Joint TSO/DSO Group Processing Approach

Pricing Principles Guidelines

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1 Introduction

On 16th June 2006 the Commission for Energy Regulation (the Commission) directed EirGrid in its role as Transmission System Operator and ESB Networks in its role as Distribution System Operator (individually and collectively the System Operator(s)), under Section 34 of the Electricity Regulation Act, 1999, to process applications by renewable generation to connect to the transmission or distribution system under a Group Processing Approach to be known as 'Gate 2' (CER/06/112). This follows an earlier incarnation of the Group Processing Approach processed by the System Operators in 2005 known as Gate 1. The Group Processing Approach enables the System Operators to process a pre-defined number of connection offers concurrently rather than having to treat each application on an individual independent basis, as had been the case before Group Processing was introduced. The purpose of this paper is to provide applicants seeking to connect under the Group Processing Approach with a clear set of guidelines explaining the rationale behind and methodology in place for the connection charging process.

Gate 1 saw 370MW of connection offers issued to renewable generators. Under the Gate 2 process, offers will issue to approximately 1,300MW of renewable generation. The selection of candidates for processing under Gate 2 is according to a set of specified criteria set out in the Commission's direction of 16th June (CER/06/112).

In tandem with the decision on the eligibility criteria for Gate 2 the Transmission System Operator (TSO), the Distribution System Operator (DSO) and the Commission have been in discussion concerning the precise principles for charging for connection to the system which would apply in Gate 2 - and beyond - of the Group Processing Approach. Following those discussions the Commission asked the TSO and DSO to produce this joint paper setting out the Group Processing Approach charging regime which would apply, incorporating several principles laid down by the Commission. This charging regime is as applied under Gate 1, however, a number of clarifications/amendments have been incorporated to ensure that clear and transparent rules are set out in respect of all known scenarios.

A list of relevant published documents is contained in Appendix 3 to this paper.

2 Connection Method Principles

Under the Group Processing Approach (GPA) the relevant System Operator, working in conjunction with the other, will specify the connection method which is to be employed.

- Firstly, the System Operator will determine the **Least Cost Technically Acceptable (LCTA)** shallow connection method for connecting the sub group. This method is derived by the System Operators consistent with the technical criteria which apply to the system to which the applicant will connect and assumes that all parties within any particular sub-group will proceed to connect. It is generally the basis upon which the cost of connection is levied on connecting parties within the sub-group[1];

  In deriving the LCTA solution the System Operators will have regard to the capital cost of equipment required to connect the party, or the sub-group, to the system in accordance with System Operator codes and practice. For the avoidance of doubt the LCTA solution will be for the entire sub-group not simply for any single party within the sub-group.

- However, the System Operator may specify a connection method different from the LCTA as being a more appropriate connection method for an individual sub-group. This proposed connection will take into account wider system development, the costs of associated system reinforcements, the possibility of future connections at a subsequent date, and an overall prudent medium term approach to system planning. This is referred to as the **System Operator's Preferred Connection Method**. To the extent the System Operator's Preferred Connection Method is more expensive than the LCTA method then the additional cost will be recovered through the Use of System (UoS) charges rather than from the connecting parties,

[1] Under the Group Processing regime applicants are divided into groups and sub-groups. Groups are made up of applicants in the same geographical area and are likely to drive the same deep reinforcements. Sub-groups are applicants that are likely to share the same connection method.

subject to usual regulatory scrutiny with respect to the appropriateness and efficiency of the investments[2].

- Where an applicant requests an alternative connection method to that offered by the System Operator this connection method may be accommodated by the System Operator subject to the following conditions:

    i. It is technically feasible and there are no negative significant system, planning or environmental implications associated with the applicant's proposed connection method;

    ii. It is consistent with the long term development of the system including, but not limited to:

        1. Not adversely impacting upon the ability of the System Operators to obtain necessary planning consents for other system developments in either the short or medium term;
        2. Not adversely affecting scarce station, or line routing capacity for potential future system development to the benefit of all customers; and
        3. Not likely to lead to higher charges for potential future connecting customers.
        4. Not likely to increase costs for the End User
        5. Not resulting in a change of the designated connection point on the meshed transmission system originally chosen by the System Operators.

    iii. The applicant pays any additional cost to the System Operator associated with its connection method and no other applicant within the sub-group is adversely affected. For the avoidance

[2] As exemplified in Appendix 1.

of doubt, in the event that the applicant's connection method involves it no longer being part of the sub-group determined by the System Operator it should pay as if it were a member of that group subject to the resultant group connection arrangements being re-optimised where appropriate, plus any incremental cost associated with its particular connection solution[3].

