

Stage 03: Attachment A: Detailed Assessment for P242

P242: Treatment of Exemptable Generation Connected to Embedded Offshore Transmission Networks

What stage is this document in the process?

- 01 Initial Written Assessment
- 02 Definition Procedure
- 03 Assessment Procedure
- 04 Report Phase

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About this document:

This is Attachment A to the Assessment Consultation/Report. This attachment provides additional information on P242, including details of the Modification Group's discussions.

What is the Offshore Transmission Regime?

The Government and Ofgem have introduced competitive Offshore Transmission Arrangements, which will Go Live in the summer of 2010. In preparation for Go Live, the Secretary of State directed changes to the industry codes, including the BSC, on 24 June 2009 (Go Active).

One of the effects of the regime is that all Offshore Transmission through 132 kilovolt (kV) cables and above will be treated as being part of the Offshore Transmission System.

What is Embedded Generation?

Embedded Generation is where a Generator is located within a Distribution System and deemed not to make use of the Transmission System. Generators that typically generate less than 100MW are Licence Exemptable and have the option to be treated as Embedded by connecting directly to a Distribution System. By connecting directly to a Distribution System and not making use of the Transmission System they are not liable for the following transmission related charges:

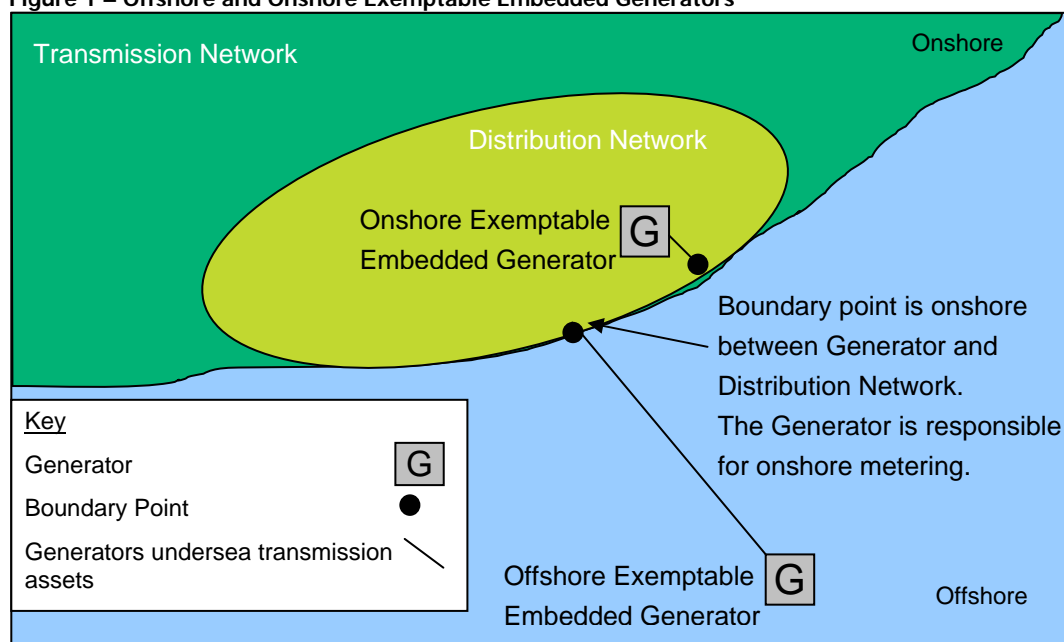
- Transmission Network Use of System (TNUoS)
- Balancing System Use of System (BSUoS)
- Residual Cashflow Reallocation Cashflow (RCRC)
- Socialised Transmission Losses

The avoidance of the above charges are known as 'Embedded Benefits'. While the Exemptable Embedded Generator receive Embedded Benefits, they are liable for Distribution Charges.

Onshore and Offshore Exemptable Embedded Generators

Before the Offshore Transmission Arrangements Go Live in June 2010, Exemptable Onshore and Offshore Generators can elect to connect directly to a Distribution System and not make use of the Transmission System. Figure 1 shows the difference between the Offshore and Onshore Exemptable Generators.

Figure 1 – Offshore and Onshore Exemptable Embedded Generators



Before Go Live, both Onshore and Offshore Exemptable Generators would have a Boundary point between them and the Distribution System. The only difference between



Any questions?

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What are TNUoS charges?

The Transmission Network Use of System charge published for the relevant year as set out in the statement provided for in Standard Licence Condition C4 of the Transmission Licence held by National Grid



What are RCRC charges?

Is a charge or credit to a Party covering an over or under payments in relation to Balancing the system at the end of each settlement period

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Onshore and Offshore Exemptable Embedded Generators is that the Offshore Generator owns Assets (i.e. a Transformer and a 132kV cable) connecting it to the Distribution System. As such the Offshore Exemptable Generator is responsible for its own Transmission Losses and maintenance of the assets. Table 1 provides a comparison of the two.

Table 1 – Comparison of Offshore and Onshore Embedded Generators and the charges they are liable for Pre Go Live

	Onshore Embedded Generator	Offshore Embedded Generator
DUoS	Liabile	Liabile
Wider TNUoS	Not Liabile	Not Liabile
BSUoS/RCRC	Not Liabile	Not Liabile
Registers Meter in	SMRS or CMRS	SMRS or CMRS
Onshore Transmission Losses	Not Liabile	Not Liabile
Offshore Transmission Losses	Not applicable	Directly attributed to the Generator (as metering is onshore)
Offshore Transmission Asset Costs	Not applicable	Liabile (own assets)



What are DUoS charges?

