Standard Prices for Generator Connections 2020

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Commercial and Renewable Regulation
Asset Management
ESB Networks Ltd.
Distribution System Operator

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1.0 Background

A key principle of the Group Processing Approach for the DSO connections and the provision of connection offers in a timely manner is the implementation of the Standard Pricing approach. Under this approach a standard price for the main items on which such connection offers were based was approved by the Commission for Energy Regulation in its Decision paper, Standard Pricing Approach for Connecting Renewable Generators to the Distribution Networks (CER/05/090). These standard prices were based on 2004 costs.

The DSO subsequently agreed with the CER that these charges should be updated on an annual basis based on forecast CPI and in 2010 it was agreed that they should be updated based on forecast HICP from 2011 onwards. In addition, DSO has revised the costs to reflect any over or underestimates in forecasts for CPI and HICP estimates used in the previous year's costs. The Commission has approved these updated standard prices under Section 36 of the Electricity Regulation Act, 1999.

2.0 Standard Pricing Approach

The application of the standard pricing approach, as outlined below, is the most effective and equitable means of processing the applications while facilitating the provision of DSO connection offers in a timely manner. For avoidance of doubt, this approach applies to both the shared and dedicated connection assets for generators. The standard pricing process and charges are outlined below.

2.1 Standard Pricing Process

1. The DSO connection offer pricing is based upon a desktop study plus a site visit to estimate the volume and type of material required.

2. The proposed connection is then costed using the schedule of charges detailed in Schedule 1.

3. Costs are attributed to the various generators in a Group/ Subgroup (by the relevant System Operator) on the basis of the charging regime outlined in section 5.1 of TSO/DSO Joint document (CER 04/317)[1].

4. Following acceptance of the connection offer, a detailed design of the project commences and planning permission and consents are obtained.

[1] Section 5.1 extract provided in Appendix 1.

2.2 Pass through Costs

In some cases costs will arise which are not possible to accurately estimate at the time of the connection offer, or which are outside the control of DSO. In such cases, these costs will be advised to and requested from the generator at the time of the next payment date.

The following costs are costs which are difficult to estimate at the time of issuing the connection offer and are always pass-through:

- Civil works associated with infrastructure required at new stations[2];
- Road Opening Licences and associated costs where cable works are undertaken by ESB Networks Ltd;
- 110kV cable – where length is >1km;
- Site purchase costs;
- Any volume changes in the plant items required (e.g. 10km of overhead line rather than 9km), following detailed route survey etc;
- Need for a temporary transformer in a scenario where in an existing single transformer station, the LCTA solution for the provision of additional generator capacity is the uprating of that transformer to the next size;
- Where the connection involves transmission work, any pass-through costs advised by the TSO.
- Cable testing costs – testing is required post cable installation to detect defects
- Security – cost of security which is required at stations to prevent material theft. Such theft can – in addition to adding to costs – lead to delays in energisation;

In addition, some examples of circumstances which are outside the control of DSO include, but are not limited to, the following:

- **Changes to Planning Permission conditions.** The final planning permission dictates the nature of the final connection and its route, which may have changed from the original design. In addition, special conditions may be applied to planning permissions; e.g. attendance of archaeologist or other professional during construction.
- **Wayleaves and Consents compensation.** Wayleaves and consents compensation are negotiated and paid by the DSO. In

[2] It should be noted that civil works (trenching, ducting, reinstatement) for cables should be carried out by the developer.

certain instances, however, these may be above the level assumed in the connection offer. These circumstances are outside the control of the DSO.

- **Forestry Compensation** The costs associated with forestry compensation are passed through to generators.

- **Lock out costs.** Lock out is the term used where DSO staff and their contractors arrive on site to discover that the landowner will not allow access to their land notwithstanding the fact that wayleaves have been served. This is an unforeseeable circumstance which can be expensive and is particularly problematic for windfarm connections. For these reasons it is deemed to be more appropriate to have this item as pass through.

