



**GROUP PROCESSING APPROACH
FOR RENEWABLE GENERATOR
CONNECTION APPLICATIONS**

Joint TSO / DSO Proposal to CER

Version 1.0

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1.0 About This Document

This paper has been prepared by TSO (ESB National Grid) and DSO (ESB Networks). It aims to introduce and discuss the concept, workings and issues surrounding a Group Processing Approach for renewable generator applications¹.

The concept of Group Processing Approach was first presented to the industry by the TSO and DSO during a half-day workshop held on 20 August 2004².

While taking into consideration the various Guiding Principles (cf. appendices 1 and 2) the proposed process aims to treat all renewable generator applications in a similar manner, irrespective of whether they are DSO or TSO applications. However, minor differences do arise and these are duly highlighted.

2.0 Executive Summary

This paper describes a new approach to processing the current large volume of applications. This approach was first presented to the industry at a workshop held by TSO and DSO on 20th August last. The views that were expressed by participants at this workshop were taken into account in the preparation of this paper.

TSO and DSO recommend that the '*Group Processing Approach*' applies to all renewable generator applications although the option to process certain non-renewable projects under this scheme will be reserved by the System Operators (pending CER approval). The new process will effectively replace the '*70 business-day Offer Process*' for any applications processed under it.

The Group Processing Approach will ensure that applicants in general receive offers quicker than under the current process, will introduce more certainty for developers by removing the concept of 'interactions' and offer re-workings and will result in the electricity system being developed more optimally. There may be certain applicants who believe that their projects are unduly and unfairly affected under the Group Processing Approach and this is discussed in this paper.

An important facet of the proposed process is that the System Operators reserve the right to base connection offers on what they determine to be the appropriate connection method. Consequently, DSO applications could become TSO offer and vice versa.

The proposed cost reflective charging regime minimises the financial risk to the end-user customer. TSO and DSO propose that all un-recovered costs associated with connections are included in the PSO rather than the respective TUoS and DUoS Tariffs.

¹ Renewable generation is electricity generated from renewable sources such as wind, hydro, solar, biomass/biogas and CHP.

² Please refer to [Hwww.eirgrid.com](http://www.eirgrid.com)H for copies of the presentations from the workshop.

Both TSO and DSO support the Group Processing Approach and in this document both System Operators make a number of joint recommendations which require CER approval on. These include:

- The 'Group Processing Approach' principle;
- Who gets included in the 'Gate';
- When the 'Gate' closes;
- Method of charging;
- Contestability rights of transmission connected parties.

In addition a number of possible options relating to certain aspects of the process are presented for comments. These include:

- The order in which Groups/Subgroups get processed;
- The order in which offers are issued.

Ultimately the final process, to be approved by CER, will aim to address all of these issues.

3.0 Existing Connection Offer Process³

At present every application for connection is assessed independently of all other applications in the process. This means that applications who have not yet accepted their connection offer can at any stage revert back to 'Day 0' if they interact with another applicant who accepts their connection offer.

There are currently⁴ 111 TSO/DSO wind applications. To illustrate the concept of proceeding with the existing offer process for dealing with this volume of applications, we'll take the example of one geographical area where there are 29 individual applications competing for the same, or similar, network capacity. Therefore they are classified as interacting applications. If these 29 interacting applications were processed under the current process it could take 8 years before all the applicants were able to accept connection offers.

Due to the level of potential interactions and the consequential potential level of offer re-workings the current process becomes inappropriate for dealing with this large number of interacting applications as it would give rise to:

- extensive delays in connecting additional renewable generation (over and above the 831MW currently connected or contracted);
- a proliferation of new electricity lines and substations in certain areas;
- planning permission difficulties for new connections;
- sub-optimal development of the transmission/distribution system; and
- an inefficient use of limited resources for all concerned.

³ Further information on the existing connection offer processes can be found in appendix 7.

⁴ Currently should be interpreted as meaning "as at 20 September 2004"

It should be noted that the current process has proved effective for large conventional generating plant or where the amount of interacting applications is at a relatively low level.

4.0 Group Processing Approach

4.1 Overall Concept

The main features of a Group Processing Approach can be summarised as follows:

1. The processing of all renewable generator applications in a 'Gate' system whereby all applications deemed complete by a given date are processed in one batch.
2. Based on their level of interaction and geographic location, the applications within the Gate are divided into specific Groups by the TSO and DSO for processing purposes.
3. Within each Group there will be Subgroups of applications.
4. TSO will study the Groups from a load-flow impact and short circuit impact perspective and the appropriate transmission network reinforcements for each Group will be determined based on these studies. For the purposes of the Group studies, TSO has assumed that all applications within the Gate have, in theory, a connection date of winter 2005/06^{5,6}
5. The System Operators will identify the shallow (i.e. direct) connection method and associated deep reinforcements for each individual application within the Group/Subgroup. The System Operators will determine the most appropriate shallow connection method, irrespective of whether the original application form was submitted to TSO or DSO. This may result in TSO applications becoming DSO connection offers and vice versa.
6. The relevant System Operator will issue the connection offers to the individual applications within the Group/Subgroup.
7. Offers will remain valid for a fixed, specified period of time irrespective of whether other applicants in the same Group/Subgroup accept their connection offers or not.
8. The connection charge will be largely independent of offer uptake. However, in the event of a major change in shared connection design (for example as a result of inability to obtain planning permission or extremely low offer acceptance etc.) the connection method and shared

⁵ TSO normally completes 6 suites of studies for each application (looking at the network situation on the connection date and also 5 years thereafter). For the purposes of the Group Study, if all applications have the same connection date this reduces the volume of datasets to be compiled and studied. The implication of this for the applicants is that they can not connect prior to October 2005.

⁶ Bullet point 4. should not be interpreted as meaning all applications will be able to connect on this date. The connection date will ultimately be dependent on the applicant's preferred connection date and the extent of shallow and deep reinforcements required for connection.

connection charge may vary from the initial offer. The purpose of this is to safeguard against network over-design and the creation of stranded network assets (cf. section 4.4 below).

9. It is worth noting that the key to the success of the Group Processing Approach resides with the generators themselves and the level of acceptance of connection offers.

4.2 Drivers for Introducing a Group Processing Approach

Both TSO and DSO believe that the introduction of a Group Processing Approach is a necessary requirement to handle the current level of applications, in addition to having a number of benefits including:

- By removing the 'interacting' aspect the current renewable generator applications waiting to be processed will:
 - in general receive their connection offers more quickly than under the current connection offer process;
 - remove the 'race to sign' for interacting offers; and
 - remove the need for offer re-workings.
- It introduces more financial certainty for developers
- It minimises the overall connection infrastructure required which in turn reduces:
 - Planning Permission requirements;
 - Impact on landowners;
 - Network development costs; and
 - Environmental impact.
- Ensures that the network is developed more optimally, minimising network charges in the long run.
- Network congestion problems will be solved faster with the early indication and initiation of the deep reinforcement works required to facilitate export from all projects in the Gate.
 - It will bring about a more efficient use of the limited resources available to each System Operator and for applicants.