Charges associated with using a Distribution Network



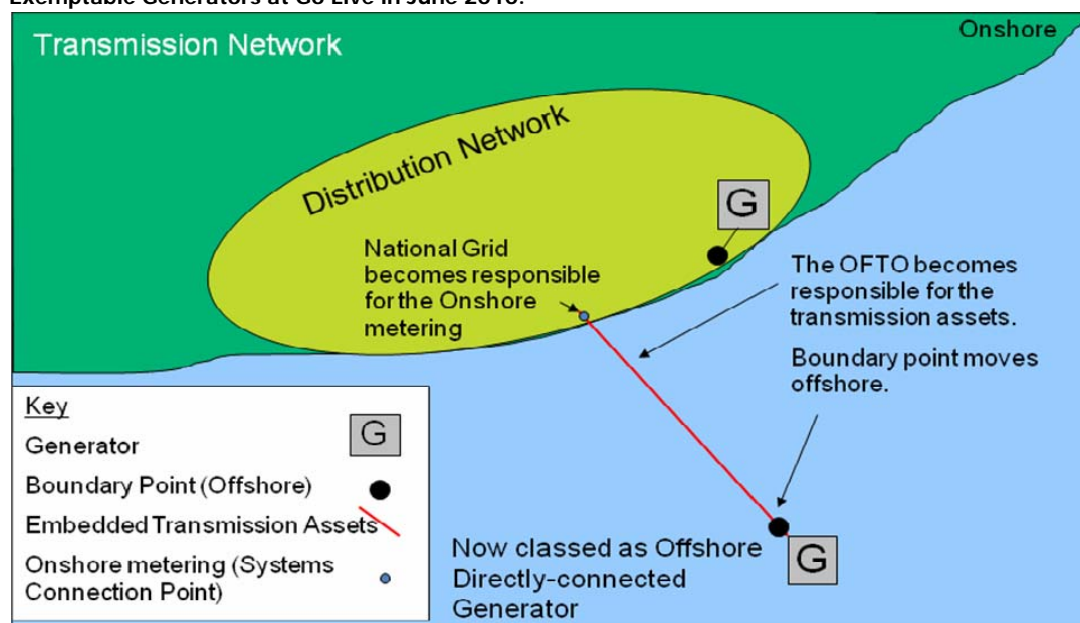
What are BSUoS charges?

The charges associated with balancing the inputs and outputs of the Transmission System.

How will the Offshore Transmission Regime affect Offshore Exemptable Embedded Generators?

When the Offshore Transmission Arrangements Go Live in June 2010, the Offshore Transmission Owners (OFTOs) will take over the responsibility of all Offshore networks operating at 132kV cables and above. These assets will be re-categorised as Transmission Networks. This means that Offshore Exemptable Generators connected by such assets to an Onshore Distribution System, will at Go Live cease to be considered as Embedded, and will instead be treated as Directly Connected. Figure 2 shows the changes that will take affect at Go Live.

Figure 2 – How the Offshore Transmission Arrangements will change the treatment of Offshore Exemptable Generators at Go Live in June 2010.



What is Embedded Transmission?

Offshore Transmission Assets that connect Onshore to a Distribution System.

Since the change in status will mean that the Offshore Exemptable Generator is now treated as directly connected, they will lose the Embedded Benefits, therefore they will be liable for the Transmission Charges and socialised Transmission Losses. In addition as the Transmission Assets connect Onshore to the Distribution System they will still be liable for the DUoS charges as well. The shift of the Boundary Point offshore to between the Generator and Transmission System, will mean existing Generators will incur a cost of installing the metering offshore. Table 2 provides a comparison of how Offshore Exemptable Generators that before Go-Live could be treated as Embedded will be treated following Go Live.

Table 2 – Comparison of Offshore Exemptable Generators before and after Go Live

	Offshore Exemptable Generator before Go-Live	Offshore Exemptable Generator at Go Live
Option to be Embedded	Yes	No (as they are Transmission Connected)
DUoS	Liable	Liable
Wider TNUoS	Not Liable	Liable
BSUoS/RCRC	Not Liable	Liable
Registers Meter in	SMRS or CMRS	CMRS only (as they are Transmission Connected)
Location of Generators Metering	At Onshore Boundary Point between Generator and Distribution System	At Offshore Boundary Point between Generator and Transmission System
Onshore Transmission Losses	Not Liable	Liable
Offshore Transmission Losses	Directly attributed to the Generator (as metering is onshore)	Socialised
Offshore Transmission Asset Costs	Liable (own assets)	Liable (paid to OFTO)

What is the Proposal trying to achieve?

E.ON/Centrica raised P242 to propose changes to the BSC so that Offshore Exemptable Generators connecting to 'Embedded Transmission' after Go Live will have the option to be treated as Embedded. These Offshore Exemptable Embedded Generators would then be able to gain access to Embedded Benefits, while picking up the relevant offshore costs that an Offshore Exemptable Embedded Generator should be liable for. Table 3 shows a comparison of how Offshore Exemptable Generators will be treated after Go Live compared with how they would be treated under the model proposed by P242, if the Generator has the option to be treated as Embedded.

Table 3 – Comparison of Offshore Exemptable Generators before and after Go Live

	Offshore Exemptable Generator at Go Live	P242 proposal -Offshore Exemptable Embedded Generator.
Option to be Embedded	No (as they are Transmission Connected)	Yes
DUoS	Liable	Liable

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	Offshore Exemptable Generator at Go Live	P242 proposal -Offshore Exemptable Embedded Generator.
Wider TNUoS	Liabe	Not Liabe
BSUoS/RCRC	Liabe	Not Liabe
Registers Meter in	CMRS only (as they are Transmission connected)	CMRS and SMRS (retain both options, that are available before Go-Live)
Location of Generators Metering	At Offshore Boundary Point between Generator and Transmission System	At deemed Onshore Boundary Point between Generator and Distribution System
Onshore Transmission Losses	Liabe	Not Liabe
Offshore Transmission Losses	Socialised	Directly attributed to the Generator (as metering is onshore)
Offshore Transmission Network cost	Liabe (paid to OFTO)	Liabe (paid to OFTO)

The Proposer's rationale behind P242 is that change in status, as a result of the Offshore Transmission Arrangements, gives rise to undue discrimination against the Offshore Exemptable Generator. The discrimination is undue as the only difference between Offshore Exemptable Generators and Onshore Exemptable Generators is that before Go Live the Offshore Generator is liable for its own Offshore Asset costs and losses along the 132kV cable to shore. This means the Offshore situation is very similar to the Onshore. After Go Live the Offshore Exemptable Generator will be considered a Transmission Connected. The Offshore Generators set up will still be more similar to the Onshore Exemptable Embedded situation, with the only difference being the presences of the Embedded Transmission, between the Generator and the Onshore Distribution System.

