

What stage is this document in the process?

01 Initial Written Assessment

02 Definition Procedure

03 Assessment Procedure

04 Report Phase

Stage 01: Initial Written Assessment

P238: Removal of the requirement to Meter each Boundary Point for Offshore Power Park Modules

The BSC requires Party's Exports and/or Imports to be determined at each Boundary Point to the Transmission System or a Distribution System, via metering.

P238 proposes to treat all Exports from (or Imports to) a Balancing Mechanism Unit comprising Offshore Power Park Modules as a single Export (or Import).

P238 will allow metering to be installed to determine the Exports (or Imports), provided that appropriate compensation is applied to meter readings to account for losses between the location of the metering and the commercial boundary.



ELEXON recommends
A 2 month Assessment Procedure



High Impact:
Offshore intermittent generators



Medium Impact:
ELEXON and the Transmission Company

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Any questions?

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This document is an Initial Written Assessment (IWA), which ELEXON will present to the Panel on 9 July 2009. The Panel will consider the recommendations and agree how to progress P238 .

Further information is available in the P238 Modification Proposal which is Attachment A to this document.



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The Offshore Transmission Regime

The Government and Ofgem have introduced a competitive Offshore Transmission Regime which is due to 'Go-Live' in the Summer of 2010. As part of the process the Government introduced changes into all the electricity codes to facilitate the new regime. The changes impact all offshore generation and transmission that is connected at 132 kilovolts and above and came into effect on 24 June 2009 ('Go-Active').

The changes introduced into the Grid Code included an amended definition of Power Park Module, which allows an Offshore Power Park Module to include Power Park Strings connected to the Offshore Transmission System at more than one Boundary Point. This Grid Code change is specific to offshore i.e. an Onshore Power Park Module is still limited to a single Boundary Point. We understand that this drafting reflects the fact that for some offshore wind farms the boundary with the Offshore Transmission System may be at the Low Voltage side of the platform (on the individual strings). The proposer believes that it would not be efficient to require each individual Power Park String to form its own Power Park Module.

The two new definitions of Power Park Modules from the Grid Code are included here for direct comparison with each other, along with a definition of an Offshore Power Park String which is referred to in the Offshore Power Park Module definition:

- **Onshore Power Park Module** - A collection of Onshore Generating Units (registered as a Power Park Module under the PC) that are powered by an Intermittent Power Source, joined together by a System with a single electrical point of connection to the Onshore Transmission System (or User System if Embedded). The connection to the Onshore Transmission System (or User System if Embedded) may include a DC Converter.
- **Offshore Power Park Module** - A collection of one or more Offshore Power Park Strings (registered as a Power Park Module under the PC). There is no limit to the number of Power Park Strings within the Power Park Module, so long as they either:
 - a) connect to the same busbar which cannot be electrically split; or
 - b) connect to a collection of directly electrically connected busbars of the same nominal voltage and are configured in accordance with the operating arrangements set out in the relevant Bilateral Agreement.
- **Offshore Power Park String** - A collection of Offshore Generating Units that are powered by an Intermittent Power Source, joined together by cables forming part of a User System with a single point of connection to an Offshore Transmission System. The connection to an Offshore Transmission System may include a DC Converter.

BSC Metering Requirements

Section K1.1.4 of the Balancing and Settlement Code (the Code) requires that the flows of electricity (called Exports and Imports) between BSC Parties' assets (physical Plant and Apparatus) need to be determined separately at each point of connection (**Boundary Points**) to the Total System (the Transmission System and each Distribution System), via

Determining Flows of Electricity

Under the BSC flows of electricity need to be determined at Boundary Points to the Transmission and Distribution Systems, via metering. Offshore generation may connect at multiple Boundary Points to an Offshore Transmission System and therefore require more metering.