4.3 Group Processing Approach – Detailed Stages

An overview of the proposed process is provided in Figure 1, with the main stages summarised below:

- Each application in the Group/Subgroup is offered a connection by the appropriate System Operator;
- TSO and DSO connection offers:

- Will be on the basis of the MEC provided in the generator's application form⁷.
- Will be a firm offer i.e.
 - the quoted connection cost will not be dependent on the level of offer acceptance in the Group/Subgroup⁸;
 - the applicant will have the full 70 business days to consider the offer.
- Will include connection methods designed as the optimal network development on the basis of the generation in the Group /Subgroup within the current gate.
- Offers will be valid for 70 business days from the date of issue.
- Offers will not be revoked as a result of inter Group interactions. Any additional reinforcements required to cater for inter Group interactions will be dealt with by TSO in the normal network development process. The requirement for these additional reinforcements will not affect the shallow connection date for the generation projects but could affect how often they have to be constrained down/off. How interactions with other (e.g. non-renewable) applications for connection are treated is discussed in section 4.5 below.
- Once the validity period of the connection offers within a Group/Subgroup expires, a sanity check will be completed by TSO and DSO to ensure that the proposed connection method is still appropriate. If there has been a relatively low level of take-up on issued offers, a less extensive connection method may then be more appropriate. In this instance a revised connection offers will issue to the relevant party(s) (cf. section 4.4 below).
- All revised connection offers for will also be valid for 70 business days from their date of issue.
- A charging regime proposal is outlined in section 5 below.
- Parties who do not accept their connection offer within the 70 business day validity period will not be entitled to any application fee refunds.

4.4 Stranded Assets & Financial Exposure to the End User

Financial risk is introduced in a number of areas (e.g the risk of over-designing the network and introducing stranded network assets; generator drop-outs following initial acceptance of the offer). It is vital that the revised process and charging regime while assigning responsibility to the relevant parties also minimises this burden of risk and provides safeguards to the end-user as much as possible and minimises the risk of over-designing the

⁷ Regardless of whether a reduction in MEC would result in a possible reduction in costs.

⁸ In the event that there is a significant change in the connection method as a result of low take-up of offers, a revised quotation reflecting the costs associated with the revised connection method will be issued to the remaining generator(s)

network and introducing stranded network assets. The following proposals endeavour to achieve this:

1. Revised Connection Charging Regime:

In accordance with current policy, the joint charging proposal (c.f. section 5.1 below) endeavours to ensure that all renewable generator costs, which reflect the actual connection method, are recovered from the renewable generator applicants based on their MEC.

2. Confirmation of the Connection Method:

Both system operators will perform a 'sanity check' of each Group/Subgroup once the committed projects within the Group/Subgroup are known. This will allow the system operators to change the connection method ex-post where practicable to avoid over-design of the connection.

3. Charging of DSO Application Fees⁹:

DSO proposes that applications for DSO connections be required to pay the Application Fee as outlined in Appendix 4, Table 2, within an agreed timeline, e.g. 20 business days from issuance of DSO notification. Such a requirement will help minimise the number of speculative applications.

4. DSO Revised Payment Schedule:

For DSO applications, DSO proposes the following payment schedule – please note that all payments are non-refundable:

- a) Acceptance of Offer stage: Applicants pay 100% of the quoted Connection Charge for the Shared Connection Asset and 25% of the quoted Connection Charge for the Dedicated Connection Asset.
- b) Pre-Construction Stage: Applicants pay 50% of the quoted Connection Charge for the Dedicated Connection Asset.
- c) Pre-Final Energisation Stage: Applicants pay 25% of the quoted Connection Charge for the Dedicated Connection Asset.

This schedule, while retaining the current arrangements for the Dedicated Connection Asset, ensures that the DUoS customer is protected against the financial risk of the cost of the Shared Connection Asset in the event the generator drops out having previously accepted its connection offer. Any further proposal to accept a partial payment at the Acceptance of Offer stage will

⁹ Under the terms of the existing 'Connection Offer Process – Process for Connection to the Transmission Network in Ireland (July 2003)' all applicants seeking connections to the transmission network are required to pay fees in accordance with the prescribed fee structure outlined in this document.

require DSO to re-assess the proposed charging regime as outlined below.

It is possible that there will be some level of stranded assets and therefore it is imperative that neither system operator is exposed to the additional financial risk in providing such connections. There are a number of options for dealing with these costs and DSO's proposal is that any costs associated with the connection that are not recovered from the generators are included in the PSO allocation which recovers the cost from all customers¹⁰. TSO has no difficulty accepting this proposal. In the interim these un-recovered costs are added to the respective RAB and recovered via the DUoS and / or TUoS tariffs. The above steps are necessary to minimise this financial risk on the end-user. Conversely, excess contributions recovered from the generators, unless subject to the system operators refund policy, will be subtracted from the respective RAB and the benefit distributed via the DUoS and / or TUoS tariffs.

4.5 Non-Renewable Generator Applications

The experience is that typically non-renewable generator applications are of the order of several hundred megawatts (MW) in size, each one has a major impact on the development of the network and the take-up rate of issued connection offers is approximately 40%. This contrasts with renewable generator applications which are a lot smaller in (MW) size, individually usually have a much smaller impact on the network and have a higher offer acceptance take-up rate.

In general, non-renewable generator applications will not be included in the batch of applications in the Group Processing Approach. However, where TSO and/or DSO believe it appropriate to include a specific non-renewable generator application(s) in the Group Processing Approach, the appropriate system operator will first obtain CER's approval to do so.

For any non-renewable generator application not being processed under the Group Processing Approach, their assessment will assume that all the applications within the Group Processing batch are committed projects.

On the other hand, the Group Processing Approach will not take into account any non-renewable generator application deemed complete during, or prior to, the Gate closing. A possible implication of this is that some of the offers accepted under the Group Process may need to be revised in the event of a non-renewable applicant accepting its connection offer. The requirement for revising the offers will not affect the shallow connection date but could affect how often the generators have to be constrained down/off.

There are currently two non-renewable generator (large thermal) applications which may need to be processed in parallel with the Group Processing Approach. The first of these originally applied for a connection on 22 December 1998 whilst the second applied on 24 March 2003. If appropriate, the processing of these two applications will assume that the applications within the Gate are committed projects. The Deep Operational Dates of these

¹⁰ Actual process to be agreed.

two thermal applications would, most probably, be negatively impacted upon under this assumption. TSO would be open to any pragmatic means by which the CER might consider it necessary to offset this negative effect.

4.6 “Live” Connection Offers

It is proposed that the connection methods for “live” offers are examined and where appropriate discussions held with the relevant parties as there may be a number of cases where a revised connection method is beneficial to all parties concerned.