History of Issue

The issue that the P242 is proposing to address was first raised by the Proposer in correspondence with Ofgem in October 2007, at various workshops and seminars through the Ofgem and the Department of Environment and Climate Change (DECC) Offshore Transmission project and consultation process. The issue was not considered formally until later in 2008.

In July 2008 Ofgem and DECC stated that they would be reviewing the treatment of these Offshore Generators and this was subsequently undertaken within the project. In the [November 2008 Regulatory Update document](#), Ofgem/DECC concluded that they were not convinced that different treatment for these generators was justified.

Meanwhile, the TNUoS charging principles behind the model were consulted on formally in National Grid's consultation on Offshore Transmission which took place in November 2008. The Proposer continued to advocate the alternative model in its response to the Regulatory Update document and included suggested BSC drafting changes to assist its further consideration. However the [final consultation document issued in March 2009](#) maintained the view that different treatment was not appropriate.

The Proposer believed that the challenging programme of work required for introducing the Offshore Transmission regime may have meant that it was not possible for the implications of such a new concept as 'Embedded Transmission' to be fully understood.

The Proposer considers that a defect in the arrangement exists, and should be addressed before Go-Live.

Amending Statutory changes

When the details of Initial Written Assessment of P242 were presented at the Panel meeting on 13 August 2009 ([158/08](#)) concerns were raised as to whether it was a Modification that was undoing parts of the Offshore Transmission Arrangements that had been put in place by the Secretary of State.

At the Panel meeting Ofgem were asked about providing a provisional view on the prospects of such a Modification. Ofgem referred back to the November 2008 and March 2009 Offshore consultation documents which indicated that Ofgem would *'consider any specific issues that relate to the transition of existing 132kV connected licence exempt offshore generators to the new transmission arrangements on a case by case basis'*.

It was agreed that this Modification should go through a thorough and complete process so that it could be judged on its own merits following a full industry consultation and assessment.

Any Authority decision will be based on:

- the content of the Modification Report;
- industry consultation responses;
- whether the proposal improves the current BSC baseline; and
- whether it better facilitates the applicable BSC Objectives.

2 Terms of Reference

The P242 Modification Group consists of members of the Settlement Standing Modification Group (SSMG), supplemented with members of the Issue 37 Group.

Table 4 lists each Terms of Reference consider by the P242 Modification group, a summary of their initial conclusions and where full details of the group's discussion and conclusions are documented.

Table 4 - P242 Assessment Procedure Terms of Reference

Area of Terms of Reference	Group's initial conclusions:	See:
Is there a reason why Offshore Exemptable Generators that are connected directly to a Distribution System should not be treated similarly to onshore Embedded Exemptable generators?	The Group discuss the arguments for and against P242, and concluded that there was no reason why they shouldn't be treated the same.	Main Document Section 7 Further Information in Attachment A, Section 5
Where should the Boundary Point lie?	To enable an Offshore Exemptable Generator to be treated as Embedded you will need a deemed Onshore Boundary Point at the Offshore Transmission Connection Point	Main Document Section 3
What BSC definition changes are needed?; and are there wider implications of changing BSC definitions on other industry codes?	Changes to Annex X-1 may be need to add new definitions. No existing BSC Definition changes are required, as the provisions in Section K can be amended to accommodate the proposed solution. Other industry changes are required in relation to the Charging Methodology. P242 is not contingent on it.	Main Document Section 5 Attachment A, Section 4
What are the wider impacts of P242 outside of the BSC?	The group discussed the wider impacts and concluded that there are no wider impacts on other industry work.	Main Document, Sections 5 Attachment A, Section 4
Are there any issues caused by the Party responsible for the Exports from the relevant generator also being the Registrant of the onshore metering?	No, the group agree that in order for the Generator to be treated as embedded and be responsible for their own losses, the Generator would be the registrant of the offshore metering in CMRS and the Supplier in SMRS.	Main Document Section 3
How will the Offshore Losses be directly attributed to the Offshore Exemptable Generator?	The group concluded that by having the Generator (CMRS) and Supplier (SMRS) responsible for the onshore	Main Document Section 3

Area of Terms of Reference	Group's initial conclusions:	See:
	metering would mean that the Offshore Losses would be automatically the responsibility of the Offshore Generator.	
What are the benefits and drawbacks of P242? Including: <ul style="list-style-type: none"> Costs/benefits to all Parties and the Transmission Company. 		Main Document Section 7 Further details in Attachment A; Section 5
How does current treatment of Offshore Exemptable Generation result in discrimination, and how will the P242 solution resolve this?	The group discussed at some length the discrimination issues and the views for and against.	Main Document Section 7 Further details in Attachment A; Section 5
Is an Alternative Modification required?	The group discussed a potential Alternative solution, which the majority of the group agreeing it should not be taken forward as it doesn't deliver the full requirements set out in the P242 Proposal.	Main document Section 4 Further details in Attachment A; Section 3
How does the P242 solution better meet the Applicable BSC Objectives?	The Groups initial views are that P242 will better facilitate objective (a) and (c) and in a limited circumstance objective (b)	Main Document Section 7 Further Details in Attachment A; Section 5

3 Details of Proposed Solution

The Main P242 document explains the P242 solution (see Section 3). To provide additional clarity on how the registration process would work, the following tables provide a high level overview of the steps that the Generator would need to follow in order to register as an Embedded Transmission BM Unit in CMRS and SMRS.

A third table shows what would need to occur if the Embedded Transmission was no longer 'Sole Use' or the Offshore Generators, Generating Capacity increases above 100MW.