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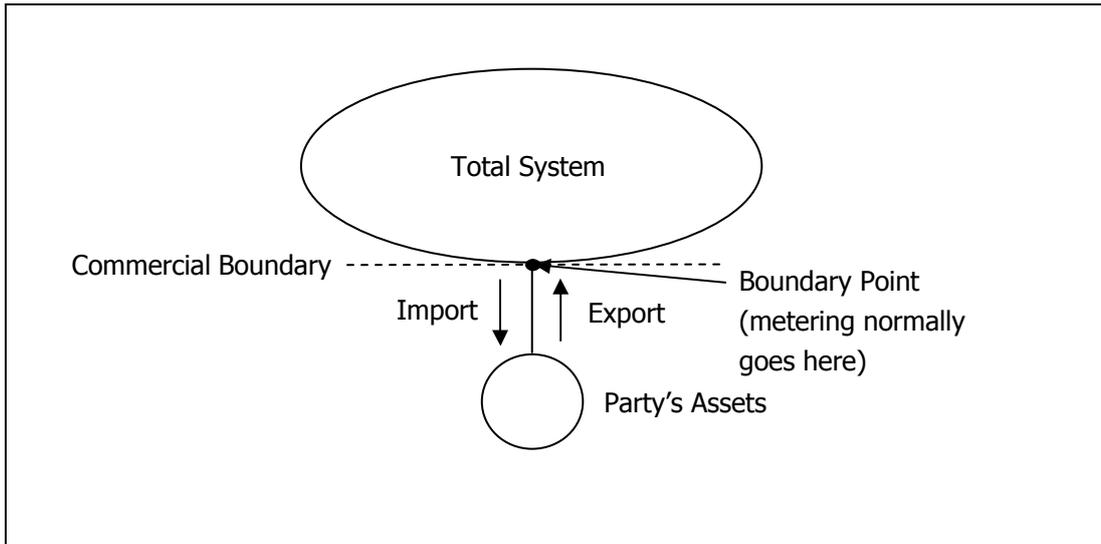
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metering. Flows of electricity towards the Transmission System or a Distribution System are known as Exports and flows away from the Transmission System or a Distribution System are known as Imports.



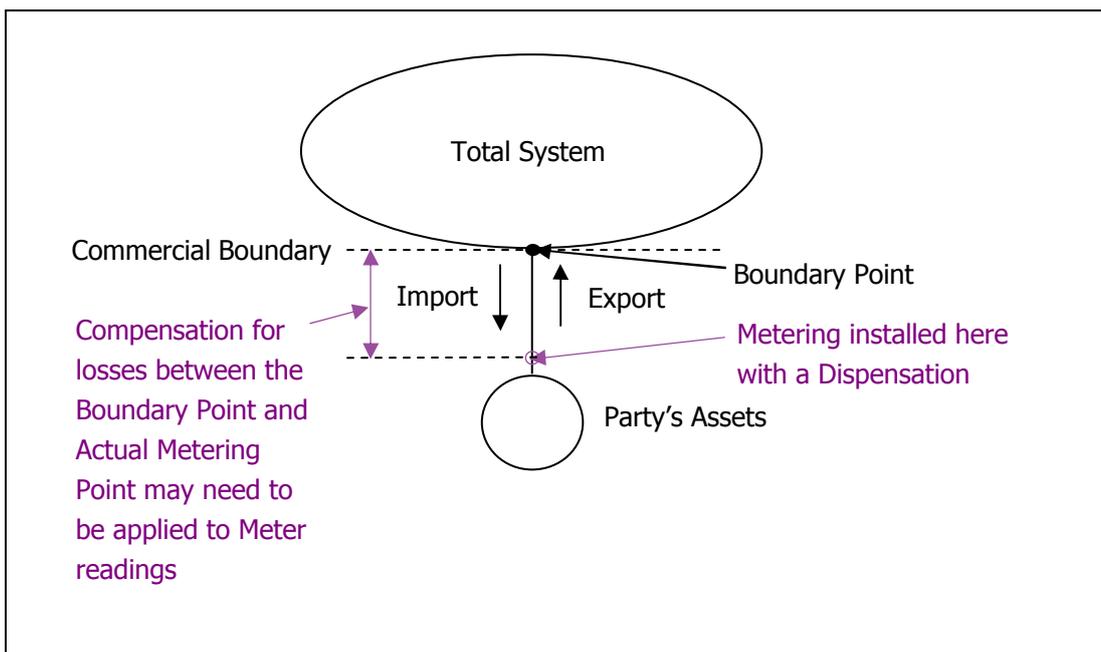
What is compensation?

In this context Meter compensation (or compensation of Meter readings) is a calculated adjustment made to meter readings to take into account any losses due to the measurement of energy taking place at a different physical location than that specified in the metering Code of Practice. The purpose of applying compensation is to more accurately determine the true energy flowing at the Boundary Point (Defined Metering Point).



Normally, metering will be installed in accordance with the relevant metering Code of Practice (CoP) at each Boundary Point (further refined as **Defined Metering Points** in the CoPs). Meter readings will then be used to calculate a BSC Party's Settlement liability.