- **Access for delivery of materials**. In the past it has been necessary on occasion to have helicopter delivery of poles. This has been necessitated by the exceptionally bad terrain which can be experienced with connections – in particular connections to windfarms. Rather than sharing this cost over all developers (by including an element for same in the standard price) it is deemed to be more appropriate to have this item as pass through.

Schedule 1 - Charges for generators excluding VAT

	Item	Description	Total €
	Line work		
1.	Standard 110kV line (300ACSR)	▪ Max design voltage = 120kV ▪ BIL = 550kV ▪ Power frequency withstand voltage = 315kV ▪ Conductor type – 300ACSR ▪ Load rating – 720A-860A[3] ▪ Fault current rating – 23kA for 1 sec ▪ Design wind speed – 45m/s on bare conductor; 26m/s on conductor with 2.5cm radial ice; 4cm radial ice, no wind ▪ 4/5 Poleset /km assumed ▪ Up to 1 mast/km ▪ Not inclusive of shield wire ▪ Not inclusive of high security lines	210,810
2.	110kV line (430mm^2) - new build only (<10km)	▪ Max design voltage = 123kV ▪ BIL = 550kV ▪ Power frequency withstand voltage = 230kV ▪ Conductor type – 400mm sq ACSR BISON ▪ Load rating – 981A (25C) -1170A (5C)[4] ▪ Fault current rating – 40kA for 1 sec ▪ Design wind speed – 45m/s on bare conductor; 26m/s on conductor with 2.5cm radial ice; 4cm radial ice, no wind ▪ 4/5 Poleset /km assumed ▪ Up to 1 mast/km ▪ Not inclusive of shield wire ▪ Not inclusive of high security lines	380,080
3.	110kV line (430mm^2) - new build only (>10km)	▪ Max design voltage = 123kV ▪ BIL = 550kV ▪ Power frequency withstand voltage = 230kV ▪ Conductor type – 400mm sq ACSR BISON ▪ Load rating – 981A (25C) -1170A (5C)[5] ▪ Fault current rating – 40kA for 1 sec ▪ Design wind speed – 45m/s on bare conductor; 26m/s on conductor with 2.5cm radial ice; 4cm radial ice, no wind ▪ 4/5 Poleset /km assumed ▪ Not inclusive of shield wire ▪ Not inclusive of high security lines	328,720

[3] Higher rating assumes ambient temperature of 5C; lower rating assumes ambient temperature of 25C

[4] Higher rating assumes ambient temperature of 5C; lower rating assumes ambient temperature of 25C

[5] Higher rating assumes ambient temperature of 5C; lower rating assumes ambient temperature of 25C

	Item	Description	Total (€)
4.	38kV Line (300ACSR)	▪ Max design voltage = 41.5kV ▪ BIL = 250kV ▪ Power frequency withstand voltage = 95kV[6] ▪ Max phase-Earth voltage = 44kV[7] ▪ Load rating – 775A-920A ▪ Fault current rating – 19kA for 1 sec ▪ Design wind speed – 36m/s on bare conductor; 20m/s on conductor with 2.5cm radial ice; ▪ 6/7 Poleset /km assumed ▪ Design temperature – 80C ▪ Minimum creepage – 900mm ▪ Up to 1 mast/km ▪ Not inclusive of high security lines	111,260

[6] 250kV BIL and Power Withstand of 95kV correspond to the 52kV IEC Voltage class

[7] The system neutral is connected to earth through Petersen coils located at 110kV/38kV stations. On the occasion of a fault to earth on one phase of the system, the voltage to earth on the healthy phases may exceed line voltage and this condition may be sustained for a considerable time (over 3 hours)