Any one of the connection methods above (LCTA, Customer/System Operator Preferred Connection) may correspond with the **Actual Build** method which is the connection method which is actually built to connect the party. The right to specify the Actual Build method always remains with the System Operator.

Appendix 1 provides an example as to how the transmission connection charge is calculated when the LCTA and the Actual Build is different.

Finally it is worth bearing in mind that any of the above connection methods may be revised if one or more parties within a particular sub-group decides not to proceed with their connection, or reduces their Maximum Export Capacity[4] (MEC). Section 4 covers in detail how such situations are treated.

[3] For the avoidance of doubt this includes any on-going maintenance or other charges applicable to the applicant as if it were a part of the original sub-group.

[4] Maximum Export Capacity (MEC) is the maximum amount of power which a customer is contracted to export to the grid in their connection agreement; it is measured in megawatts (MW). Maximum Import Capacity (MIC) is the maximum amount of power which can be imported from the grid by a customer under their connection agreement, it is measured in MVA.

3 Connection Charging Principles

As stated earlier connection charges are calculated based on the LCTA solution except in circumstances where the applicant has requested a more expensive solution. Connection charges reflect the cost of constructing, installing and maintaining the connection assets. These charges comprise a capital element to cover the construction and installation of the asset and a revenue element to cover ongoing maintenance of the asset.

As outlined in the Commission Direction (CER/05/049) of April 2005, the connection charging policy under the Group Processing Approach shall include the following principles:

1. Generators will be charged 100% of the cost of providing the Dedicated Connection Asset (excepting where an asset was oversized to accommodate future development);
2. Charges for connection to the Shared Network shall be based on a per MW basis in accordance with the formulae in Figure 1.

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

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

Where:

X = Total cost (LCTA for the subgroup) 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

V = Total MEC (in MW) of the DSO Generator Applications in that Subgroup*

P_T = Transmission Probability Factor = 1 for Gate 1 and Gate 2

P_D = Distribution Probability Factor = 1 for Gate 1 and Gate 2

Figure 1: TSO/DSO Connection Charging Formulae for Shared Connection Assets

3.1 Connection to Transmission System

The capital charge for connection to the transmission system is determined on a "shallow" basis. The charge for connection is made up of costs associated with both the dedicated assets and shared assets. Generators pay 100% of the dedicated asset costs. However it should be noted that – should any of the connection assets be shared by more than one connecting party who are processed under the Group Processing Approach (GPA) - then the cost of the associated assets will be shared on a per MW basis[5]. Thus if three connecting parties with MECs of 40MW, 40MW and 20MW are sharing connection assets they will pay for 40%, 40% and 20% of the cost of the asset respectively.

In the case where a subgroup shares assets **with the system** the connecting sub-group pays for the bays and protection etc. associated with its connection and a proportion of the station common costs[6], the proportion associated with the number of bays required for the sub-group's connection. As with all shared assets within a subgroup the costs are apportioned between the members of the subgroup on a per MW basis.

The charging structure, in respect of transmission, is conducted in accordance with Commission approved connection charging policy as outlined by the Commission on the 16th October 2000, in its Direction on the boundary between Connection and Transmission Use-of-System (TUoS) assets.

3.1.1 Contestability (Transmission connections only)

Parties connecting to the transmission system have the right to construct, or arrange to have constructed their shallow connection to the transmission system. In the case of group processing all parties within a sub-group who will be making use of the assets in question must come together to agree to contest the construction of their shared assets if they wish to construct or arrange to construct the shared transmission shallow assets. Should the System Operator require a connection method other than the LCTA method to be constructed the parties must, of course, construct the method specified

[5] Prior to the GPA apportioning of the shared costs was done on a per bay basis
[6] Costs associated with the station to which the user is connected, typically busbars, couplers, site and civil costs, control buildings etc

by the System Operator. However, the parties will receive a capital contribution to cover the incremental cost of the System Operator's chosen connection. The parties will be responsible for the cost of oversight etc. required by the System Operator to ensure the connection is built according to the required specifications. Under statute the System Operator can seek to take responsibility for the connection and if so the connection assets will be transferred to the ownership of the Transmission Asset Owner (TAO) and under the responsibility of the Transmission System Operator for a nominal fee.