Sometimes it is not practical to install metering at the Boundary Point in order to determine the flows of electricity across it. In this instance a Party who registers the Metering System can apply for a Metering Dispensation against the requirement to install the metering at the Defined Metering Points set out in the CoPs. Typically, the Meter or the Data Collector's system would need to apply **compensation** to the Meter readings so that the energy flowing across the Boundary Point can still be determined despite the actual metering being at a different physical location (i.e. to account for 'losses' in cables or power transformers).



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What is a BM Unit?

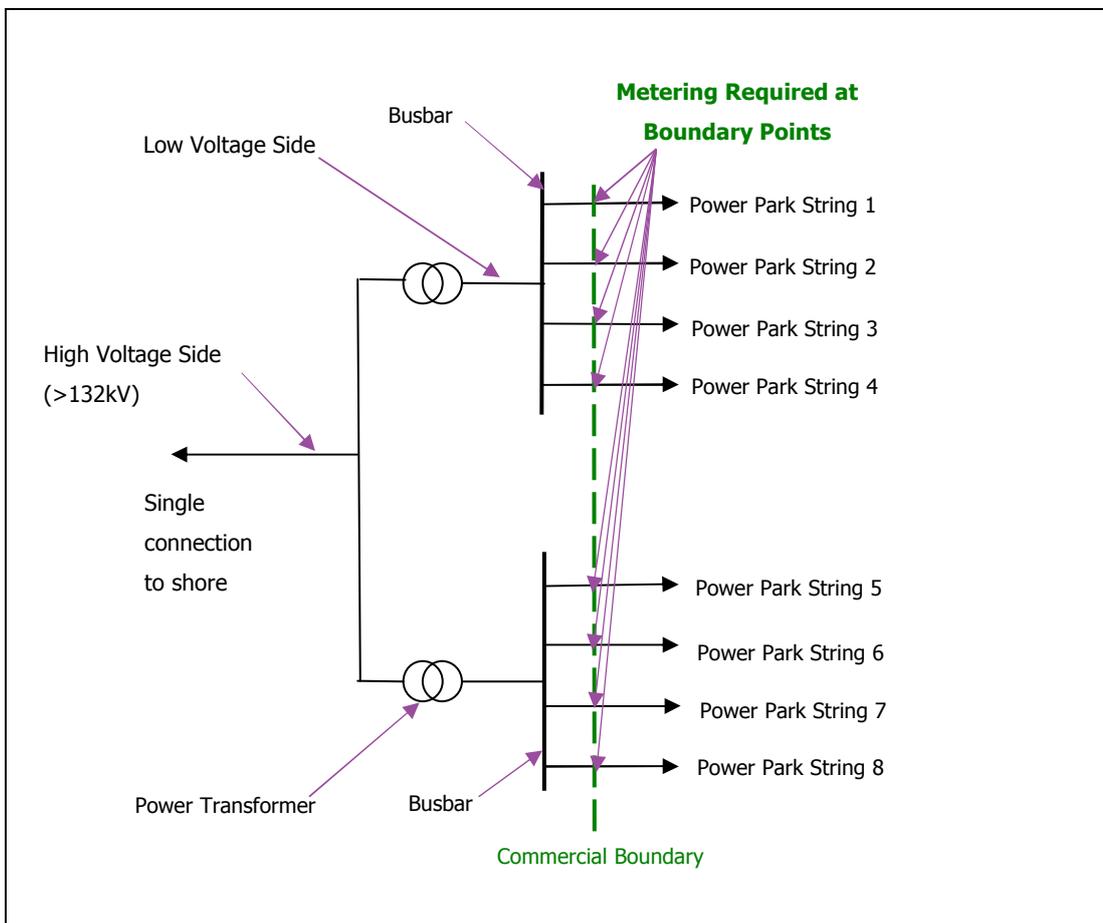
Section K3 of the Code also requires Parties to establish and register Balancing Mechanism (BM) Units which include the **assets** for which they are responsible for the Exports from and/or Imports to. Section K3.1.2 sets out the conditions which a BM Unit must satisfy but it also deems certain configurations of assets (K3.1.4) to meet the requirements to form a single BM Unit; a Power Park Module (PPM) is one type of configuration of multiple assets which is deemed to meet the requirements to form a single BM Unit.

The 'Power Park Module' definition and BSC requirement to Meter at the Boundary Point (the single point of connection) allowed for the establishment of a single BM Unit for a single PPM. In other words, as a minimum, the flows into and out of this single BM Unit could be determined by a single Import/Export Metering System.