4.7 Contestability of Transmission Connections

TSO believes that transmission connection assets¹¹ which are, at the connection offer issue date, exclusively used to connect one party to the shared connection assets should continue to be considered “contestable”. On the other hand, TSO believes that until a “Contestability” code of practice, which clearly sets out each party’s rights, obligations and available remedies, is developed (and approved by CER), the shared connection assets should not be considered “contestable” for the following reasons:

- For a variety of reasons, an individual party, by delaying the provision of the shared connection, can hold up the development of other party’s projects without incurring any penalties and the other party having no remedy rights.
- In a contestable situation it is necessary to decide which party(s) builds the shared connection. Other parties will have to pay for their “piece” of the shared connection which could lead to potential disputes e.g. a party feels aggrieved by the fact that they did not build the shared connection and that they could have done it more cheaply. This would suggest that all parties connecting would have the right to tender to build the contestable assets.
- The standards to which the shared connection assets are built will affect all connecting parties. If disputes arise over the quality or standards of construction methods or material used then this will affect the timing of all other parties’ connections.

¹¹ Contestability does not arise in respect of connections to the distribution system.

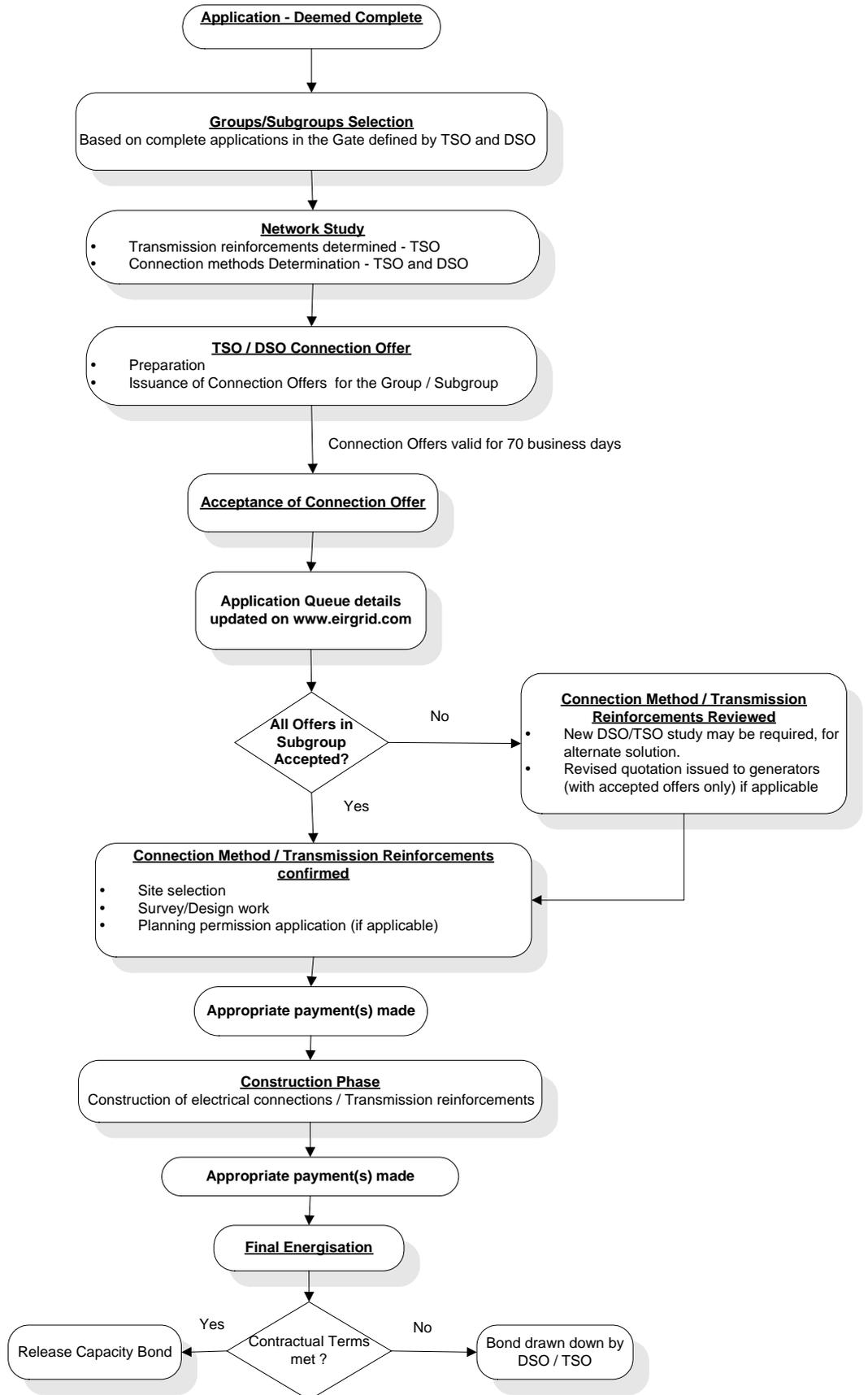


Figure 1: Overview of the Group Processing Approach for Renewable Generator Applications

5.0 Connection Charging Issues & Proposals

There exists at present two charging regimes for generators wishing to connect to the transmission and distribution systems:

- the standard connection policy appropriate to the relevant system operator (see Appendix 7); and
- the GUDP (Grid Upgrade Development Plan) policy underwritten with EU funds and open only to renewables (see Appendix 6).

5.1 TSO / DSO Charging Proposal for 'Gate System'

TSO and DSO have examined a number of different charging regimes taking into consideration the number of applicants in addition to the various factors outlined in the respective Guiding Principles (c.f. Appendices 1 and 2)

The connection charges for generator applications to the distribution system are comprised of the Dedicated Distribution Connection Asset and the Shared Connection Assets¹² for the Subgroup. The final charging regime must endeavour to ensure that charges are cost reflective and allocated correctly to each generator and are 100% recovered from the generator thereby protecting the final end-user customer.

In accordance with current connection charge policy, this proposal aims to recover the costs of both the Dedicated Distribution Connection Asset and the Shared Connection Assets. However, rather than the "first mover" paying the initial high costs for the Shared Connection Asset, this proposal allocates such costs for the Group/Subgroup on an average basis to each applicant. It broadly reflects that of the GUDP:

- Determine the overall "connection method" for a Group/Sub-group (Shared plus Dedicated assets)¹³;
- Charges for connection to the Shared Network shall be calculated and charged to a connecting generator on a per MW basis¹⁴ in accordance with the following formula:

¹² The transmission deep reinforcement costs are not charged as they are recovered by TSO via the appropriate TUoS tariff.

¹³ In accordance with the total Group/Subgroup MEC at the Gate closure.

¹⁴ In accordance with the MEC applied by each generator at the Gate closure.

Transmission Connections: $P_T * X * (Z/W)$

Distribution Connections: $[(P_T * X) + (P_D * Y)] * (Z/W)$

Where:

X = Total cost of providing the associated transmission works of the Shared Network including remote end station allocated charges

Y = Total cost of providing the associated distribution works of the Shared Network

Z = MEC (in MW) of the specific generating plant

W = Total MEC (in MW) of the Generator Applications in that Subgroup

P_T = Transmission Probability Factor⁺

P_D = Distribution Probability Factor⁺

- In addition, generators will be charged 100% of the cost for providing the Dedicated Distribution Connection Asset, in accordance with CER approved connection charging policies.
- In the event that another generator is connected to an existing Subgroup, the connection charges for this generator and all other existing generators in this Subgroup are recalculated and refunds are apportioned to existing generators in accordance with the relevant system operator policy¹⁵.
- Following connection, the generator¹⁶ will be subject to the Annual Ongoing Service charges in respect of the connection.