The shallow connection of the transmission connected generator shall be considered contestable in accordance with the current contestable regime up to a pre-defined boundary point. This boundary will take account of, among other things, practical and safety considerations. This includes both the Dedicated and Shared Transmission Connection Assets. The box below details the rules for contestability under Group Processing as set out in the Commission direction to the System Operators CER/05/049.

BOX 1 – Rules for Contestability of Transmission Connections under Group Processing

a) The identity of applicants within Subgroups involving a Shared Transmission Connection Asset shall be disclosed to all applicants within that Subgroup prior to issuing the connection offers.

b) Only the transmission connecting parties shall be allowed to construct or arrange to have constructed the Shared Transmission Connection Asset.

c) All applicants – transmission and distribution - sharing the transmission asset within a Subgroup must come to a unanimous agreement amongst themselves that they wish to make the Shared Transmission Connection Asset contestable.

d) This agreement must be notified in writing to the TSO three weeks following the connection method update meeting, with evidence that unanimous agreement has been reached. The applicants shall nominate one transmission applicant who will liaise with the TSO during the process of constructing the contestable Shared Transmission Connection Asset.

e) Should the parties not be able to agree on the Shared Transmission Connection Asset being contestable, or the nominated transmission applicant not accept its connection offer (where there is

no other transmission applicant in the Subgroup)[7] the Shared Transmission Connection Asset will be deemed to be non-contestable. This is important to ensure that the parties within the Subgroup and subsequent Gates are not unduly delayed. However, the remaining accepted offers may have to be reworked as the connection costs discussed in (f) below may have to be reviewed with a view to cost recovery on behalf of the final customer.

f) The arrangements for payment of connection costs for the Shared Transmission Connection Asset shall be a matter for the parties within the Subgroup if the contestable option is chosen. The Commission has no remit to protect any party, other than the final TUoS and DUoS customer, from potential financial risk of unrecovered connection costs.

g) If the TSO considers it necessary for system security and stability reasons to make the Shared Transmission Connection Asset of a subgroup non-contestable it shall notify the Commission as soon as practicable. The Commission shall decide on such cases on an individual basis. Such a situation will be an exception and the burden of proof will rest with the TSO.

3.2 Connection to Distribution System

The charges for connection to the Distribution System are made up of costs associated with both dedicated assets, shared assets[8] (on the same basis for transmission as set out in section 3.1) and Distribution Reinforcement works, which enable generators to export their full MEC. Charges are calculated using standard charges as per the Commission Direction (CER/05/090) of June 2005. As depicted in Figure 1 shared assets are apportioned on a per MW basis.

3.3 Bonding Requirements & Principles

A party seeking to connect to the system must provide security in the form of a number of bonds which are designed to protect other users of the system. The following bonds are required:

[7] Where there is another transmission connection applicant in the Subgroup then this applicant may apply to the TSO to take over this role (with the agreement of the other Subgroup parties and subject to the other conditions as set out above). Such an application will be considered on its individual merits on a case-by-case basis.
[8] Shared with other members of the sub-group

Transmission and distribution connections

The **Capacity Bond** is designed to recognise the value of network capacity. It requires an applicant to post a bond of €10,000 per MW of capacity sought at offer acceptance stage.

Drawing down of the Capacity Bond – Should the applicant not attain 90% (subject to a maximum variance of 10MW) of the MEC sought for the plant in accordance with the Connection Agreement, the bond will be drawn down on a pro-rata[9] basis and the MEC amended to the new value. Additionally, should an applicant request a reduction in MEC after work has commenced on a given Gate, the capacity bond will be drawn down on a pro-rata basis, following processing of the reduction in accordance with section 4.3. Transmission applicants are required to provide a "Capacity Certificate[10]" for 100% of the requested MEC. In the event that the applicant does not provide a capacity certificate for 100% of its MEC or has not installed generation units with sufficient capacity to meet the requested MEC the capacity bond shall be drawn down on a pro rata basis and the MEC amended to the new value.