Even though a number of Boundary Points can be treated as a single Offshore Power Park Module (and hence a single BM Unit), the BSC currently still requires metering for each Power Park String. Since this is a BSC requirement (rather than a Code of Practice requirement) Metering Dispensations cannot be granted in such cases.

The proposer believes that the efficiency benefits of the recent Grid Code changes are somewhat undermined by the BSC requirement to separately determine the flows at each Boundary Point.

The diagram below shows an example of the circuit configuration for an offshore platform to which 8 strings (Power Park Strings) of wind turbines generators connect. Four strings connect to one busbar¹ and four connect to another busbar. Under the BSC metering would need to be installed for each circuit that crossed the commercial boundary.



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¹ A busbar is a solid copper or aluminium bar used for connecting circuits together.

The proposer asserts that to require metering on each individual Power Park String provides no benefit to Settlement, and potentially imposes significant costs on Parties (particularly for existing projects where the cost of retro-fitting additional metering may be extremely high).

Background and Related changes

On the 14 May 2009 we presented a paper to the BSC Panel on two issues relating to metering requirements for CCGT Modules and PPMs and one on the problems associated with switching assets between BM Units for operational reasons (particularly relevant to offshore wind farms under fault conditions). The BSC Panel raised **Standing Issue 37** (Boundary Point Metering and BM Unit Issues in Section K). The Issue 37 Group met on the 3rd and 27th June 2009 and identified potential solutions to these issues. P238 is based on the solution identified by the Issue 37 Group to deal with the metering requirements for Offshore PPMs.

P237 is related to **P238 'Standard BM Unit configuration for Offshore Power Park Modules'** as metering requirements are linked to BM Unit configurations. It is likely that further Modification Proposals will be raised to propose potential solutions to the remaining issues identified by the Issue 37 Group.

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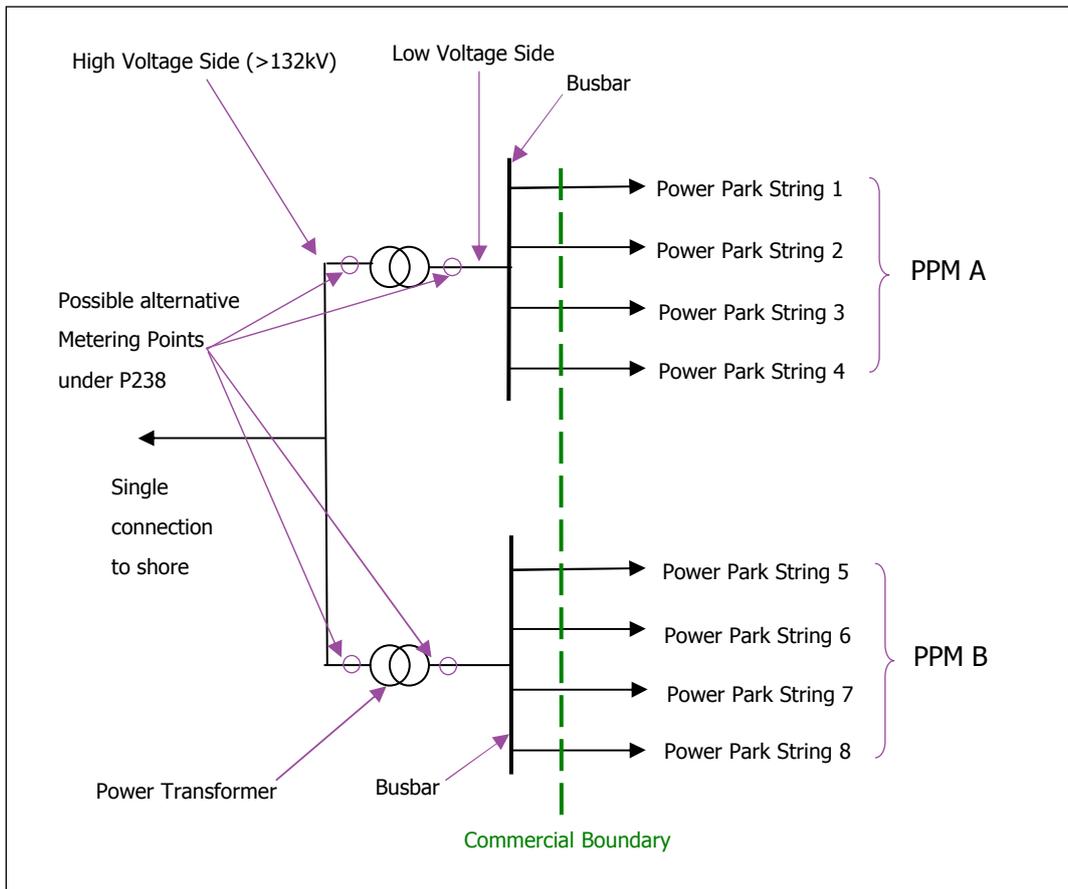
How will P238 resolve the issue?