The probability factor is aimed at minimising the cost liability if a committed project fails to proceed after offer acceptance. Such a factor will protect the remaining generators who would continue to be liable only for the full 'original' shared network charge. It attempts to ensure that generators pay for connection assets *on average*. It has the advantage of providing generators with greater financial certainty upon accepting a connection offer.

For example; If it is believed that 80% of the requested MW in the applications will commit to connecting under the connection offer process

⁺ The absence of a probability factor can lead to an extended process of issuing revised quotations based on the level of take-up of the connections offers and the possibility of design changes based on this take-up would result. This is an iterative process and the revised quotation may result in increased costs to the generators. Therefore there is a risk of an increased level of 'drop-outs' as the process progresses thereby incrementing costs to the remaining generators. This introduces a level of financial uncertainty to those generators wishing to proceed in addition to prolonging the overall process. This option, whilst ensuring that developers pay for shared connection assets on a case by case basis, clearly has financial implications for developers and the perceived level of risk when accepting a connection offer. The system operators expect that it could result in a climate of uncertainty that will result in fewer offer acceptances.

¹⁵ The exact connection method of the new generator will determine the extent of the refund (e.g. applies to the dedicated distribution connection asset and/or the shared subgroup connection) and the generators entitled to a refund.

¹⁶ Applicable to generators connected to the Distribution System

then the TSO would charge 1.25 times the pro-rata cost in each offer ($1/0.8 = 1.25$). Should the expected level of uptake occur then one would expect that overall the correct amount of money would be received from developers for the shared connection asset costs.

It is proposed that as the level-of-take is identified as various Groups/Subgroups progress, the probability factors are altered accordingly to best reflect cost recovery from the generators thereby minimising burden on the end-user customer. The use of separate transmission (P_T) and distribution (P_D) probability allows the flexibility to apply factors based on particular situations.

A sample calculation is provided in Appendix 5.

In addition to the benefits outlined in section 4.2 above, there are a number of advantages to adopting this charging regime which include:

- Promotes certainty for developer;
- Charges are cost reflective
- Increased probability of recovering the actual costs.
- Expedites process for all applicants
- Frees up resources to progress further offers.

6.0 General Implementation Issues

Some general implementation issues include:

- Selecting the Gate “open” and “close” dates;
- Selecting the conditions precedent for inclusion in the Gate;
- Treatment of “exceptional cases”
- Deciding the order in which Groups/Subgroups are processed;
- The order and timing of individual connection offers;
- Reassessment pending level of offer acceptance;
- How lapsed offers are treated.

We now look at each issue in turn:

6.1 Selecting the Gate “Open” and “Close” Dates

The selection of the Gate closure date needs to provide a reasonable degree of confidence for optimal development of the system¹⁷ in addition to facilitating growth in renewable generation as quickly as practicable.

On the basis that there is currently 1876MW of wind applications in addition to a further 4.2W of non-wind, renewable applications for TSO/DSO connections, the TSO and DSO propose that the Gate closes as quickly as

¹⁷ Too early a date may result in TSO/DSO could be choosing a suboptimal network development - a 110kV station, when if a later date were chosen, a 220kV station might have been required

practicable after a final decision is made on how the current volume of renewable applications should be processed but that the date affords parties some time to make/withdraw applications before the Gate closes.

The TSO and DSO propose that the Gate closes on the date falling one (1) month after the date of the CER's final approval on the workings of the Group Processing Approach for renewable generator connection applications.

The appropriateness of continuing with a Group Processing Approach for applications received after the Gate closure date will be reviewed between the DSO and TSO, in consultation with the CER, upon clearing the Gate's applicants.

6.2 Selecting the Conditions Precedent to Inclusion in the Gate

The implementation of effective conditions precedent for applications to be included within the Gate will have a number of benefits to the overall process, including:

- Minimising the number of speculative applications;
- Facilitating the conclusion of Group/Subgroup studies; and
- Reducing the probability of offers having to be re-issued due to low offer acceptance take-up and resultant change in connection method.

The following are a list of the suggestions made at the recent Workshop¹⁸ on the subject of which applications should be included in the Gate:

- **Applications holding AER contracts**

The TSO and DSO do not believe that applicants holding AER contracts should be given preference, as an AER contract is not the only take-off contract available to renewable generators.

- **Applications with Planning Permission**

The TSO and DSO believe that making planning permission a pre-condition may be unfair in that some local authorities will not grant planning permission before a party has first received its connection offer. Also, given the validity period of planning permissions there is a timing issue for applicants with regard to when they apply for planning permission.

- **Applications with Funding in Place**

Because there may be circumstances where applicants could not raise funds without an indication of connection costs i.e. a connection offer, TSO and DSO believe that making this a pre-condition may be unfair.

TSO and DSO believe that all renewable generator applications for connection which are Deemed Complete at the date of the Gate closure, which have also paid the appropriate application fee by the date of the Gate closure and who have formally confirmed that they wish to proceed with the

¹⁸ A half-day workshop was held by the TSO and DSO in the Alexander Hotel in Dublin on the 20th August 2004 to introduce and discuss the concept of a Group Processing Approach for wind generator applications.

application¹⁹, are included in the Group Study²⁰. This will require an Application Fee to be retrospectively applied to DSO applications.

6.3 “Exceptional Cases”

There may be some applicants who believe that their projects are unduly and unfairly affected by the introduction of the Group Processing Approach. Applicants who might fall under this category are:

- Applications either submitted or deemed complete prior to the introduction of the wind moratorium.
- Applications for extensions to operational sites or sites currently under construction, where the extension does not require any changes to the site’s shallow/direct connection method.
- Applications which do not form part of a Group/Subgroup.
- Applications for projects which are “ready to go” and whose development might be arguably unduly delayed.
- Applications for projects whose connection method aligns with the optimum Group/Subgroup connection method.

While recognising these issues TSO and DSO believe that if “exceptional cases” were processed outside of the Group Processing Approach the following could arise:

- Suboptimal and inefficient development of the system;
- Route corridors being used by sub-optimal connections leading to planning permission and wayleave difficulties in the future;
- Delays in the processing of the applicants under the Group Processing Approach;
- A large number of disputes from parties not deemed “exceptional cases” because of the subjectivity involved in deciding the criteria for “exceptional cases”.

On the balance of the analysis carried out and in the interest of fairness and equity, it is TSO’s and DSO’s view that the disadvantages of processing “exceptional cases” outside the Group Processing Approach far outweigh any possible advantages.

¹⁹ Prior to the Gate closure date, TSO applicants will be asked to confirm whether they want to withdraw their application and receive a full refund of their application fee or continue with the processing of their application under the Group Processing Approach. DSO applications will have to pay the appropriate fee prior to the Gate closure date.

²⁰ In the event that TSO or DSO consider it appropriate to include certain non-renewable generator application(s) in the Group Process, the appropriate system operator will first obtain CER’s approval to do so.