	Item	Description	Total (€)
5.	38kV 150AAAC	▪ Max design voltage = 41.5kV ▪ BIL = 250kV ▪ Power frequency withstand voltage = 95kV ▪ Load rating – 511A-604A ▪ Fault current rating – 12kA for 1 sec ▪ Design wind speed – 36m/s on bare conductor; 16m/s on conductor with 2.5cm radial ice; ▪ 8 poles /km assumed ▪ Design temperature – 80C ▪ Minimum creepage – 960mm on glass insulators; 1280mm on polymeric insulators ▪ One mast per 5km ▪ Not inclusive of high security lines	88,830
6.	38kV 100ACSR	▪ Max design voltage = 41.5kV ▪ BIL = 250kV ▪ Power frequency withstand voltage = 250kV ▪ Max phase-Earth voltage = 44kV ▪ Load rating – 385A-450A ▪ Fault current rating – 6kA for 1 sec ▪ Design wind speed – 36m/s on bare conductor; 23m/s on conductor with 2.5cm radial ice; ▪ 6/7 poles /km assumed ▪ Design temperature – 80C ▪ Minimum creepage – 900mm ▪ Terminal masts in high security areas only ▪ Not inclusive of high security lines	70,270
7.	MV 150AAAC/92 SCA	▪ Max design voltage = 21.5kV ▪ BIL = 125kV ▪ Power frequency withstand voltage = 50kV ▪ Load rating – 412A-516A ▪ Fault current rating – 11.5kA for 1 sec ▪ Design wind speed – 45m/s on bare conductor; 16m/s on conductor with 2.5cm radial ice; ▪ 12poles /km assumed ▪ Design temperature – 65C	52,700
Cable Costs (EXCLUDES ALL CIVIL WORKS AND DUCTING UNLESS OTHERWISE STATED)			
8.	110kV cable 630XLPE [8] (Aluminium)	▪ Max design voltage = 123kV ▪ BIL = 550kV ▪ Power frequency withstand voltage = 230kV ▪ Load rating – 600A ▪ Fault current rating – 26kA for 1 sec	357,210

[8] Price applies for first km only. In the event that a job requires more than one km then the price will be based on actual tenders and passed through.

	Item	Description	Total (€)
9.	38kV cable 630XLPE (Aluminium)	▪ Max design voltage = 52kV ▪ BIL = 250kV ▪ Power frequency withstand voltage = 95kV ▪ Load rating – 660A ▪ Fault current rating – 20kA for 1 sec ▪ Includes cost of fibre optic cable ▪ Per unit cost of arc suppression coil included	128,830

	Item	Description	Total(€)
10.	MV Cable(400XLPE) (Aluminium)	▪ Max design voltage = 22kV ▪ BIL = 125kV ▪ Power frequency withstand voltage = 50kV ▪ Load rating – 500A ▪ Fault current rating – 20kA for 1 sec	58,550
11.	38kV cable end mast		46,850
12.	110kV cable end mast		163,960
13.	110kV and 38kV cable civils	Costs assumed for refund or estimate purposes only	152,910
14.	MV cable civils	Costs assumed for refund or estimate purposes only	53,090
Station Work (Site purchase and civil works excluded for all new stations)			
110kV stations			
15.	New looped Outdoor 110kV station	▪ 4 110kV bays ▪ Single strung 110kV busbar ▪ AIS Switchgear ▪ SCS control ▪ Civil works excluded ▪ Site purchase excluded ▪ No transformers included ▪ No lower voltage B/B	2,767,200
16	New Tail-fed (Single Supply) Outdoor 110kV Station Industrial Customer	▪ AIS Switchgear ▪ SCS Control ▪ Civil works included ▪ Site purchase excluded	1,373,040