CMRS Registration

Table 5 – CMRS registration steps

Step	Activity	Timetable ref.
1	Offshore Embedded generator registers as a BM Unit with an Embedded Transmission BM Unit configuration. The indication that the BM Unit configuration uses Embedded Transmission would warrant necessary checks to show the assets are 'Sole Use'.	BSCP15 3.1
2	During the registration as an Embedded Transmission BM Unit, the Offshore Generator will need to prove its Exemptable status	BSCP15 3.10
3	The registration of an Embedded Transmission BM Unit will provide the necessary indication to National grid that the Generator will be taking the responsibility of the settlement metering at the deemed Boundary Point	-
4	Once the BM Unit's exemptable status has been confirmed it would be treated as an Exempt Export BM Unit, which will mean it will join the Base Trading Unit	-

SMRS Registration

Table 6 – SMRS registration steps

Step	Activity	Timetable ref.
1	Offshore Exemptable Generator agrees connection with the Distribution System via the System Operator.	-
2	The relevant Supplier will then register the metering system in SMRS. In doing this the Offshore Exemptable Generator joins the Supplier BM Unit, and automatically joins the Base Trading Unit for the relevant GSP Group.	-
3	At the same time as 2 the Supplier must register an Additional BM Unit via BSCP15 4.1, which will indicate that it is an Embedded Transmission BM Unit configuration and that the Generator has 'Sole Use' of the Transmission System. During the registration of the Additional BM Unit,	BSCP15 3.4

	proof will be needed of the Generator's Exemptable Status (BSCP15 3.10).	
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No longer 'Sole Use' or increase in generating capacity above 100MW

Table 7 explains the steps that an Offshore Generator would need to go through if the Embedded Transmission Assets stopped being 'Sole Use' or the generation capacity of the Generator increased to 100MW or above. These changes in status would stop the Offshore Exemptable Generator from being able to be treated as Embedded (and Exemptable for the Generation capacity change) and would need to re-register.

Table 7 – No longer 'Sole Use' or increase in Generation Capacity above 100MW

Step	Activity	Timetable ref.
1	<p>If the Transmission Assets stop being 'Sole Use' or the generation capacity of the Offshore Exemptable Generator changes, the Generator or Supplier will need to de-register the Embedded Transmission BM Unit in CMRS or SMRS.</p> <p><i>(National Grid will have early site of an new Generation considering connection to an existing 'Sole use' Asset or re-enforcement of a Generating Plant to cope with increase capacity, so will know if a Offshore Exemptable Generator will need to de-register as an Embedded Transmission BM Unit and instead register as a Directly Connected BM Unit.)</i></p>	BSCP15 3.11
2	<p>The Offshore Exemptable Generator will then need to register as a Directly Connected Generator in CMRS</p> <p><i>(If the Generation capacity is still below 100MW they may need to re-confirm the Exemptable status following the process in BSCP15 3.10)</i></p> <p>By Registering as a Directly Connected BM Unit the generator will need to have the metering installed at the Boundary Point where it connects to the Transmission Assets.</p>	<p>BSCP15 3.1</p> <p>BSCP15 3.10</p>

Alternative Solution

Following the completion of discussions over the P242 Proposed Solution, the group considered one potential Alternative Solution.

How did the alternative solution differ?

The key differences were that:

- there would be no deemed Onshore Boundary Point.
- metering Onshore would be achieved through a metering dispensation; and
- the meter registration would remain CMRS only inline with other Transmission connected Generation

Location of the Boundary Point and Use of Metering Dispensation

Under the suggested alternative Modification the location of the Boundary Point would remain unchanged. It would be Offshore between the Offshore Exemptable Generator and Offshore Transmission. Instead a party would seek a Metering Dispensation against the relevant Code of Practice (CoP) so that the Generator could meter onshore at the Offshore Transmission Connection Point.

Registration

CMRS

The meter would be registered in CMRS. It would be used to determine flows for the Systems Connection Point. Readings from the same meter would be used in the aggregation rules for the Offshore generator, possibly with a scaling factor for losses on the line (part of the dispensation application referred to above). This may need a bilateral agreement between the generator and National Grid in relation to the generator's BSC obligation to ensure metering at the boundary point.

At least one BM unit would be registered with the Boundary Point flow(s) allocated to it as for all other Directly Connected Generators. Registration of a BM Unit maintains visibility and the potential for balancing actions and ancillary services associated with the directly connected generator. This would be consistent with the existing BSC and all other Directly Connected Generators.

The 'embedded Benefits' would be obtainable by being in a BSC Trading Unit would be achieved by a simple change to BSC Section K4, to allow a BM Unit using a Dedicated Transmission System would be deemed to be in the GSP group and would automatically join the base trading unit.

SMRS

There would be no SVA registration, so as to be consistent with all other Directly Connected connections.

Views and Conclusion of the Group on the suggested Alternative

The Modification group member who suggested the potential Alternative believed it would have been better than the proposal, as the discrimination with other directly connected assets (not just generators) in terms of meter registration, BM Unit registration, Transmission Losses and visibility would have been reduced. It would have maintained a vestige of the Offshore Transmission being treated as Transmission rather than as private assets.

The Group discussed the Alternative Solution and reached a majority conclusion that the suggested Alternative solution was not suitable as:

- Not meeting all the requirements set out in the P242 Proposal Form, and highlighted in Section 3 of the main P242 document), in so far that:
 - it only allowed for CMRS registration, whereas the P242 Proposal form explicitly stated that both CMRS and SMRS registration options would be available;
 - The Offshore Transmission losses would not necessarily be directly attributed to the Generator, and would remain socialised;
- Introducing a degree of uncertainty as there would be no guarantee that the necessary metering dispensation would be approved, to allow the Generator to meter onshore at the Offshore Transmission Connection Point; and
- The option to submit a metering dispensation to allow the Generator to continue to Meter onshore is already available, and would not need to form part of a Modification to occur.

4 Modification Group's Discussions

Wider Impacts

Other Industry Code impacts

The Group discussed whether there would be other code impacts, with there being some discussion around impacts on National Grid's Grid Code (GC) and Connection and Use of System Code (CUSC). The Proposer indicated at the Modification Group meetings that there are related changes being taken forward to the GC and CUSC, but these changes are not contingent on P242.

