to any such sites that fall under the P224 provisions due to re-registration, the P224 Group believed that Meters are available which can accommodate the P224 solution, and that obtaining such metering would not be unduly onerous on Parties.

3.9 Implementation Approach

The Group considers that the P224 Proposed Modification, if approved, should be implemented as part of a planned BSC Release. As stated previously, the Group has no intention to make the solution retrospective, as it is believed that this would be unduly onerous on participants. The Proposed Modification would apply only to shared Import/Export sites which are newly registered or re-registered following approval of P224. The Group believes that business drivers exist that will encourage Parties and Exemptable Generating Plant associated with shared Import/Export sites to re-register such sites, where appropriate, in order to fall under the P224 provisions.

As stated above, the Group believes that implementation of the Proposed Modification should be via requirements in the BSC, with provision that exceptions can be made within the specific applicable metering CoP, if other criteria are also met.

Implementation Date

The Group considered the impacts reported by respondents to the P224 IA, and considered the implementation timescales associated with these impacts. The Group noted that significant impacts had been reported by LDSOs, but considered that these impacts were not directly required for implementation (see Appendix 3, Section C) for further details). The Group therefore agreed that the Implementation lead time for P224, and the associated Implementation date should be determined by only non-LDSO impacts.

The Group agreed that if approved, P224 should be implemented as part of a standard BSC Release.

These considerations led the Group to conclude that a 9 month implementation period is required (based on a non Distributor Party's indicated lead time). This suggests an Implementation date in November 2009, assuming an Authority decision is received later in 2008. The Group noted that if any other impact timescales could be reduced, or also considered as optional, the overall P224 lead time could potentially be reduced, and an Implementation Date in June 2009 could become viable. The Group will review and finalise its recommendation on the P224 Implementation Date following the P224 Assessment procedure consultation.

The Group therefore agreed a provisional recommended Implementation Date of **November 2009**. This was intended to allow a 9 month lead time for Implementation by all Parties, based on the responses to the P224 industry IA.

4 ASSESSMENT OF MODIFICATION AGAINST APPLICABLE BSC OBJECTIVES

This section outlines the initial views of the Modification Group regarding the merits of P224 against the Applicable BSC Objectives.

The initial **UNANIMOUS** view of the Modification Group was that the Proposed Modification **WOULD** better facilitate the achievement of Applicable BSC Objectives (b) and (c) when compared to the current Code baseline, for the following reasons:

Applicable BSC Objective (b)

- Levying accurate and correctly targeted charges relating to Reactive Power tends to have a positive impact on the operation of the Transmission System, as appropriate cost signals are sent to Parties which encourages them to consider the most economic manner of operation;
- If it is in Parties economic interest to reduce the amount of Reactive Power they cause, this will tend to reduce the amount of Reactive Power on the Transmission System, which will reduce the actions National Grid is required to take to compensate for Reactive Power.

Applicable BSC Objective (c)

- Reactive Power would be allocated more appropriately and accurately to the Party actually responsible for them (or the MSID they should logically be assigned to), and therefore DUoS charges relating to Reactive Power will be more accurate and targeted correctly;
- More accurate DUoS charges relating to Reactive Power, and more correct targeting of charges to Parties actually responsible for Reactive Power flows, will facilitate competition;
- More appropriate allocation and metering of Reactive Power would facilitate potential creation of a competitive market in trading Reactive Power volumes;
- More appropriate allocation and metering of Reactive Power would facilitate a market for ancillary services for Exemptable Generating Plant, removing a potential barrier to the creation of new plant if Suppliers were reluctant to provide services due to inflated DUoS bills caused by inappropriate allocation of Reactive Power;

- The additional, more accurate data available would allow LDSOs not currently charging for Reactive Power to do so, and would facilitate competition in Distribution System operation;
- Facilitate competition between Import Suppliers to Exemptable Generating Plant, as currently these plant are potentially restricted in their ability to switch Import Supplier due to reluctance by Suppliers to risk exposure to inflated DUoS bills.