6.4 Deciding the Order in which Groups/Sub-groups are Processed

Once the Groups/Subgroups have been defined by TSO and DSO, the order in which they are assessed needs to be agreed prior to the implementation of the overall process. The following are the suggestions made at the recent workshop²¹:

- **Order of the existing queue**

Process in the order of the existing queue (which contains the 111 individual applications) might be the most equitable approach but would result in all applicants having to wait until all of the Groups/Subgroups are fully studied. Therefore, TSO and DSO do not believe that this is a pragmatic option.

- **Applications holding AER contracts**

TSO and DSO do not believe that applicants holding AER contracts should be given preference, as an AER contract is not the only take-off contract available to renewable generators.

- **Applications with Planning Permission**

A suggestion was that the Group(s) with the most applications having Planning Permission should be given priority. The fact that some local authorities insist on parties having an ESB Connection Offer before accepting planning permission applications probably mitigates against this approach.

- **Applications with Funding in Place**

Because there may be circumstances where applicants could not raise funds without an indication of connection costs and conditions i.e. without having received a connection offer, the TSO and DSO believe that making this pre-condition.

- **Smallest Groups First**

TSO and DSO believe that there may be some merit in prioritising the processing of the smallest Groups/Sub-groups as these are likely to require relatively less complex shallow connections or drive major deep reinforcement. In addition, the possibility of obtaining GUDP (cf. appendix 6) funding is more likely.

TSO and DSO believe that the following approaches, which were not raised at the recent workshop, warrant further consideration and would welcome the CER's and other interested parties' views on the relative merits of each of them:

- **Earliest Single Deemed Complete Application First**

The order sequence is based on the Group/Subgroup containing the application with the earliest Deemed Complete, where the Group/Sub-group with the earliest Deemed Complete date application is processed first and so on.

- **Earliest Average Deemed Complete Applications First**

The order sequence is based on the average queue position of all applications within the Group/Sub-group, where the Group/Sub-group with the highest average queue position is processed first and so on.

- **Capacity Available First**

Prioritise the processing of offers to those Groups or Subgroups where capacity is available in the local distribution network and local transmission network to accommodate the requested MEC without significant deep reinforcements. The order sequence will be based on the smallest MEC MWs with the smallest being processed first.

- **Largest Group/Subgroup First**

Because the largest Groups/Subgroups will take the longest to process there might be some merit in prioritising the largest Groups/Subgroups first.

- **Random Selection**

Random selection for the processing order sequence of Group/Sub-groups. The CER, or some other independent authority, could witness the "lottery".

As there is going to be a certain degree of parallel processing of Groups/Subgroups a mix of the above might be appropriate. One option might be to process the "smallest" Groups/Subgroups in parallel with the "largest" Groups/Subgroups. Where there are a number of "largest" and/or "smallest" Group/Subgroups, priority could be given to those Group/Subgroups containing applications with the earliest deemed complete dates.

6.5 The Order and Timing of Individual Connection Offers

TSO/DSO believe that the Connection Offers should only issue to a Group/Subgroup once the study on the entire Group/Subgroup is complete, as the deep reinforcements required are only identified at the time the entire Group/Subgroup has been assessed. This also provides an indicative date at which an applicant can begin generation.

Once TSO and DSO agree the optimal connection method for a Group/Subgroup, an agreed process which outlines the order and timing of the issue of the individual Connection Offers will be required.

It is proposed that connection offers for each Group/Subgroup issue in the original queue order²¹, based on the Deemed Complete date, with an agreed time delay between each offer. This time delay reflects the time required by the appropriate System Operator to finalise the connection method and prepare the connection offer²².

To maintain a streamlined efficient Connection Offer process it is proposed that applicants who do not accept connection offers are deemed to have

²¹ It may be important that the queue order is maintained depending on the approach CER/TSO takes to constraining off wind farms.

²² DSO's Standard Pricing model, as outlined in Appendix 8 will facilitate the processing of the DSO applications.

exited the process. However, they do of course have the option of re-applying and availing of a future connection offer at any subsequent stage.

Once decisions are made on the processing order and the timing of connection offers issuing, an indicative schedule for the provision of connection offers will be provided by TSO/DSO to applicants.

6.6 TSO's Dynamic Simulations for Wind Farms

In order for TSO to be able to carry out studies in this process a complete base case of the electricity system needs to be in place. This base case should include previously connected renewable generation and those with firm connection contracts.

TSO is endeavouring to start the Global Dynamics Studies (for all connected and contracted windfarms) based on models that have been provided by the WTG (Wind Turbine Generator) manufacturers to date. Issues may arise when combining these various models and from the dynamic analysis itself or as a result of validation. This may give rise to changes to models provided, which will in turn change the results of the dynamic analysis, i.e. it is an iterative process.

As these global studies of connected and contracted windfarms will form a base case for dynamic analysis of any further connections, there is little benefit in performing dynamic analysis of the projects in the gate until the global studies are complete. It is possible that these dynamics studies will not be completed before some or all of the offers in the gate are due to be issued, TSO does not wish to delay issuing offers if the global studies are not complete.

If offers have to issue before global dynamics studies are complete the offer will contain a caveat stating that the connection is subject to the dynamic analysis being carried out and that the results of this analysis may have an impact on the offer issued. The impact of this on individual accepted offers is difficult to prescribe. For some the impact might be non-existent, for others it might be additional deep reinforcements are required, which may not affect the offer's shallow connection date but could affect the level of constraining down/off.

6.7 Other Suggestions from the Recent Workshop

A number of suggestions made at the workshop may warrant further debate and their relative merits considered by all parties.

For example, a suggestion was made that the appropriate System Operator applies for Planning Permission (PP) for Speculative Transmission Stations in an effort to expedite the overall process and delivery of connection dates. In situations where both the substation solution and its location are evident then it may be appropriate to proceed on this basis. However, in the majority of cases such an approach is inappropriate for the following reasons:

- Many local authorities will not grant planning permission on a speculative basis;

- There are substantial costs associated with preparing planning permission applications. Depending on the take-up of Connection Offers there may be wasted expenditure;
- The location of the planned Station may prove suboptimal after detailed analysis or depending on the take-up of Connection Offers;
- Delays associated with changes to PP due to location and nature will eliminate any preconceived benefits of applying for PP on a speculative basis; and
- This approach could present a drain on the limited resources available to both System operators to progress the turning of connection applications into connection offers.

6.8 General Offer Process Changes

The Group Processing Approach may also need to retain a number of elements proposed by TSO and DSO to CER earlier this year. These include:

- Introduction of non-refundable application fees as a pre-requisite to application completeness for DSO connection offers;
- Introduction of MEC Capacity Bonds as a pre-requisite to DSO offer acceptances; and
- The introduction of a “contractual longstop date”²³ into TSO and DSO connection offers.

6.9 Transmission Vs Distribution

Due to the volume of applications there will need to be a high degree of co-ordination between TSO and DSO in designing the most efficient connection methods from an electricity network development perspective. Some of the issues that will require a high level of co-operation are:

- Applications to connect large projects to the distribution system, where it would be better to connect to the transmission network from an overall network design perspective. The system operators will base the connection offer on what they determine to be the appropriate connection method.
- Removing any potential ambiguity in terms of what constitutes transmission and/or what constitutes distribution assets.