Impacts on other Industry Work

Charging Methodologies

A charging methodology change is being progressed to clarify that the Offshore Exemptable Generator will only pick up the Local Offshore changes (use of the Transmission Assets connecting the Generator to the Distribution System) only, when the Generator is treated as Embedded. See Section 5, for further details of the charging methodologies change.

As with the NGC and CUSC changes, the change to the charging methodologies would support the changes that would be introduced by P242, are not contingent on each other.

Transmission Access

The group discussed and concluded that there would be no changes in relation to Transmission Access in relation to the P242.

National Grid Review of Small Generation

The group discussed that the review may have an impact on the BSC in the future, with the effect at this time unknown. P242 is looking at the current live baseline and if the Modification is approved, any change in the future as a result of the National Grid review will be against the Baseline of the BSC at the time the review is completed.

Incentives/Disincentives to become Embedded Generation

The Group considered whether the P242 Solution could provide an incentive for developers to design new sites in a manner that will enable them to take advantage of Embedded benefits.

The Proposer took an action to provide information on the current situation with Offshore developments and whether there would be an incentive.

What would the generator need to do to meet the requirements of the P242 solution?

The circumstances under which developers could avail themselves of the benefits of P242 are:

- The Generator would have to be able to convince National Grid and the Secretary of State that the wind farm was a number of separate Generators located next to each other to obtain the Licence Exemptions.
- The design of the Offshore network would have to be such that discrete cables (or groups of cables) would transmit the output of each individual Exemptable Generator alone and that the output of each station could not be exported along the cables of any other station.

- Each cable or group of cables would have to connect to the distribution system onshore with its own individual metering at each point.

Can developments take advantage of P242?

Current Developments

There is presently very limited scope for existing wind projects (known as Round 1 and 2) to redesign and acquire licence exemptions from the Secretary of State as most of them are either constructed, under construction, have planning permission or are in the planning process.

Future Developments

Future projects (known as Round 3) are all of a large size ranging from 500MW to 1500MW. Due to their size, providing the proof (to get a Licence Exemption) that these wind farms are in fact separate Generators is likely to be very difficult.

Additionally, these sites are often grouped into larger zones. The largest of these zones for example is Dogger Bank with an estimated capacity of around 10GW. There are also two zones with an estimated 5GW each and one of 3GW. These zones are generally further from shore than the earlier rounds.

Both the size of the zones and their distance from shore make it less likely that individual stations will be connected to the mainland with their own point to point cables. In December 2008, National Grid and Senergy Econnect, published a study¹ for Crown Estate on possible connection options for Round 3 projects. The designs contained in that document generally entailed a number of projects being aggregated Offshore before being transmitted together to the mainland.

The situation of the Round 3 projects compared with the Round 1 and 2 projects is summarised very well in the report²:

"Projects arising out of the Round 1 and Round 2 offshore leasing process were predominantly small in size and close to the shoreline (almost exclusively within the 12 nautical mile limit of territorial waters) relative to the proposed Round 3 areas. For the majority of these Round 1 and Round 2 projects, cost benefit analysis clearly demonstrated that individual, AC, radial connections to the electricity system onshore were the most economic. In contrast, offshore areas earmarked for Round 3, such as the Dogger Bank, could be developed to levels of up to tens of gigawatts and are located more than 100km from the onshore system leaving greater scope for consolidation and optimisation in taking the energy to shore."

Therefore, it is going to be very difficult to justify individual radial connections for each "Exemptable" power station as would be necessary to exploit P242 in this manner.

Security issues with Larger Sites

There is also a general security of connection issue for the wind farms. A 500MW site could typically require 4 cables to connect it to shore. This would provide very limited redundancy compared with the maximum capacity of the station. That is, if one of these cables failed it is unlikely that the maximum capacity of the station could be transmitted down the remaining cables. However, wind stations do not operate at full capacity all of the time. Therefore, ordinarily if such a large wind farm lost a quarter of its transmission capacity you would not expect it to lose a quarter of its output.

¹ http://www.thecrownestate.co.uk/round3_connection_study.pdf

² See page 12 of the report.

At times when the generator was generating at three quarters of its total capacity or less, the whole station's output could still be transferred down the remaining transmission capacity. By contrast, if the generator split into 4 individual power stations each with one cable, if one cable failed then the entire output of the individual station would be curtailed. In other words a quarter loss of transmission capacity would equate to a quarter loss in output.

Loss of Offshore transmission capacity is a significant risk to a project, particularly Offshore as the lack of suitable vessels and the requirement for a window of good weather means that repairs cannot be effected as easily or as quickly as onshore. Should a failure occur at the beginning of winter, it could be many months until the asset is returned to operation.

As well as the risk associated with loss of cables it should be borne in mind that in the above example each cable would be carrying around 125MW each, well above the licence exemption threshold. To bring a project of 500MW below the threshold it would have to be split into at least 5 projects, if not 6. Therefore, the cost implications in terms of additional cables would act as an additional disincentive.

Finally, even if the above hurdles were cleared, the generators would have to connect to the local distribution system onshore. Apart from the costs of transmitting 500MW of power at 132kV in terms of losses and infrastructure reinforcement, the generator would not have the same level of financial firmness as would be provided by an onshore transmission connection.

Conclusion

In conclusion there are a number of factors which would stop sites choosing to fragment to make use of the P242 solution, making it unlikely in reality. This is based on experience in respect of the larger projects, such as London Array, which are choosing to connect onshore to the Transmission System.

Group's discussion of the information provided

The Group discussed the information that the Proposer provided and concluded that:

- while unlikely, due to the size of the developments, a generator could consider the Embedded option as a means of avoiding some of the transmission costs, through obtaining Embedded Benefits;
- the developer would weigh up the costs of developing the site as a transmission connected compare to an embedded development, and if the cost to develop the embedded site was too costly or the savings incurred did not cover the cost of development they were more likely to develop a larger transmission connected site;
- the development of larger Offshore sites are more efficient and provide better security as they will connect to a larger Offshore Transmission system across groups of cables, so if one cable fails there are others to cope with the transmission, whereas Embedded Transmission involves a single cable, and if it fails the energy cannot be transmitted; and
- a Distribution System would be limited on the number of Offshore connections at 132 KV cables and above, before the System needed re-enforcing.