The Group agreed that the Proposed Modification would have a neutral impact on Applicable BSC Objectives (a) and (d).

5 TERMS USED IN THIS DOCUMENT

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

Acronym / Term	Definition
CDCA	Central Data Collection Agent
CVA	Central Volume Allocation
DUoS	Distribution Use of System
Exemptable Generating Plant	Generating plant that are exempt from the requirement to hold an electricity licence to operate because their export capability is below a threshold (100MW in England and Wales)
LDSO	Licensed Distribution System Operators
LEG	Licence Exempt Generator
MPAN	Metering Point Administration Number - a unique number relating to a Metering Point under the MRA (equivalent to the MSID for an SVA Metering System)
MSID	Metering System Identifier (equivalent to MPAN for an SVA Metering System)
SVA	Supplier Volume Allocation
kVAR	Kilo Volt Amp Reactive – unit of Reactive Power
kVARh	Kilo Volt Amp Reactive hour – unit used for Reactive Power charging
Reactive Power Charges	LDSO charge for Party operation (i.e. Supply or Generation) that results in associated Reactive Power in excess of an agreed value (billed in units of kVARh)
Supply Capacity Charges (or Demand Capacity Charges)	LDSO charge for Party operation (i.e. Supply or Generation) that results in the Party exceeding their maximum capacity for power distribution (billed in units of kVA) (NB - Reactive Power occupies distribution capacity (in the same way as Active Power) so contributes to a Party potentially exceeding agreed capacity)

6 DOCUMENT CONTROL

6.1 Authorities

Version	Date	Author	Reviewer	Reason for Review
0.1	27/06/08	Dean Riddell	David Jones	For technical review
0.2	30/06/08	Dean Riddell	P224 Group	For Modification Group review
0.3	02/07/08	Dean Riddell	John Lucas, Mike Smith	For technical review
0.4	03/07/08	Dean Riddell	David Jones	For quality review
1.0	03/07/08	P224 Modification Group		For industry consultation

6.2 References

Ref.	Document Title	Owner	Issue Date
1	(Business Council for Sustainable Energy UK document)	UKBCSE	May 2008
2	(REA/BERR Future Energy System slides	REA/BERR	19/06/08
3	Energy Networks Association spreadsheet showing DUoS tariffs at April 2008 (GB DNO DUoS and G-DUoS Final tariff tables April 2008.xls).	ENA	April 2008

APPENDIX 1: 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: http://www.elexon.co.uk/changeimplementation/ModificationProcess/modificationdocumentation/modProposalView.aspx?propID=248

Date	Event
28/04/08	Modification Proposal raised by E.ON UK plc
08/05/08	IWA presented to the Panel
20/05/08	First Assessment Procedure Modification Group meeting held
28/05/08	Second Assessment Procedure Modification Group meeting held
06/06/08	Requirements Specification issued for BSC Agent impact assessment
06/06/08	Request for Party/Party Agent impact assessments request issued
06/06/08	Request for Transmission Company analysis issued
06/06/08	Request for BSCCo impact assessment issued
10/06/08	BSC Agent impact assessment response returned
18/06/08	Party/Party Agent impact assessment responses returned
18/06/08	Transmission Company analysis returned
18/06/08	BSCCo impact assessment returned
23/06/08	Third Assessment Procedure Modification Group meeting held

ESTIMATED COSTS OF PROGRESSING MODIFICATION PROPOSAL[5]

Meeting Cost	£2,000
Legal/Expert Cost	£0
Impact Assessment Cost	£5,000
ELEXON Resource	68 man days £14,405

These estimated costs have not changed from those provided in the IWA.