²³ A milestone which needs to be met by the generator by a specific date to avoid the connection agreement being terminated and the System operator seeking CER approval to draw down the MEC Capacity Bond.

7.0 Conclusion

In conclusion, the proposed Group Processing Approach introduces a number of benefits for all parties. The generators will now be guaranteed a connection, with the uncertainty arising from the current local interaction process now removed. In addition to a resultant quicker process for genuine applicants the proposed charging regime now allocates the shared costs on an average basis.

The continued use of a cost reflective charging regime, based on the Group/Subgroup studies, is one means of minimising the financial burden ultimately borne by the end-user customer. TSO and DSO propose that all un-recovered costs associated with these generator connections are included in the PSO rather than the respective TUoS and DUoS Tariffs.

Both TSO and DSO support the Group Processing Approach. However, for the effective implementation of this proposed scheme there are a number of issues which require CER approval on and these have been presented above.

In order to preserve optimal network development and at the same time maximise the number of renewable generation projects connecting to the network as quickly as practicable, it is essential that the Group Processing Approach is adopted as quickly as possible following the lifting of the wind moratorium.

8.0 Appendices

Appendix 1 TSO Guiding Principles

While considering the effective implementation of the proposed process and application of connection charges, TSO has adopted the following guiding principles:

1. The Group Processing Approach applies to all renewable generator applications, although, the option to process certain non-renewable projects under this scheme will be reserved by TSO and/or DSO (pending CER approval).
2. The Group Processing Approach effectively replaces the TSO's '70 Business Day Process' for those applications included in the Gate.
3. TSO and DSO reserve the right to base connection offers on what they determine to be the appropriate connection method. Consequently, DSO applications could become TSO offer and vice versa.
4. The proposed Group/Subgroup Connection Method will be the only connection method offered to the relevant applicants in the Gate.
5. It is assumed that TUoS will underwrite the progressing of deep reinforcements associated with Groups/Subgroups as these will be triggered by the first application in the group to accept a connection offer.
6. Once all applications within the Gate are processed, a review is carried out to assess the suitability of applying this Group Processing Approach for future applications. It may be more appropriate that the current Connection Offer Process be employed instead.

These principles form the basis of TSO's proposed approach and implementation as outlined below.

Appendix 2 DSO Guiding Principles

While considering the effective implementation of the proposed process and application of connection charges, DSO has adopted the following guiding principles:

1. Neither the DSO nor the DUoS end-user is exposed to any additional financial risk that may arise in the event that embedded generators do not proceed.
2. The proposed Group and Subgroup Connection Method will be the only connection method offered to the relevant applicants in the particular gate.
3. The process itself (refer to section 4.0) and associated charging (refer to section 5.0) must be considered equitable.
4. This Group assessment approach and Connection Offer Process is applied to all existing embedded generator applications upon the lifting of the moratorium.
5. Upon clearing of the backlog, a review is carried out to assess the suitability of applying this Group study and process to future embedded generator applications. It may be more appropriate that the Connection Offer process for embedded generation, similar to that submitted to CER on 16th March 2004, is re-introduced as the enduring process.

These principles form the basis of DSO's proposed approach and implementation as outlined below.

Appendix 3 Wind Connections

Table 1. Wind Connections (MW) in Republic of Ireland²⁴

Status	Transmission	Distribution	Total	Cumulative total
Connected	90	190	229	229
Signed Agreements	379	215	594	823
Live offers	0	39	39	862
Applications in Process	596	773	1369	2231
Applications being checked	125	146	271	2502

²⁴ As of the 8th July 2004

Appendix 4 DSO Process and Fees

- The Application is Deemed Complete upon receipt of:
 - Completed Application Form and associated information
 - Non Refundable Application Fee as per Table 2, Appendix 2.²⁵
 - Provision of Dynamic Model (if applicable)

- Parties seeking connection of more than 20 - 25 MW size (Generation output) may wish to consider a connection to the Transmission network first

- Acceptance of Offer upon receipt of:
 - A signed Connection Agreement
 - Payment²⁶ of 25% of cost of dedicated connection asset plus 100% of the cost of the shared connection asset (pro-rata as per MEC application).
 - Provision of Decommissioning and Reinstatement Bond.
 - Provision of the Capacity Bond per MW for connection²⁷.
 - Completed Form C1 (if applicable).

- Pre-Construction Stage - Conditions Precedent include
 - Payment of 50% of the quoted Connection Charge for the Dedicated Connection Asset.
 - Provision of the Completed Form C1 (if applicable).

- Final Energisation - Conditions Precedent include:
 - Payment of outstanding 25% of the cost of the dedicated connection asset.
 - Provision of a Declaration of Fitness for the embedded generator network
 - Satisfactory completion and testing of the G10 protection the accuracy of the metering and communications, confirmed by DSO.
 - Following confirmation that accurate metered data is being communicated from the embedded generator to DSO, MRSO is informed so that the procedures necessary for settlement participation can proceed
 - Embedded generator has completed all Conditions Precedent in the Connection Agreement
 - Evidence of Insurance from the embedded generator

²⁵ In accordance with process in March, all payments must be made by bank draft to ESB Networks. Payments in other forms will be returned and the Application will not be deemed complete.

²⁶ Via bank draft and non-refundable.

²⁷ This protects the TUoS customer against financial risk of cost of deep reinforcement. The cost per MW for the Capacity Bond is set by the TSO and is the same as in TSO Connection Offers. Once the generator has proved to DSO that it has reached 90% of it's MEC then the Capacity Bond can be returned. However if the Generator has not reached 90% of it's MEC within 2 years of it's final connection then the Capacity Bond is drawn down

TABLE 2. DSO Connection Offer Application Fees (including VAT²⁸)

MIC & MEC Capacity Ranges	0-2MW	2-4MW	4- 20MW	> 20MW
ESBNG Study Fee	N/A		€ 16,000	€ 24,000
DSO Connection Offer	€ 2,500	€ 4,000	Add € 14,000	

Note – This Fee is Non-Refundable

TSO Application Fees are available on www.eirgrid.com

The fee structure for modifications and reprocessing is as follows:

Modifications must not fundamentally change the nature of the original application. Increases in MW or Maximum Connection Cost by more than 10%, will be deemed to be fundamental changes. Changes in Applicant or in the Connection Method will also be deemed fundamental changes.