Arguments for and against the Applicable BSC Objectives

Section 7 of the main document, provides a summary of the Benefits and Drawbacks of P242. Most of the arguments arose during discussions around whether there was undue discrimination against Offshore Exemptable Generators not being able to be treated as Offshore Exemptable Embedded Generators after the Offshore Transmission Arrangements Go Live in June 2010 next year. The Group considered other areas of discrimination providing arguments for and against each.

Table 8 provides the arguments for and against the Modification in relation to this discrimination issue how they in turn related to the Applicable BSC Objectives as summarised in section 7 of the main document.

Table 8 – Views for and against the Discrimination Issue

Discrimination	Views For P242	Views against P242
Discrimination between Offshore Embedded Transmission Exemptable Generators and Onshore Exemptable Embedded Generators	<p>The Offshore Embedded Transmission connected Exemptable Generator more closely resembles the situation of an Onshore Exemptable Embedded Generator than it does a Transmission connected Generator, as:</p> <ul style="list-style-type: none"> These generators are not connected to the wider, integrated GB Transmission Network, and so treating them as if they are is unjustified – indeed in National Grid's Transmission Charging methodology the Offshore Transmission assets are regarded as local works and not part of the Main Integrated Transmission System; Their only difference to an Onshore Embedded Generator is the presence of the 132kV cabling to shore. <p>P242 ensures the Offshore Generator is exposed to charges similar to that of an Onshore Exemptable Embedded Generator; by doing so it provides equitable treatment and so better facilitates competition under BSC Objective (c).</p>	<p>After Go Live, the assets (the 132kV cable) will be the responsibility of the OFTO and so the Offshore Generator must be considered as transmission connected. After this point there is a suitable difference between the Offshore and Onshore Exemptable Generators to warrant the difference in treatment.</p> <p>Allowing differences in the treatment of transmission-connected generation (whether Licensable or Exemptable) would create further discrimination and would have a negative impact on Applicable BSC Objective (c).</p>
Discrimination between Offshore Embedded Transmission	The Offshore Embedded Transmission Exemptable Generator does not resemble the situation of Onshore Exemptable Transmission Connected	As above, notwithstanding the fact that the detailed connection configurations differ, both cases are considered to be transmission-connected and so warrant being

Discrimination	Views For P242	Views against P242
Exemptable Generators and Onshore Exemptable Transmission Connected Generators in Scotland (with 132kV connections)	<p>Generators in Scotland, as:</p> <ul style="list-style-type: none"> The 132kV network in Scotland is part of the wider integrated GB Transmission Network and is not a discrete standalone network. Embedded Transmission connected Generation meets demand in the same manner as an Embedded Generator situated Onshore does. It cannot be claimed that it connects to the Onshore Transmission System in the same manner as a 132kV Transmission connected Generator in Scotland. The access to the market that an Exemptable Embedded Transmission connected Generator has is different from the equivalent Transmission connected Generator in Scotland. If there is a failure of the Distribution System that means that an Embedded Transmission Generator has to reduce output, this will not be accommodated through a Bid being accepted in the Balancing Mechanism. Instead the Generator has to reduce output at its own cost and potentially incur imbalance charges. This is the same position as is faced by someone responsible for the output of an Embedded Exemptable Generator. Conversely, if a failure on a Distribution System caused circumstances which required a 132kV connected Generator on the Scottish Onshore Transmission System to reduce power, a bid would be accepted by the System Operator in the Balancing Mechanism. <p>As the physical and commercial positions of the two classes of Generators are significantly different, it is not unduly discriminatory to treat them differently under P242; indeed to</p>	<p>treated in the same way.</p> <p>To do otherwise risks making the maintenance and operation of the Offshore Transmission System (whether discrete or contiguous with the rest of the GB network) more difficult, impacting Applicable BSC Objective (b), or creating unfair discrimination between generators, impacting Applicable BSC Objective (c).</p>

Discrimination	Views For P242	Views against P242
	<p>treat them the same would be unduly discriminatory. Therefore, P242 would better facilitate competition in generation and so better facilitate Applicable BSC Objective (c).</p>	
<p>Discrimination between Offshore Licensable Generators having to meter Offshore and Exemptable Generators and being able to meter Onshore under P242</p>	<p>The scope of P242 is focused on addressing discrimination in respect of Exemptable Generation. The same discrimination issue does not exist in Licensed Generation, where all generators are treated equitably.</p> <p>Under P242 the treatment of Licensable Generation would remain unchanged. If the Embedded Transmission Licensable Generators are to be exposed to the costs of the wider Transmission System including Onshore Transmission losses, it is only equitable that the losses of the Offshore Transmission Network should be socialised across other parties in a similar manner. This creates the requirement for Offshore metering so that the output of the relevant Generator is measured gross of the relevant Offshore losses.</p> <p>Conversely, under P242 the Embedded Transmission Exemptable Generator is totally responsible for its Offshore losses. This drives the requirement for these Generators to be metered Onshore.</p> <p>The result is that the generator incurs charges that are fair and reasonable and so do not adversely impact competition and therefore Applicable BSC Objective (c).</p>	<p>Under the Offshore Transmission arrangements, the Licensable Generators have to install and meter Offshore at the Boundary Point, which involves a much higher cost over metering Onshore. This difference in requirements could have a negative impact on competition and therefore Applicable BSC Objective (c).</p> <p>The Exemptable Generators will only be able to meter onshore at the deemed Boundary Point in limited situations, i.e. in cases of Sole Use, and where connecting to Distribution System. Maintaining different treatment for particular Offshore generators could impact the Transmission Company's ability to discharge its duties efficiently, resulting in a negative impact on Applicable BSC Objective (a).</p>

6 Costs Benefit Analysis

Cost Analysis

Offshore Exemptable Generator Baseline (Post Go Live) costs compared to P242 Proposed Solution costs.