MODIFICATION GROUP MEMBERSHIP

Member	Organisation	20/05/08	28/05/08	23/06/08
David Jones	ELEXON (Chairman)	Y	Y	Y
Dean Riddell	ELEXON (Lead Analyst)	Y	Y	Y
Glenn Sheern	(Proposer's Representative)	Y	Y	Y
William Hung	National Grid	N	N	N
Andrew Neves	Central Networks	Y	Y	Y
Jonathan Purdy	EDF energy	Y	Tel (part)	Tel (part)
Derek Lowe	Scottish and Southern	Y	Y	N
Maurice Smith	Campbell Carr	N	N	N
Simon Brooke	Electricity North West	Y	Tel	Tel
Janice Thompson	Scottish Power	Y	N	Y
Mike Smith	Western Power Distribution	Y	Y	Y

Attendee	Organisation	20/05/08	28/05/08	23/06/08
David Ahmad	ELEXON (Lawyer)	N	N	N
John Lucas	ELEXON (Design Authority)	Y	Y	Y
Abid Sheikh	Ofgem			Y
Nicholas Rubin	Ofgem	N	N	N
Neil McKeown	Electralink	Y	N	Y
Howard Gregory	npower	Y	Y	Y
Ceri Hughes	Centrica	-	Tel (part)	N

[5] 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.

MODIFICATION GROUP TERMS OF REFERENCE

TERMS OF REFERENCE
(Version 2.0)

APPENDIX FOR MODIFICATION PROPOSAL P224

Modification Proposal P224 will be considered by the P224 Modification Group, formed from the Settlement Standing Modification Group, Volume Allocation Standing Modification Group and members with Distribution and exemptable generating experience, in accordance with the SSMG and VASMG Terms of Reference and the Appendix attached.

P224 – Reactive Power Flows Associated with Exemptable Generating Plant

ASSESSMENT PROCEDURE

1.2. The Modification Group will carry out an Assessment Procedure in respect of Modification Proposal P224 pursuant to section F2.6 of the Balancing and Settlement Code.

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

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

- Development and confirmation of the P224 solution;
- Implications for Licence Exempt Generators (and Parties associated with them), Generators, Suppliers, Licensed Distribution System Operators and Reactive Power charging;
- System impact (including implications for metering and data flows) for participants, Party Agents and BSC Agents;
- Impacts on any other codes or documentation (e.g. BSCPs, CoPs);
- Impact on CVA metering arrangements;
- Implications of the proposed 100kW materiality threshold, and how this would be implemented;
- Benefits of P224 and quantification of benefits/disadvantages against the Applicable BSC Objectives;
- Provision of evidence and/or analysis relating to the defect, including:
    - Examples of where the issue has arisen;
    - Confirmation of how the BSC definition of a traded site impacts or gives rise to the defect, and consideration of whether there would be a defect if the generator and the site load were separately metered; and
    - A description of the physical layout of sites that are affected and an explanation of why wind farms are so affected;

- Quantification of the cost-benefit of P224 (note that analysis is dependent upon provision of data by industry in the form of DUoS billing information, or a similar data source, as the benefits are likely to be in this area);

- Any alternative solutions;

- Determination of the means of allocating responsibility for Reactive Power, including any limits in terms of:

    - Accuracy of allocation in practice;

    - Technical or theoretical constraints, such as the allocation of Reactive Power in the absence of any associated Active Power.

- Validation of the underlying assumption of the P224 'straw man' solution, that an allocation of responsibility based on associating Reactive Power with Active Power is more appropriate than the current arrangements; and

- Comparison of the cost-benefit associated with implementation of any different solutions available, including:

    - The proposed P224 'straw man' solution, i.e. change to the BSC with consequential changes to central metering and reporting, allowing revision of DUoS billing methodologies to make use of a new allocation of Reactive Power volumes and improved metered volume data;

    - Revision of DUoS charging methodologies, possibly with greater reliance on estimation than the straw man solution, and potential for bilateral contracting between affected Suppliers and operators of Exemptable Generating Plant to ensure provision of data and appropriate charging in relation to Reactive Power;

    - Any benefits or cost savings currently arising from the presence of Reactive Power.

APPENDIX 3: RESULTS OF IMPACT ASSESSMENT

a) Impact on BSC Systems and Processes

System / Process	Impact of Proposed Modification
CDCA	Service provider impact assessment confirms **no impact** on CDCA: the CDCA system must be able to accommodate the Meter Register configuration necessary for the P224 Proposed solution; the current CDCA system is able to do this.