17	New 110kV/MV station (excluding site purchase and civil works)	▪ Tailed 110kV station with 110kV B/B[9] ▪ 2*20MVA transformers ▪ Remote end works to be charged separately ▪ Civil works not included. To be charged as pass through ▪ Site purchase not included. To be charged as pass through	3,045,060
	Item	**Description**	**Total (€)**
18.	110kV/38kV 63MVA green field transformer package	• Installation of 110kV/38kV 63MVA transformer into a new station. • 38kV transformer cubicle to be equipped • Half 38kV busbar to be constructed. • Outdoor station assumed • Civil Works excluded[10] • 110kV transformer cubicle excluded	1,582,630
19	110kV/38kV 31.5 MVA green field transformer package	▪ Installation of 110kV/38kV 31.5MVA transformer into a new station. ▪ 38kV transformer cubicle to be equipped ▪ Half 38kV busbar to be constructed. ▪ Outdoor station assumed ▪ Civil Works excluded[10] ▪ 110kV transformer cubicle excluded	1,223,490
20.	110kV/MV 20 MVA green field transformer package	▪ Installation of 110kV/MV 20MVA transformer into a new station. ▪ MV transformer cubicle to be equipped ▪ Half MV busbar to be constructed. ▪ MV busbar assumed to be indoor ▪ Civil Works excluded[10] ▪ 110kV transformer cubicle excluded	1,060,610
21.	110kV/MV 31.5 MVA green field transformer package	▪ Installation of 110kV/MV 31.5MVA transformer into a new station. ▪ MV transformer cubicle to be equipped ▪ Half MV busbar to be constructed. ▪ MV Busbar assumed to be indoor ▪ Civil Works excluded[10] ▪ 110kV transformer Cubicle excluded	1,297,070
22.	Uprate 1*31.5MVA to 2*31.5MVA	▪ New 110kV B/B to be installed ▪ 3*110kV bays to be installed ▪ Additional Control and protection required ▪ Extensive civil works included	2,665,600

[9] Assumes the 110kV B/B is owned and operated by DSO

[10] Charge includes civil works associated with transformer plinth

23.	Uprate 2*31.5MVA to 2*63MVA	▪ 38kV B/B uprating required ▪ Civil works included ▪ No allowance for retiring 2*31,5MVA trafos included	2,927,940
24	Civil works for a typical outdoor 110kV station	Costs assumed for refund or estimate purposes only	1,097,790
	38kV stations		
25.	New 2*5MVA station	▪ 38kV B/B required ▪ MV B/B required ▪ 2*5MVA transformers	1,229,740
	Item	**Description**	**Total (€)**
26.	5MVA 38kV/MV green field transformer package	▪ Install 5MVA 38kV/MV transformer into a new 110kV or 38kV station ▪ MV transformer cubicle to be equipped ▪ Half MV busbar to be constructed. ▪ MV Busbar assumed to be indoor ▪ Civil Works excluded[10] ▪ 38kV transformer Cubicle excluded – the charge for this is listed separately	511,610

	Item	Description	Total(€)
27.	10MVA 38kV/MV green field transformer package	▪ Install 10MVA 38kV/MV transformer into a new 110kV or 38kV station ▪ MV transformer cubicle to be equipped ▪ Half MV busbar to be constructed. ▪ MV Busbar assumed to be indoor ▪ Civil Works excluded[10] ▪ 38kV transformer Cubicle excluded– the charge for this is listed separately	556,970
28.	15MVA 38kV/MV green field Transformer Package	▪ Install 15MVA 38kV/MV Transformer into a new 110kV or 38kV station ▪ MV transformer cubicle to be equipped ▪ MV busbar to be constructed. ▪ MV Busbar assumed to be indoor ▪ Civil Works excluded[10] ▪ 38kV transformer Cubicle excluded– the charge for this is listed separately	586,690
29.	Install 5MVA 38kV/MV transformer into existing station + 38kV busbar extension	▪ 38kV busbar extension required ▪ Includes equipping of 38kV transformer bay ▪ 5MVA transformer to be installed ▪ MV Transformer Bay included ▪ Civil Works included	525,070
30.	Install 10MVA 38kV/MV transformer into existing station + 38kV busbar extension	▪ 38kV busbar extension required ▪ Includes equipping of 38kV transformer bay ▪ 10MVA transformer to be installed ▪ MV transformer Bay included ▪ Civil Works Included	569,900
31	Install 5MVA 38kV/MV transformer into existing station – no 38kV busbar extension	▪ Assumes Spare 38kV bay available ▪ Includes equipping of 38kV transformer bay ▪ Short 38kV cable run to transformer position ▪ 5MVA transformer to be installed ▪ MV transformer bay included ▪ Civil Works Included	415,470
32.	Install 10MVA 38kV/MV transformer into existing station – no 38kV busbar extension	▪ Assumes Spare 38kV bay available ▪ Includes equipping of 38kV transformer bay ▪ Short 38kV cable run to transformer position ▪ 10MVA transformer to be installed ▪ MV transformer Bay included ▪ Civil Works Included	459,820
33.	Uprate 2*5MVA station to 2*10MVA	▪ 38kV B/B uprating required ▪ MV B/B uprating required ▪ Protection upgrade incl new control room ▪ Substantial civil works ▪ No allowance for retiring 2*5MVA transformer included	1,756,770