P238 proposes that all Exports from (or Imports to) a BM Unit comprising Offshore PPMs can be treated as a single Export (or Import).

The effect of this change would be to remove the requirement for separate metering of every Boundary Point of Offshore PPMs. The over riding consideration would be that the installed metering was able to measure and record the energy Exported (or Imported) by each BM Unit. P238 proposes that there should be nothing within the solution to prevent Generators from metering each Boundary Point and aggregating the metered data to a BM Unit level if they prefer (particularly as some Generators may have already designed their offshore platform on that basis).

The solution proposed envisages that, as part of the implementation of this proposal, this would require amendment to the Codes of Practice to introduce additional flexibility for the location of the Defined Metering Points for offshore platforms. This would avoid the need for Metering Dispensations. The Modification Group should consider the changes to the CoPs during the Assessment of P238. The recommendation of the Issue 37 Group was that Generators should be able to choose where on the offshore platform to place their metering, provided that it was capable of measuring the Exports from (and Imports to) each BM Unit, and the meter readings were (where necessary) adjusted to compensate for any losses between the metering and the commercial boundary.

The diagram below shows two alternative locations (one on the LV side and the other on the HV side of each offshore platform Power Transformer) which could determine, with appropriate compensation, the Export and/or Imports of each PPM. This would support a single BM Unit configuration for each PPM.



What are the Applicable BSC Objectives?

- (a) The efficient discharge by the Transmission Company of the obligations imposed upon it by the Transmission Licence
- (b) The efficient, economic and co-ordinated operation of the National Electricity 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 of the balancing and settlement arrangements

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Conversely, if the commercial boundary were such that metering at the commercial boundary would not give visibility of several (i.e. more than one) BM Units below the commercial boundary then it would be necessary to fit more metering than would otherwise be required and aggregate up to a BM Unit level.

The Proposer believes that P238 will better facilitate the achievement of **Applicable BSC Objectives (c) and (d)**.

The table below shows the benefits identified by the Proposer against each of these Objectives.

| Applicable BSC Objective | Benefit identified by Proposer for P238 |
|--------------------------|---|
| Objective (a) | None identified. |
| Objective (b) | None identified. |
| Objective (c) | P238 would remove an inefficient requirement for offshore generators to install and read metering that is not required either operationally or for Settlement. This would ensure that offshore generators do not face excessive metering requirements when compared to other types of generation, particularly in the case of offshore generators in the transitional scheme that are either planned, built or in the process of construction to designs that did not envisage the need for BM Units. |
| Objective (d) | P238 would ensure that BSC Agents will not have to accommodate excessive metering data collection requirements. |

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Modification Group Terms of Reference

ELEXON recommends that the P238 Terms of Reference should also include the specific areas identified in this IWA.

What is the recommended way forward?

ELEXON recommends that a Modification Group should carry out further assessment of P238.

The proposed solution has already been discussed at a high level by the Issue 37 Group, and the Modification Proposal is well-defined. However, the Issue Group left some of the lower-level solution details open for further consideration during the Modification Process. As P238 is silent on these, ELEXON recommends that a Modification Group considers them further as part of an Assessment Procedure.

Modification Proposal P237 has also arisen from the Issue 37 discussions, and is related to P238. The issues identified by the two modifications are distinct and will benefit from separate assessment. However, there are likely to be resource savings for the industry if both modifications follow the same progression timetable, with shared Modification Group meetings and parallel consultations and reports.

The following sections contain ELEXON's suggested Terms of Reference for the Modification Group, and its recommended progression timetable.