A copy of the full BSC Agent impact assessment is attached as a separate document, Attachment 4.

b) Impact on BSC Agent Contractual Arrangements

BSC Agent Contract	Impact of Proposed Modification
LogicaCMG (CDCA)	Potential impact of P224 solution requirements assessed - service provider impact assessment confirms **no impact** on CDCA.

BSC Agent Contract	Impact of Proposed Modification
PwC (BSC Auditor, Certification Agent)	Potential audit requirement due to system changes.

c) Impact on BSC Parties and Party Agents

13 responses were received to the P224 Party and Party Agent Impact Assessment. These included six responses from Parties which operate as LDSOs, five that are Suppliers and eight whose activities include a HHDC and/or MOA role.

HHDC and MOA

Respondents with HHDC and MOA functions identified impacts due to process and system changes that would be required, documentation and training in relation to new procedures and sourcing meters compliant with the P224 provisions. Costs associated with these activities were generally low, estimated at £5,000, with timescales ranging from 2 – 6 months. However, one HHDC identified greater impact due to requirements to upgrade and test its data management system if the P224 solution is introduced, with an estimated cost of £60,000 and a timescale of 12 - 18 months.

The total cost identified by the P224 IA respondents for these HHDC and MOA impacts is £65,000.

LDSO and Supplier

LDSOs generally identified the greatest impact, though some reported no impact because they do not currently bill in relation to Reactive Power specifically. Impacted LDSOs identified that changes would be needed to their DUoS billing systems, with associated costs ranging from £20 – 100,000 per LDSO and implementation timescales of 6 - 9 months. Some Suppliers also identified possible impacts to their billing systems and processes; one respondent identified costs of £50,000 and a 9 month timescale for implementation.

However, the P224 Group considered that though changes to LDSO DUoS billing systems are anticipated as a result of the P224 Proposed solution, *they are not directly necessary for its implementation*. This argument was also applicable to Supplier billing system changes which would be made if P224 were to be approved. The Group therefore believed that these identified impacts should not be taken into account when planning the P224 implementation. LDSO and Supplier impacts would be relevant only if they concerned activities directly necessary for the implementation of P224, such as the ability to receive an impacted data flow or training staff in a revised registration process.

Though it is anticipated (and some LDSOs have stated as much) that LDSOs will change (or introduce) Reactive Power billing procedures, processes and systems, approval of P224 cannot mandate that such changes be made. By the same rationale, though LDSOs and Suppliers reaction to approval of P224 should logically be to amend their billing systems to align with the new allocation method and to utilise new information that is available, these activities would not be directly relevant to implementation of P224 from a BSC perspective.

The impacts, and associated cost and lead times, identified *are included in the assessment of the cost benefit of P224*. This is because though these changes are not directly required for implementation of the P224 solution from a BSC perspective, they are necessary for full realisation of the anticipated P224 benefits. The total cost identified by the P224 IA respondents for these 'optional' changes is £270,000.

Full copies of the Party and Party Agent impact assessment responses are attached as a separate document, Attachment 1.

d) Impact on Transmission Company

P224 TRANSMISSION COMPANY ANALYSIS AND IMPACT ASSESSMENT

Q	Question	Response
1	Please outline any impact of the Proposed 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.	None expected.
2	Please outline the views and rationale of the Transmission Company as to whether the Proposed Modification would better facilitate achievement of the Applicable BSC Objectives.	The Transmission Company believes that P224 would better facilitate the achievement of Applicable BSC Objectives c) and d) in particular by introducing more consistent accounting for reactive power absorbed by Distribution Networks and more consistent charging arrangements.
3	Please outline the impact of the Proposed 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.	None expected.
4	Please outline any potential issues relating to the security of supply arising from the Proposed Modification.	None expected.
5	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.	None anticipated.
6	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.	None expected.
7	Please provide details of any impact on or interaction with any other Transmission Company related work, e.g. CUSC Amendment Proposal to Accommodate Reactive Power from Wind Farms.	A CUSC Amendment Proposal is expected to be put before the CUSC Panel this month amending the arrangements in the MSA for the provision of reactive power from embedded generation. The Grid Code Review Panel has agreed that a working group should begin examining in due course (probably Autumn 2008) the technical capability of new technologies to provide reactive power which will include renewable sources. It is not clear yet whether the CUSC Amendment Proposal and the work of the Grid Code Working Group will impact on or interact with P224 but at present this is considered unlikely.