During its discussions the P242 Modification Group agreed that a comparison of the costs that Offshore Exemptable Generators would be liable for after Go-Live (the current Baseline) compared to the costs the Offshore Exemptable Generator would be liable for under the P242 Proposed Solution if it elected to be Embedded would be useful.

The following table shows a generalised comparison, along with supporting commentary on how the costs were calculated.

Source Data			Costs post Go Live (£)		
Generation Capacity	270		Generator Costs	Baseline	P242
Load Factor	35%		BSUoS	959,037	0
Output MWh	827,820		RCRC	-87,215	0
BSUoS £/MWh	1.16		Onshore Distribution Losses	0	-1,297,099.55
RCRC £/MWh	-0.11		Onshore Transmission Losses	379,772	
Market Price	53.84		Offshore Losses	1,539.90	1,337,216
Total TGSD (TWh)	359		Total	1,253,134	40,116
Onshore Losses	TLM	Percentage	Supplier Costs	Baseline	P242
Offtaking	1.011	1.1%	BSUoS	959,037	0
Delivering	0.991	0.9%	RCRC	-87,215	0
Distribution Line Loss		-3%	Onshore Transmission Losses	473,269	0
Offshore Losses	3.0%		Offshore Losses	1,539.90	0
			Total	1,346,631	0
All source data covers periods from 1 Aug 2008 to 31 July 2009			Grand Total	Baseline	P242
				2,599,765	40,116

Commentary

The source data for this table comes from information available from the ELEXON and National Grid websites, with the values covering the period between 1 August 2008 and 31 July 2009. The generation capacity quoted is the sum of the individual capacities of three current Offshore Exemptable Embedded Generation plants: Barrow, Robin Rigg East and Robin Rigg West. For the purpose of the exercise, Offshore Losses and Onshore Distribution Losses are assumed to be 3%.

1. Generator Costs

i) BSUoS Costs

Baseline – the generator will pay BSUoS on metered generation at the Offshore platform (i.e. gross of Offshore Transmission Losses).

P242 – the generator would not be liable for BSUoS as it would be considered as Embedded.

ii) **RCRC**

Baseline – the generator will be exposed to RCRC on its metered generation at the Offshore platform (i.e. gross of Offshore Transmission Losses).

P242 – the generator would not be exposed to RCRC.

iii) **Onshore Distribution Losses**

Baseline – The generator will not be exposed to Onshore Distribution Losses.

P242 – The generator would be credited with losses at the relevant Distribution Line Loss Factor. That is, the generator is scaled up for losses that have been deemed to have been saved by the generator reducing the demand of the GSP Group. Line losses are generally set specifically for each generator, however, an average benefit of 3% has been assumed. The value has been applied to the output of the generator net of Offshore Transmission Losses as this would be the figure used for settlement. The benefit of these losses has been priced at Market Index Price for this analysis as a proxy for the energy price.

iv) **Onshore Transmission Losses**

Baseline – The generator will be exposed to Onshore Transmission Losses on its metered output Offshore (gross of Offshore Transmission Losses). The loss factor to be used is that for Delivering BM Units. The cost of these losses has been priced at Market Index Price for this analysis as a proxy for the energy price.

P242 – the generator would not pay any Onshore Transmission Losses

v) **Offshore Losses**

Baseline – The Losses associated with the generator's Offshore Transmission Network will be smeared across all other market participants. These will be split roughly 50:50 between generation and demand. The generator will be exposed to its share of the losses allocated to generators in proportion to its market share. The cost of these losses has been priced at Market Index Price for this analysis as a proxy for the energy price.

P242 – The generator would be exposed to the total Losses associated with its Offshore Transmission Network. These are generator specific but for this analysis are assumed to be 3%. This is applied to metered output Offshore. The cost of these losses has been priced at Market Index Price for this analysis as a proxy for the energy price.

2. **Supplier Costs**

As well as avoiding costs itself, an embedded generator is deemed to reduce demand in the GSP Group equivalent to its generation. This means that a supplier benefits from reduced charges on this output too. These principles would also apply for suppliers associated with generators affected by P242 were it to be implemented.

i) **BSUoS Costs**

Baseline – The supplier will pay BSUoS on its metered demand. This analysis shows the additional amount that the relevant suppliers would have to pay under the present baseline arrangements when the Offshore Arrangements Go Live, as a result of the loss of embedded benefits from the P242 affected generators.

P242 – The supplier would not be liable for BSUoS on the amount of demand offset by the P242 generator.

ii) **RCRC**

Baseline – The supplier will be exposed to RCRC on its metered demand. This analysis shows the additional amount that the relevant suppliers would be exposed to under the present baseline arrangements when the Offshore Arrangements Go Live, as a result of the loss of embedded benefits from the P242 affected generators.

P242 – The supplier would not be exposed to RCRC on the amount of demand offset by the P242 generator.

iii) **Onshore Distribution Losses**

The supplier's Distribution Losses would be unaffected by P242; they would be liable for the same amount under both the Baseline and the proposed P242 arrangements.

iv) **Onshore Transmission Losses**

Baseline – The supplier will be exposed to Offshore Transmission Losses on its metered demand. This analysis shows the additional amount that the relevant suppliers would be exposed to under the present baseline arrangements when the Offshore Arrangements Go Live, as a result of the loss of embedded benefits from the P242 affected generators. The loss factor to be used is that for Offtaking BM Units. The cost of these losses has been priced at Market Index Price for this analysis as a proxy for the energy price.

P242 – The supplier would not be exposed to Onshore Transmission Losses on the amount of demand offset by the P242 generator.

v) **Offshore Transmission Losses**

Baseline – The Losses associated with the generator's Offshore Transmission Network would be smeared across all other market participants. These will be split roughly 50:50 between generation and demand. The supplier will be exposed to its share of the losses allocated to demand in proportion to its market share. This analysis shows the additional amount that the relevant suppliers would be exposed to under the present baseline arrangements when the Offshore Arrangements Go Live, as a result of the loss of embedded benefits from the P242 affected generators. The cost of these losses has been priced at Market Index Price for this analysis as a proxy for the energy price.