Transmission connections only

Decommissioning and Reinstatement Bond In the case of applicants connecting to the transmission system only the applicant must also maintain a decommissioning and reinstatement bond for the duration of their connection agreement to cover any potential costs associated with decommissioning their connection assets at such a time as they might disconnect from the system. In the event that the assets are not decommissioned no decommissioning and reinstatement charge will be payable by the connecting party.

[9] For example if a 100MW generator attains an MEC of 80MW in the Capacity Test then 20% of their Capacity Bond is drawn down.

[10] A certificate from a manufacturer confirming that the applicant has entered into a contract with that manufacturer for a particular type and number of generation unit(s) and their scheduled delivery date(s).

Connection Charges Bond In the case of applicants connecting to the transmission system only there is a requirement to post a connection charges bond upon acceptance of their Connection Offer. This bond will cover any costs incurred during construction of the shallow connection assets which are not covered under the payments made by the applicant. The bond will be drawn down should the applicant not proceed to connect.

3.4 Basis of Offers and Payment Schedules

3.4.1 Transmission

TSO's connection charge to connecting parties is comprised of both fixed and an estimate for certain pass through charges. Fixed charges are the costs associated with the materials and /or connection works for which EirGrid is responsible. These works are set out in the connection offer. The only change to the prices quoted in the connection offer is to take account of inflation. However these prices are based on a number of assumptions set out in the offer letter. If any of those assumptions fails then the entire offer is open to be revisited.

Pass through charges are those charges that are not directly controlled by the TSO and cannot be directly recovered by the Transmission Asset Owner (TAO). These costs are project specific and are passed directly to the customer. Any change in (1) the cost of consents, (2) the timing of the connection, (3) project management fees and/or (4) the method of connection could give rise to a change in the pass through charges, which in turn could give rise to a change in the connection charge. Examples of pass-through costs are project management fees, consents, civils etc. Actual pass-through costs will be as outlined in EirGrid's offer letter.

3.4.2 Schedule of payments – Transmission

The payment schedule is offer specific and related to the cash flow associated with providing the shallow connection assets. These payments are payable in advance to ensure the TSO/ TAO remain in a cash positive position thus minimising the risk to

the TUoS customer i.e. the first payment due on execution of the Connection Agreement usually covers EirGrid's costs until Consents Issue Date[11] (CID). This is done to ensure that EirGrid and hence the TUoS customer is not financially exposed.

Where consents are required, the second and subsequent payments are scheduled to ensure alignment with the actual work being performed. In all cases the full connection charge will be payable before the connection works are completed.

3.4.3 Distribution

DSO Connection Offer charges are generally determined using Commission approved standard charges. They are firm costs with the exception of pass through costs, and volume changes. Pass through charges are (1) as outlined in the Commission Direction CER/05/090, which include items such as civil works and forestry payments and (2) pass-through costs from EirGrid in respect of project management fees, consents, civils etc. In addition developers may be charged any additional costs incurred by the DSO due to unforeseeable difficulties encountered undertaking the work. Volume changes cover the situation where the length of line/cable required for the connection may be greater or less than the original estimate.

3.4.4 Schedule of payments - Distribution

The distribution payment schedule is as follows:

- 25% on Offer Acceptance. This is non-refundable except in instances where the developer has failed to secure planning permission. In these instances a refund will be made less expenses incurred by the System Operator in processing the application.;
- 50% and any known estimated Pass-Through Costs before ESB construction begins;

[11] The date on which both the System Operator and the customer have obtained the consents relating to the connection works necessary to allow construction works to begin.

- The balance of the Connection Charges (including and any Pass-Through Costs) 1 calendar month before the Operational Date.

3.5 Annual Charges

In addition to connection charges, generators are liable for a number of annual charges as follows:

An Ongoing Service Charge (OGSC) On-going service charges are applied to both transmission and distribution connected generators and incorporate rates, maintenance, operations and indirect overheads attributable to maintaining the asset. An annual charge will cover the average annual cost the System Operators expect will be incurred over the term of the connection agreement, and is payable for the period of connection. Where more than one customer is connected at a site, the ongoing service charge for the assets will be apportioned on the same basis as the capital component.