8	Any other comments on the Proposed Modification.	No.

e) Impact on BSCCo

Area of Business	Impact of Proposed Modification
Corporate Services	Implementation support, varying according to whether Consumption Component Classes in Settlement systems are affected.
Legal	Advising Modification Group and drafting legal text.
Change Implementation	P224 implementation, including changes required to Code Subsidiary Documents that are impacted. Impacted Code Subsidiary Documents are detailed below; other Configurable Items which reference "Import Energy" or "Export Energy" (e.g. BSCP550) may require amendment. Management of implementation as part of a Release. Further impacts may be identified following any further development of the solution.
Stakeholder Assurance	Support and update the BSC Auditor, Qualification and TAA (PwC & C&C Group) of changes to audit, and audit against revised CoPs. Potential monitoring of correct submission of MTDs. Review of the redline changes and amendments to the Code and Code Subsidiary documents.
Service Delivery	Review of changes to BSCP20. Change to internal working procedures and documentation regarding CVA Metering Systems.

f) Impact on Code

Code Section	Impact of Proposed Modification
K	Amendment and introduction of terminology and change to obligations.
X-1	Changes to definitions.

g) Impact on Code Subsidiary Documents

Document	Impact of Proposed Modification
BSCP20 'Registration of Metering Systems for Central Volume Allocation'	Consequential changes to requirements due to the changes to Code Provisions. Registration of metering systems will be affected by the proposed new rules for allocation of Reactive Power.
BSCP514 'SVA Meter Operations for Metering Systems Registered in SMRS'	Consequential changes to requirements due to the changes to Code Provisions. Possible amendment to describe how to configure the D0268

Document	Impact of Proposed Modification
	appropriately.
BSCP502 'Half Hourly Data Collection for SVA Metering Systems Registered in SMRS'	Consequential changes to requirements due to the changes to Code Provisions. Amendment to document the impact on HHDCs; to oblige HHDCs to send relevant data to the Supplier or the Party associated with Exemptable Generating Plant, as appropriate; and to update the terminology used.
BSCP601 'Metering Protocol Approval and Compliance Testing'	Changes to detail new requirements for Meter capabilities.
BSCP509 Appendix: MDD Entity Change Request Forms	MDD Entity Id 47 'Measurement Quantity' refers to 'Active Import' and 'Active Export', and may require amendment to refer also to "Reactive Import' and 'Reactive Export'. Such references should align with the BSC terminology.
CoP1 'The Metering of Circuits with a Rated Capacity Exceeding 100MVA for Settlement Purposes'	Consequential changes to requirements due to the changes to Code Provisions.
CoP2 'The Metering of Circuits with a Rated Capacity not exceeding 100 MVA for Settlement Purposes'	Consequential changes to requirements due to the changes to Code Provisions.
CoP3 'The Metering of Circuits with a Rated Capacity not exceeding 10 MVA for Settlement Purposes'	Consequential changes to requirements due to the changes to Code Provisions.
CoP5 'The Metering of Energy Transfers with Max Demand of up to (and including) 1MW for Settlement Purposes'	Consequential changes to requirements due to the changes to Code Provisions.

h) Impact on Core Industry Documents/System Operator-Transmission Owner Code

No impact.

i) Impact on Other Configurable Items

No impact.

j) Impact on BSCCo Memorandum and Articles of Association

No impact.

k) Impact on Governance and Regulatory Framework

No impact.