Terms of Reference

In addition to the standard Assessment Procedure activities,² ELEXON recommends that the Modification Group considers the following:

| Area | Reason for inclusion in Terms of Reference |
|--|--|
| Does the identified issue only affect Offshore, and not Onshore, Power Park Modules? | This is believed to be the case, due to the specific busbar requirements for Offshore Power Park Modules under the Grid Code. However, the Modification Group will need to confirm this to ensure that Onshore intermittent generators are not disadvantaged by being unable to utilise less metering for their Power Park Modules without having to resort to aggregating metered data to a BM Unit level. |
| What changes are required to Section K and what legal drafting is required? | Section K details what needs to be measured and at which location, therefore consideration is required for Offshore installations. |
| How the CoPs need to be changed and what CoP drafting is required? | The Codes of Practice detail the Defined Metering Points in support of Section K and require consideration. |
| Which CoPs are affected any proposed changes? | The Offshore Transmission arrangements apply to connections at 132kV and above however Codes of Practice are applicable on a capacity or demand basis. Therefore consideration is required as to which CoPs are required to |

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² Industry consultation, assessment against the Applicable BSC Objectives, consideration of any Alternative Modification, development of an Implementation Date and legal text, and production of an Assessment Report to the Panel.

| | |
|---|---|
| | be changed to support P238. |
| Does P238 impact any BSC Agents? | Metering Systems are registered, and Meter Technical Details are used, in the central BSC Systems. ELEXON recommends that the Modification Group undertakes a BSC Agent impact assessment to establish whether any changes to BSC Agent systems, processes and/or documents are needed to support P238. |
| What are the specific benefits of P238? | The Issue 37 Group considered the benefits of all its recommended changes as a package. These changes are now being progressed through separate Modification Proposals. The changes deal with different issues, and therefore give rise to benefits in their own right without being contingent on each other. However, they are complementary, and their combined benefits may therefore be greater than those at the individual proposal level. The Modification Group will need to agree which of the benefits identified by the Issue 37 Group are important for P238, and will assess P238 on its own merits against the existing Code baseline. However, ELEXON recommends that the Modification Group also notes any benefits from combining P238 with P237 or any of the other changes recommended by the Issue Group, so that these can be taken into account by Ofgem when making its decision on the various changes. |

ELEXON recommends that the P238 Modification Group is formed from members of the **Settlement Standing Modification Group** (SSMG), whose areas of expertise include BM Unit registration and configuration.

ELEXON also recommends that the SSMG's core membership is supplemented by:

- Members of the Issue 37 Group (to ensure continuity of discussion); and
- Transmission Company expertise in the relevant Grid Code definitions and requirements for Power Park Modules.

Timetable and costs

ELEXON recommends that P238 undergoes a 2-month Assessment Procedure.

This will enable P238 and P237 to be progressed to an identical timetable, with shared meetings and parallel consultations/reports.

The following page shows the full recommended timetable of activities, which includes:

- A 2-week industry consultation;
- A BSC Agent impact assessment (in parallel with the consultation);
- A Transmission Company impact assessment (in parallel with the consultation); and

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- 2 Modification Group meetings, before and after the consultation (leeway has been left in the timetable to include a second, pre-consultation, meeting in case this is required to complete the Group's discussions).

| Estimated progression costs based on proposed timetable | |
|--|----------------------------------|
| Meeting costs (including Modification Group member expenses) | £750 (2-3 meetings) |
| Non-ELEXON legal and expert costs | £0 |
| Service Provider impact assessment costs | £0 |
| ELEXON resource | £57 man days, equating to c.£15k |

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4 Likely Impacts



At this stage, ELEXON believes that P238 will impact:

- **Section K1 and K2** of the BSC, which contains the requirements for establishing flows and registering Boundary Points Metering Systems;
- **Metering Codes of Practice** which describes the physical metering locations; and
- **Offshore intermittent generators**, who will be designing procuring and installing Metering Equipment.

ELEXON does not anticipate that any changes will be required to the Grid Code. However, Transmission Company expertise will be needed as part of the Modification Group's discussions, to ensure that the P238 solution and legal text is consistent with the Grid Code requirements.

Recommendation

ELEXON recommends a 2 month Assessment Procedure for P238.

5 Recommendations

On the basis of this Initial Written Assessment, ELEXON invites the Panel to:

- DETERMINE that Modification Proposal P238 progresses to the Assessment Procedure;
- AGREE the Assessment Procedure timetable of 2 months such that an Assessment Report will be completed and submitted to the Panel at its meeting on 10 September 2009;
- DETERMINE that the P238 Modification Group will be formed from members of the Settlement Standing Modification Group supplemented with members of the Issue 37 Group and with expertise from the Transmission Company on the Grid Code requirements; and
- AGREE the Modification Group's Terms of Reference.

6 Further Information

More information is included in the P238 Modification Proposal form which is Attachment A to this document.

Attachment A: P238 Modification Proposal form

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