The charge is derived from the shallow connection assets that are used by a customer but which are owned and maintained by ESB Networks (where a generator owns and maintains their own connection assets they are responsible for maintenance and OGSC is not levied). This charge is specific to each customer connection and it is dependant on the line length and the equipment in the substation etc. OGSC is calculated based on the LCTA connection method except where the customer requests a connection above or outside the LCTA, in that situation the OGSC is calculated on the Actual Build.

Transmission Use of System charges (TUoS). All transmission connected generators and distribution connected generators with an MEC $\geq$ 10MW are liable for Generation TUoS charges. In addition all transmission and distribution connected generators are liable for Demand TUoS charges.

Distribution Use of System Charges (DUoS). All distribution connected generators are liable for DUoS charges for their MIC.

4 Non Take-up of Offers/Connection Principles

It may happen that an applicant does not accept their connection offer or withdraws after signing a connection offer. These situations will be dealt with by the respective System Operator as follows:

4.1 Offer Stage

If one or more applicants within a group does not accept their offer, the connection method should be re-examined. Additionally, the connection method and offers to the remaining applicants in the group may be re-worked, after account has been taken of prudent long term system planning and the interests of final customers, if this results in a **reduction** in their connection cost, of 5% or more. If the reduction in the connection cost is less than 5%, the over-recovery of connection payments will be reconciled on the TAO/DSO's Regulated Asset Base (RAB) as appropriate. However, regardless of whether the connection method is re-worked, the connection costs to the remaining applicants in the group will **not** be increased. Any anticipated unrecovered cost should be added to the appropriate RAB and funded by the TUoS/DUoS customer.

4.2 Connection Stage

If a party withdraws after signing a connection offer, the same principles apply as in 4.1 above. However, for transmission applicants it is expected that the connection charges bond and/or connection payments provided by the withdrawing party may cover the shortfall if a connecting party withdraws, rather than the TUoS customer. To the extent that the bond/payment does not cover the entire cost (where deep reinforcements have commenced), the TUoS customer will cover the difference. For distribution applicants, the shortfall would be recovered from a combination of connection payments made and, to the extent that connection costs have not been covered by the connection payments, the DUoS customer.

4.3 MEC Changes & the Capacity Bond

Increases in MEC

Applications for increases in MECs are considered as new applications.

Decreases in MEC

Once Gate processing commences, applications for reductions in MEC by applicants within the Gate can only be applied for once the offer is accepted (through a modification request to the Connection Agreement). For the avoidance of doubt, if an applicant seeks to withdraw from the process (i.e. reduce their MEC to zero effectively) prior to their offer being issued processing of that group will continue as if that applicant had not withdrawn. In addition, that applicant will not be entitled to any refund in respect of their application fee.

Dedicated Assets

If a party applies for a reduction in MEC (having accepted their offer), the offer will be revised to reflect a new dedicated connection, assuming a lower capacity dedicated connection is needed. This applies only if construction work has not already commenced and delivery schedules are unaffected. Any additional costs in excess of those required for the original MEC will be charged in full e.g. additional design costs.

Shared Assets

No change to the offer will be made with respect to shared assets, as this could affect other generators in the group unless this can be done without penalty to the other generators. However, should another generator connect to the shared assets within the following ten years, the reducing party will be refunded in respect of the shared assets before other generators are refunded, though after the TUoS/DUoS customer and Grid Upgrade Development Programme[12] (GUDP) fund if applicable – see 5.2 below.

The Capacity Bond of €10,000/MW will be drawn down when a generator reduces its MEC subsequent to the acceptance of an offer in accordance with policy as set out in

[12] EU funded programme to contribute towards the capital cost of renewable connections, link in Appendix 3

section 3.3. A further draw down of the bond would occur in the event that an applicant fails to achieve 90% (subject to a maximum variance of 10MW) of the revised MEC sought for the plant in accordance with the Connection Agreement and also in the case of a transmission applicant who fails to provide a capacity certificate for 100% of the revised MEC or has not installed generation units with sufficient capacity to meet the revised MEC.

5 Rebating Principles

Rebates/refunds to generators will apply as detailed below.