P242 – The supplier would not be exposed to the losses associated with the Offshore Transmission Network as the Offshore Generator would be fully exposed to these.

Is TNUoS charging affected by P242?

During discussions of costs the Group considered whether TNUoS charges was affected in any way by P242.

The Proposer looked at whether P242 would change the allocation of TNUoS charges in any way, rather than requiring a related but not contingent change to the Transmission Charging Methodology. On looking at the TNUoS Charging Methodology the group concluded a change would be required in respect of Generation TNUoS charges and Demand TNUoS Charges.

Generation TNUoS

Under the Offshore Transmission Arrangements, the Embedded Transmission connected Generator would sign a Bilateral Connection Agreement (BCA) with National Grid. Generators with a BCA are required to pay TNUoS charges in accordance with 5.1ii) of the Charging Methodology³. Therefore a change would be required to the methodology to change this requirement for Exemptable Generation Connected to Embedded Transmission.

Demand TNUoS

In terms of demand TNUoS embedded benefit, the situation is different depending on whether the generator is CMRS or SMRS registered.

CMRS Registered

At present CMRS register generators with Bilateral Embedded Generation Agreements and who do not have to pay Generation Charges can receive a credit for demand TNUoS, as set out in paragraph 4.11 of the Charging Methodology:

"4.11 For Supplier BMUs and BM Units associated with Exemptible Generation and Derogated Distribution Interconnectors with a Bilateral Embedded Generation Agreement, if the average half-hourly metered volume over the Triad results in an import, the BMU will be charged the amount of the relevant kW tariff multiplied by the average import. If the average half-hourly metered volume over the Triad results in an export, the BMU will be paid the amount of the relevant kW tariff multiplied by the average export. For the avoidance of doubt, parties with Bilateral Embedded Generation Agreements that are liable for Generation charges will not be eligible for a negative demand credit."

The Generator receives negative demand TNUoS on its average output over the Triad. Note that 4.11 also applies to supplier BMUs (ie SMRS registered BMUs) that export during the Triad.

The relevant part of the Transmission Use of System Methodology covering SMRS Exemptible Generators, is paragraph 4.12 which says:

"4.12 The output of generators and Distribution Interconnectors registered as part of a Supplier BM Unit will have already been accounted for in the Supplier BM Unit demand figures upon which National Grid Transmission Network Use of System Demand charges are based"

Therefore, P242 would have a direct effect on this as it would allow the generator to be registered in SMRS and therefore be part of a supplier BMU and net off with demand, or receive a negative TNUoS credit if it was exporting.

³ [The Statement of the Use of System Charging Methodology](#)

As indicated in Section 3, the related changes to P242, including the necessary changes to the Charging Methodologies to provide require clarity are being progressed in parallel to P242. These related changes are not contingent on P242, which means they can be progressed and considered separate on their own merits.

Cost of Moving Metering Offshore

During discussions the costs to the Offshore Exemptable Generators of having to install Offshore Metering at the Boundary Point between the Generator and Transmission System was questioned.

The costs off moving the metering offshore will vary depending on the location and size of the Generator and the type of meters used.



Where can I find other P242 documents?

Visit the P242 page of ELEXON's website [here](#)

Table 10 – P242 Timetable

Date	Assessment Activity
24/07/2009	E.ON UK plc raises P242
13/08/2009	ELEXON presents the P242 IWA to the Panel/Panel submits P242 to the Assessment Procedure
24/08/2009	Modification Group holds its First meeting for P242
15/09/2009	Modification Group holds its second meeting for P242
22/09/2009	Modification Group holds its Third meeting for P242
02/10/2009	ELEXON issues the P242 Assessment Consultation documents for industry consultation, and for impact assessment by BSC Agents and the Transmission Company
16/10/2009	Participants return Assessment Consultation responses/BSC Agents and the Transmission Company return impacts assessments
20/10/2009	Modification Group holds its fourth meeting for P242
06/11/2009	ELEXON submits the Group's P242 Assessment Report to the Panel
12/11/2009	ELEXON presents the Group's P242 Assessment Reports to the Panel

Table 11 – Estimated P242 progression costs up to an Authority decision

Meeting cost	External legal/ expert cost	BSC Agent impact assessment cost	ELEXON resource
£1,750 ⁴	£0	£0	75 man days, equating to c. £16,590

Table 12 – P242 Modification Group attendance

Member	Organisation	24/08/2009	15/09/2009	22/09/2009
Adam Lattimore	ELEXON (Chairman)	Y	N	N
David Jones	ELEXON (Chairman)	N	Y	N
Chris Rowell	ELEXON (Chairman)	N	N	Y
David Barber	ELEXON (Lead Analyst)	Y	Y	Y
Paul Jones	E.ON (Proposer)	Y	Y	Y
Ian Pashley	National Grid	Y	Y	N
Chris Stewart	Centrica	N	Y	Y
Gary Henderson	SAIC	Y	Y	Y
Martin Mate	EDF	Y	Y	Y
Andy Colley	Scottish and Southern	Y	N	Y
Bill Reed	RWE npower	Y	Y	Y

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Detailed Assessment

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⁴ This has increase from the £1,500 estimate in the IWA, as an additional half day meeting was needed prior to consultation.

Matthew Hays Stimson	EDF Energy Networks	N	N	Y
Attendee	Organisation	24/08/2009	15/09/2009	22/09/2009
Diane Mailer	ELEXON (Lawyer)	N	Y	Y
Natalie Pike	ELEXON (Lawyer)	Y	Y	Y
Abi Akala	ELEXON (Service Delivery)	Y	Y	Y
Steve Francis	ELEXON (Design Authority)	Y	Y	Y
Yvonne Naughton	Ofgem	Y	N	N
Bridget Morgan	Ofgem	N	Y	Y