TABLE 3. Modification Fees (including VAT²⁹)

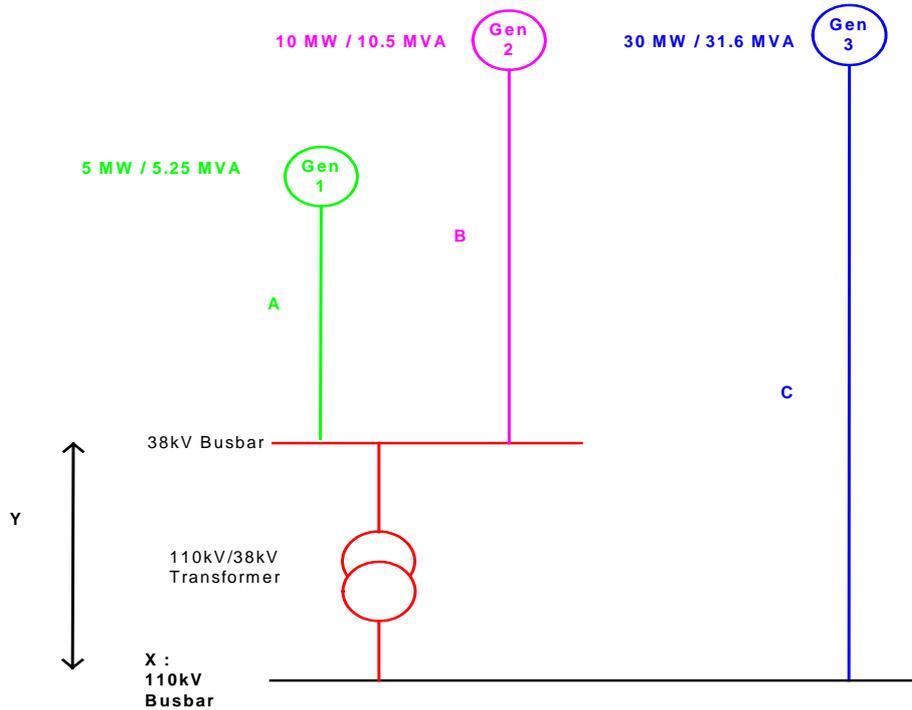
Programme Extension							
Grade	1	2	3	4	5	6	7
Days	0	5	10	15	25	40	70
Modification Price							
Grade	a	b	c	d	e		
DSO Study	no charge	10% Original DSO Price	15% Original DSO Price	20% Original DSO Price	40% Original DSO Price	60% Original DSO Price	100% Original DSO Price
ESBNG Study	no charge	10% Original ESBNG Price	15% Original ESBNG Price	20% Original ESBNG Price	40% Original ESBNG Price	60% Original ESBNG Price	100% Original ESBNG Price

* Price will be limited by the either originally quoted fee or the revised fee calculated based on the revised MEC submitted as part of the modification.

²⁸ Current VAT rate of 13.5%

²⁹ Current VAT rate of 13.5%

Appendix 5 Sample Calculation of Connection Charges



- Shared Network -Transmission Element **X**
- Shared Network - Distribution Element **Y**
- Dedicated Connection Asset - Distribution **A**
- Dedicated Connection Asset - Distribution **B**
- Dedicated Connection Asset -Transmission **C**

Sum of MEC = 45MW

The above simplified single line diagram is for illustrative purposes only and does not include details such as metering, circuit breakers, switchgear etc. These are taken into account when calculating the connection charges.

Table 4. Sample Connection Charge Calculation

Embedded Generator	Probability Factor
1	100% Cost of A + [(X * P _T) + (Y * P _D)] * (5/45)
2	100% Cost of B + [(X * P _T) + (Y * P _D)] * (10/45)
3	100% Cost of C + [(X * P _T) * (30/45)]

Appendix 6 Grid Upgrade Development Programme (GUDP)

The GUDP Steering Group proposed 5 cluster substations to initially avail of the EU funding available at that time. To-date, only one cluster has been triggered and is currently being progressed. Following a recent meeting³⁰ DCMNR indicated that, to secure the remaining EU funding, it is necessary that CER are informed, by DSO and TSO, of any renewable energy projects at Capital Approval stage before December 2005. The EU funding will not be available to renewable energy projects subsequent to this date. To avail of the remaining EU funding³¹ to offset the stranded asset financial risk, such projects and / or deep reinforcements are required to be approved and DCMNR notified prior to 2005.

This section describes the key connection charging and method principles solely associated with the GUDP³². GUDP was underwritten with EU funding and hence the TUoS (Transmission Use of System) customer was protected from stranded costs should a number of the developments not proceed. The specific differences between the standard policies and connection charging principles and those associated with the GUDP scheme are listed below.

For applications to the TSO for transmission connections, the standard policies apply except in the following areas:

- Method of Connection;
- Connection Charges;
- Refunds for Shared Network; and
- Contestability rights.

For applications to the DSO for distribution connections standard policies apply except in the following areas

- Method of connection
- Connection Charges
- Refunds for Shared Network,
- Least-Cost Technically-Acceptable (LCTA) method of connection
- Commitment Bond

TSO/DSO, in accordance with their respective licences, will decide upon the connection method and final location of the Network Station. Parties who apply for a Connection Offer under the GUDP will receive an Offer based on the LCTA method of connection *to their associated cluster*, which takes account of the other proposed projects within that cluster. Therefore a cluster connection charge may not, in every case, be less than the normal LCTA method of connection charge. Notwithstanding this, the principle of LCTA will apply to the Dedicated Connection Asset for the cluster connection. Charges for connection to the Shared Network shall be calculated and charged to a connecting generator using the following formulae:

³⁰ Meeting on 28th July 2004 between TSO, DSO, CER and Dept of Communications Marine and Natural Resources (DCMNR).

³¹ Revised downwards to the region of €20 million.

³² Further details are provided in CER approved document "GUDP – Implementation Guidelines for Generators" 22nd August 2003.

Transmission Connections: $X^* (Z/70)$

Where: X = The total cost of providing the associated transmission works of the Shared Network including remote end station allocated charges

Z = MEC (in MW) of the connecting generating plant

70 = Typical capacity of the transmission works, taking into account system issues

Distribution Connections: $\{X^* (Z/70)\} + \{Y^* (W/60)\}$

Where: Y = The total cost of providing the associated distribution works of the Shared Network

W = MEC (in MVA) of the connecting generating plant

60 = Typical capacity (MVA) of the Network Station

Note: The EU Grant is not taken into account for the purposes of calculating these X & Y costs.

In addition, generators will be charged 100% of the cost for providing the Dedicated Connection Asset, in accordance with CER approved connection charging policies.

Where a more expensive option to connect to the cluster is chosen by the TSO for system reasons, the connection charge applicable to the connecting generator will be the same as that for the LCTA cluster connection.

- **Contestability Rights:**
Parties will not be entitled to construct, or arrange to construct, any Shared Network. Generators connecting to the transmission network will be entitled to construct, or arrange to construct, any Dedicated Connection Asset.
- **Refunds:**
There will be no refund for the Shared Network costs, as the generator has only paid a contribution in proportion to his capacity for the associated works.
- **Commitment/Capacity Bond:**
The Level of bond is €10,000 per MVA and the acceptable bond types are similar to those applicable to the Decommissioning and Reinstatement bonds³³. This bond expires 6 months after the completion of Phase 4. In the event that capacity is not taken up within the period specified in the Connection Agreement, DSO will inform the relevant generator that the offer has lapsed and that the MEC and the capacity in his offer will be made available to the next applicant in the queue. The Commitment Bond may be drawn down at this point.

³³ Refer to the Quotation Letter in the DSO Connection Offer.

Appendix 7 Current Connection Process & Charging Regime

1.0 Existing Connection Offer Process

At present every application for connection is assessed independently of all other applications in the process. This means that applications who have not yet accepted their connection offer can at any stage revert back to 'Day 0' if they interact with an applicant who accepts a connection offer.