5.1 Additional Connections

If, **within ten years** of a generator(s) energising, another party connects to the shared or dedicated asset for which it has paid, the pre-existing generator(s) will be eligible to receive a rebate under the rules outlined in this section. (An exception to this general principle is a generator who has paid for their connection under the Grid Up-Grade Development Programme (GUDP) pricing formula.)

Transmission Connections

If a party connects to a dedicated or shared asset **after the tenth year** of that asset's life, the party will be charged their per MW share of the Modern Equivalent Asset Value[13] (MEAV) of that asset and their connection charge will be netted with the allowed TUoS revenue. In the case of transmission assets, if EirGrid connects an additional transmission system line to an existing looped station (or a station consisting of more than two system lines built to connect the user to the transmission system) within ten years then the circuits connecting the transmission station to the network will be deemed Use-of-System assets and the existing user(s) at that station will be eligible to receive a rebate on assets previously defined as connection assets.

Distribution Connections

If a party connects **after the tenth year** of the life of the shared or dedicated assets of another party, then there will be no charge for their use of that asset.

5.1.1 Charging/Rebating Process

If a customer requests a non-standard, more expensive connection then as stated in section 2 above, that user will be eligible to pay the full cost above the LCTA cost of

[13] The MEAV is the cost of the shared connection asset that would have been built to connect the new customer for the life of their Connection Agreement. It would include the updated standard costs for the assets.

providing this connection. Any future customers connecting into these assets will pay solely based on the LCTA connection and the original customer will also receive a rebate on that basis.

Transmission Connections

For dedicated or shared assets aged **ten years or less**, the new connecting party will be charged their per MW share of the Modern Equivalent Asset Value of the shared connection assets. Any rebate to the pre-existing generator(s) will take into account the time value of money and depreciation, as well as the administrative work in operating the rebate mechanism. The value of the rebate is depreciated to reflect the number of years of exclusive use the original connecting party has had in respect of the assets. Depreciation is calculated on a straight line basis over 50 years for transmission assets. Any additional amount paid by the new connecting customer over that rebated to the original customer(s) is used to reduce TUoS. Any rebate will align with current Commission policy regarding return on assets. Following any rebate the Ongoing Service Charge will be apportioned on the same basis as the capital costs of the shared connection assets.

Distribution Connections

For dedicated or shared assets aged **ten years or less**, the new connecting party will be charged their per MW share of the depreciated historical cost of the shared connection assets. The value of the rebate to the pre-existing generator(s) will also be based on this cost less the administration costs incurred in calculating and processing the rebate. Depreciation is calculated on a straight line basis over 45 years for distribution assets.

Where a cable solution is the LCTA refunds for the civils element of the work will be based on standard costs approved by the Commission.

Following any rebate the Ongoing Service Charge will be apportioned on the same basis as the capital costs of the shared connection assets.

5.2 Order of Rebates

Where a generator connects to a shared/dedicated asset as referred to above, the order of rebates to other parties is as follows:

1. TUoS/DUoS Where the TUoS/DUoS customer has incurred additional costs to facilitate the connection of future customers or where the TUoS/DUoS customer has paid for development in the interests of longer term system planning, or where the TUoS/DUoS customer has picked up costs as result of offers issued not being accepted, etc, the TUoS/DUoS customer is rebated in the first instance.

2. GUDP Fund Where the GUDP fund has incurred costs to facilitate the connection of future customers the GUDP fund is rebated after the TUoS/DUoS customer.

3. Connecting Party Where a party reduces their MEC after accepting an offer[14] or a Party pays for the connection assets but does not actually use the connection.

4. Others All other parties connected.

5.3 Interaction between Renewables & Conventional Plant

While this document deals with the Group Processing pricing principles it is also useful to consider the interaction between customers who connect under this process and those that do not as it is likely that some shared assets in the future will be shared by a variety of customers.

Transmission

[14] Once processing has commenced within a given Gate, an applicant cannot reduce their MEC until they have accepted their connection offer

It is useful to consider in this paper the possible interaction between the various charging policies in order to avoid confusion and uncertainty with possible future connections.

The principle covering the interaction of a customer who connected on a per bay basis with another customer who connected on a per MW basis employs the equivalent principles applied to the interaction of a renewable customer who connected on a per bay basis prior to the GPA and a more recent renewable customer who connects on a per MW basis. If generators (conventional, renewable etc.) interact their shared connection charge will be apportioned on a per MW basis, examples are given in Appendix 2.

Distribution

Shared assets are apportioned based on MW capacity for both renewable and conventional plant.

Appendix 1 – Transmission Example of Calculation of Connection Charge where Connection Method is not LCTA

EXAMPLE 1:

Table 1: Example 1

	Dedicated Works (A)	Deep Works (B)	Overall System cost (A+B)	Allocated Charge (D)	Shallow Charge (A+D)
Option 1	**3**	**1**	**4**	1	4
Option 2	1	5	6	2	3
Option 3	**2**	4	6	**0**	**2**

In the table above there are three options for connecting a generator, or group of generators, to the transmission system, all of which are technically acceptable and can be built. Option 1 is the connection method likely to be actually built as the overall cost on the system is the lowest when including necessary deep reinforcements - in other words it's the System Operator's Preferred Connection Method. However the generator(s) will only be charged for the LCTA shallow connection method - the dedicated assets charge (dedicated works) plus the associated allocated charge[15], which in the case above is Option 3. Therefore the generator must pay €2 + €0 = €2, while the remaining connection cost will be recovered through the UoS charges.

[15] The allocated charge is the charge apportioned to a generator for the sharing of any assets that are already in place or are being built e.g. sharing a connection asset, station common costs, etc.

Appendix 2 - Examples of Interacting Renewables, Pre & Post the GPA - Transmission

A. Connection scenario 1: Looped Station, 2 connections

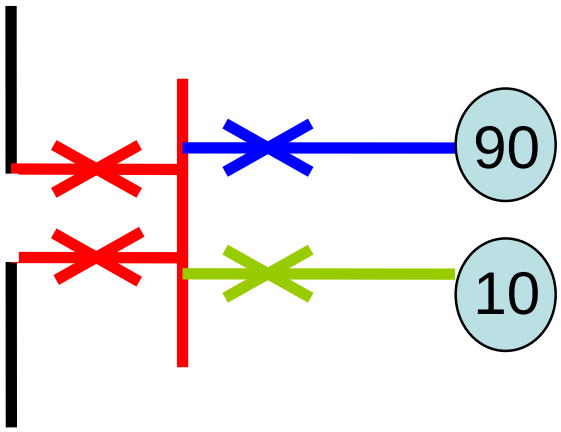

Figure 2: Looped station, 2 connections

In figure 2 we have an example of a looped station with a 90MW and a 10MW connection. For the purpose of understanding the application of the rebate policy let us assume that the 90MW connection was made first to the transmission system under the traditional sequential processing approach (paying on a per bay basis) and the second 10MW connection under the Group Processing Approach (paying on a per MW basis). The dedicated assets in green are new build assets required specifically to connect the 10MW to the transmission system and would be exclusively charged to the 10MW connection. At issue is how the shared connection assets in red should be apportioned between the two parties.

The original connecting party (90MW) paid 100% of the LCTA connection method (assuming they did not request a connection method above the LCTA). If there was a difference between the LCTA and the Actual Build (for System Operator reasons) either the TUoS/DUoS customer or the GUDP Fund funded the difference. In order to charge on the basis of the Group Processing Approach the cost of the shared assets are apportioned on a per MW basis, thus the 10MW connection will pay 10% of the shared connection cost. Based on the rebating hierarchy the TUoS/DUoS customer or the GUDP Fund is rebated first if applicable and then the 90MW customer.

The first connecting party cannot receive more than has been recovered from the second. Using the above example, the first 90MW party is only rebated one tenth of the cost of the shared connection assets if neither the TUoS/DUoS customer nor the GUDP Fund are due a rebate.