To put this into context, if there were 10 interacting applications in an area, as per the existing process all the applications would be processed independently of each other and each individual offer would issue in accordance with its place in the offer process queue. When the first connection offer is accepted the remaining 9 applications might (depending on the level of interaction) have to be re-processed. This would mean that the last application in the queue could be processed roughly 10 times (70 business days*10= 700 business days= approximately 2.8 years later). Assuming each time one of the 10 offers is accepted, the remaining applications need to be re-processed, this would result in the equivalent of 55 applications being processed by the time the last applicant gets an offer approximately 2.8 years later.

There are currently 111 wind applications awaiting connection offers from either the TSO or DSO. 29 of these are located in a similar geographical area. If all these 29 were processed under the current process it could in theory take approximately 8 years before they all were able to accept connection offers.

2.0 TSO Standard Shallow Charging Policy

A generator connecting to the transmission network will be eligible to pay for the full cost associated with the direct connection (i.e. shallow connection) to the transmission system. The capital elements of the connection costs will include, as appropriate:

- some or all of the costs of the circuit (s) connecting the transmission station at the generator's location to the transmission network;
- the circuit bay (s) required to connect the generator;
- the station common costs associated with the station to which the generator is connected (or a share of the costs depending on the number of users at that station);
- the cost of any line retirements resulting from a new connection;
- the cost of upgrading of existing protection or communication equipment as a direct result of the connection; and
- the cost of metering equipment.

From a process perspective offers are considered on a sequential basis, with each offer being based on the Least Cost Technically Acceptable (LCTA) connection at that point in time, based on commitments to that date. Generators connecting to the transmission network are entitled to construct, or arrange to construct, any Dedicated Connection Asset.

Where a more expensive option to connect the generator is chosen by the TSO for system reasons, the connection charge applicable to the connecting generator will be the same as that for the LCTA.

Where the generator chooses a connection option that deviates from the LCTA, it is liable for the LCTA charge plus the difference between the option with the cheapest total cost and its preferred option.

When connection assets are shared rebates can apply.

3.0 DSO Standard Charging Policy for Generators

For DSO, the Least Cost Technically Acceptable Solution is defined as the solution which is technically acceptable and which results in the least cost being incurred by the DSO in implementing the solution and which facilitates the long term development of the electricity network in the area³⁴ in addition the connection method would be technically feasible according to our current policies, standards and designs. Any costs incurred by the ESB Networks in providing a connection or installing infrastructure which are deemed by ESB Networks to be over and above the Least Cost Technically Acceptable solution are borne in full by the customer or developer.

To date, each Generation application has been considered separately. Where possible, future development in an area would be considered by DSO, and an optimal overall connection method proposed with would facilitate the entire development in the area. However, this approach was hindered by the fact that, prior to the build-up of applications during the moratorium, there was a time lag between each of the applications. As a result, none of the future development was apparent at the time of developing the initial connections. Therefore, by in large, up to now the incorporation of other connections in DSO's consideration of the connection method of a windfarm has been largely academic.

There are, however, a small number of situations where shared connections have been offered. To date these have only been in situations where the generation applicant made it apparent that they would be proceeding with a second development at a later stage, and requested a shared connection to be made available.

If a shared solution for a number of applicants were deemed to be the optimal development in a given location, the approach would be to make a joint offer of a shared connection, with each quote contingent upon the other applicant proceeding.

³⁴ Refer to Section 4.0 of The Distribution System Security and Planning Standards, approved by CER September 2003.

It should be noted that DSO charges for distribution deep reinforcement costs – unlike TSO. For DSO, in each case, a Generator is only connected to a station which can accept the generation input. If there is no capacity for this connection, then the applicant is charged for the increase in transformer increase. If a transformer increase can not facilitate the connection, then the Generator is charged for a connection to the next nearest station or a new station.

The continued application of the current connection charges mechanism to each individual application is not a valid approach as the proposed Group study approach devises the connection method on the basis of the impact of a number of generator connection applications. The current mechanism operates off the ‘first-mover’ principle with the provision of refunds and does not provide a means to divide the costs of the shared connection amongst the applicants.

Appendix 8 DSO Standard Pricing Model

In order to avoid undue delay in providing connection offers, DSO proposes that:

- a. Connection offer pricing is based upon a desktop study plus necessary site visits to estimate the volume and type of material required.
- b. The proposed connection is then costed using a "Standard Pricing" model, approved by CER, wherein the prices of connection elements are calculated based on experience with past projects and reviewed as required for currency.
- c. Following Acceptance of the Connection Offer, a detailed design of the project commences and Planning Permission and consents are obtained³⁵.
- d. DSO will issue a revised connection offer to the generator(s), incorporating revised costs, arising due to reasons outside DSO's control or unknown at the time of issuing the initial connection offer. These shall include, but shall not be limited to the following:
 - Changes to distances or the nature of the connection³⁶ which arise while obtaining the Planning Permission or consents;
 - Changes to items of significant cost such as river crossings/major road crossings/ Forestry compensation/ Telecom crossings etc;
 - Ground conditions different from those assumed in the initial desktop study
 - Interaction with other generator and demand customers at the same connection node
 - Wayleave and consents compensation.
 - Delays associated with consents or access issues
- e. This revised connection offer will incorporate revised costs based on the change in work required or the availability of more detailed costs. In accordance with DSO Guiding Principles and to minimise financial exposure to final end-user, the generator(s) will be required to pay the revised costs to progress the project to the next stage.
- f. To provide stability in pricing no revised quotations will issue unless the variance expected in the overall cost is over + 10%, in which case a revised quotation for the costs in excess of 110% will issue to the applicant.
- g. To ensure that DSO is not exposed to additional financial risk in providing such connections, any costs associated with the connection that are not recovered from the generator, will be added to the respective RAB and recovered via the DUoS and / or TUoS tariffs.

³⁵ This process usually takes 6 months or more where Planning Permission is required (e.g. 38kV overhead line; 110kV/38kV or 110kV/MV stations), and about 3 months where MV work only is involved.

³⁶ For example Underground versus Overhead line connection.

Appendix 9 Definitions

TERM	DEFINITION DESCRIPTION
Capacity Bond	The bond to be provided by the Generator to the TSO/DSO in the form set out in the Connection Agreement in relation to the generators Maximum Export Capacity (MEC) and currently calculated as €10,000 per MW of MEC.
Dedicated Connection Asset	Electrical network (lines, cables, switchgear, etc.) used to connect a single user to the Transmission or Distribution System. The connection asset is specific to the user and does not form part of the connection to any other user.
Gate	The date at which any embedded generator applications are deemed complete on or before this date will be considered in the Group study.
Group	The applicants that will have exactly the same deep reinforcements
Shared Network	Electrical network (lines, cables, switchgear, etc.) used to connect a number of users to the Transmission or Distribution System.
Shared Subgroup Connection	Electrical network (e.g. common network station equipment/site, transmission network connecting that station to the network and any associated remote end station works) used to connect more than one of the Subgroup generators to the existing network. This includes the total cost of providing. The associated transmission works including remote end station allocated charges and the associated distribution works
Subgroup	A number of applicants in the same geographic location who will share a connection method or connection assets.