B. Connection scenario 2: Tail fed looped station, 2 connections

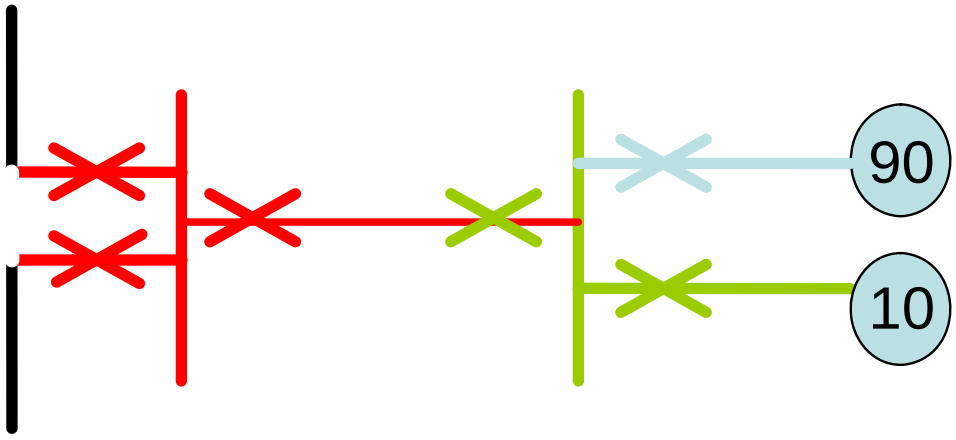

Figure 3: Tail fed looped station, 2 connections.

Figure 3 illustrates a variation on the earlier example. This time a 90MW connection is initially made to a new looped station via a tail-fed circuit and once again we are assuming it is under the sequential processing approach. With the arrival of the second 10MW connection a new busbar and associated bays are required. These dedicated assets in green are required specifically to connect the 10MW generator to the transmission system and are therefore exclusively charged to the 10MW generator. At issue again is how are the shared connection costs in red (looped station plus tail feed) apportioned between the two parties.

The original connecting party (90MW) paid 100% of the LCTA connection method (assuming they did not request a connection method above the LCTA). If there was a difference between the LCTA and the Actual Build (for System Operator reasons) either the TUoS/DUoS customer or the GUDP Fund funded the difference. In order to charge on the basis of the Group Processing Approach the cost of the shared assets are apportioned on a per MW basis, thus the 10MW connection will pay 10% of the

shared connection cost. Based on the rebating hierarchy the TUoS/DUoS customer or the GUPD Fund is rebated first if applicable and then the 90MW customer.

The first connecting party cannot receive more than has been recovered from the second. Using the above example, the first 90MW party is only rebated one tenth of the cost of the shared connection assets if neither the TUoS/DUoS customer nor the GUDP Fund are due a rebate.

Appendix 3 – Relevant Published Documentation

Criteria for Gate 2 Renewable Generator Connection Offers, Direction to the System Operators, CER/06/112 16th June 2006 - http://www.cer.ie/CERDocs/cer06112.pdf

Group Processing Approach for Renewable Generator Connection Applications, Connection and Pricing Rules, Direction to System Operators, CER/05/049 6th April 2005 - http://www.cer.ie/CERDocs/cer05049.pdf

DSO Standard Pricing Approach for Connecting Renewable Generators to the Distribution Network, Commission Decision, CER/05/090 24th June 2005 - http://www.cer.ie/CERDocs/cer05090.pdf

Letter from CER clarifying aspects of Standard Pricing for Renewables, 28th January 2006
http://www.esb.ie/esbnetworks/downloads/letter_dso_clarifying_standard_charges_for_renew.pdf

DSO & TSO Grid Upgrade Development Programme (GUDP): Implementation Guidelines for Generators, June 2003 - http://www.cer.ie/cerdocs/cer03152.pdf

TSO Connection Asset Costs: Guiding Principles, CER/ESB/2000/10 12th April 2000 -
http://www.eirgrid.com/EirGridPortal/uploads/Regulation%20and%20Pricing/Connection%20Asset%20Costs.pdf

TSO Contestability and Connection Assets, March 2002 -
http://www.eirgrid.com/EirGridPortal/uploads/General%20Documents/Contestability.pdf

TSO Connection Offer Process, Process for Connection to the Transmission System in Ireland 1st July 2003 -
http://www.eirgrid.com/EirGridPortal/uploads/General%20Documents/Process%20for%20Connection.pdf

TSO 2007 Statement of Charges -
http://www.eirgrid.com/EirgridPortal/uploads/Regulation%20and%20Pricing/Final%202007%20SOC%20(approved%20by%20CER%2031-10-2006).pdf

DSO 2007 Statement of Charges -
http://www.esb.ie/esbnetworks/downloads/distribution_system_charges_2007.pdf