	Item	Description	Total (€)
34	Civil works for a typical outdoor 38kV station	Costs assumed for refund or estimate purposes only	439,120

	Item	Description	Total (€)
	Miscellaneous Station Items		
35.	New 110kV line bay in existing Outdoor 110kV Station	▪ AIS Switchgear ▪ SCS control ▪ Civil Works included ▪ Station extension excluded	771,010
36.	38kV cubicle in 38kV station	▪ Max design voltage = 52kV ▪ BIL = 250kV ▪ Power frequency withstand voltage = 95kV ▪ B/B Load rating – 1000A-1250A ▪ B/B Fault rating – 20kA for 1 sec ▪ Cubicle to include CB's CT's, VT's, Disconnects, Protection Relays[12] ▪ Civil works included	158,110
37.	38kV cubicle in 110kV station[11]	▪ Max design voltage = 52kV ▪ BIL = 250kV ▪ Power frequency withstand voltage = 95kV ▪ B/B Load rating – 2000A ▪ B/B Fault rating – 20kA for 1 sec ▪ Cubicle to include CB's CT's, VT's, Disconnects, Protection Relays[12] ▪ Civil works included	181,540
38.	MV Cubicle in 110kV or 38kV station[13]	▪ Max design voltage = 24kV ▪ BIL = 125kV ▪ Power frequency withstand voltage = 50kV ▪ B/B Load rating – 2000A ▪ B/B Fault rating – 20kA for 1 sec ▪ Cubicle to include CB's CT's, VT's, Protection Relays[14] ▪ Civil works included ▪ MV B/B assumed available	164,170
39.	MV cubicle with interface transformer[11]	▪ Max design voltage = 24kV ▪ BIL = 125kV ▪ Power frequency withstand voltage = 50kV ▪ B/B Load rating – 2000A ▪ B/B Fault rating – 20kA for 1 sec ▪ Cubicle to include CB's CT's, VT's, Protection Relays[12] ▪ Civil works included ▪ 5MVA interface transformer included ▪ MV B/B assumed available ▪ Additional civil works (for interface trafo) included	210,810
40	Half MV busbar	▪ Construction of half an indoor MV busbar required with associated switchroom and control room. ▪ No circuit breakers are to be equipped	232,110

[11] Costs based on spare 38kV bay available

[12] Protection to include impedance, directional earth fault and cable differential (where appropriate)

[13] Costs based on spare bay – with all required protection functionality - available

[14] Protection to include Earth fault, Overcurrent and Directional Sensitive Earth Fault

	Item	Description	Total (€)
	Metering[15]		
41.	38kV meter and Power Quality	▪ Includes CT/VT cabinet ▪ Main and check meter included ▪ Power quality meter and transducer included	58,550
42.	MV metering and Power Quality <10MVA	▪ Includes CT/VT's ▪ Main meter included ▪ Power quality meter and transducer included ▪ KKK unit included ▪ EGIP not installed or Charge Number 43 applied for EGIP	29,280
43.	MV metering and Power Quality <10MVA (where MV CB is being charged as part of EGI installation, no need for KKK. See note 5)	▪ Includes CT/VT's ▪ Main meter included ▪ Power quality meter and transducer included ▪ EGIP Charge Number 44 applies. See Note 5	11,540
44.	MV metering and Power Quality >=10MVA	▪ Includes CT/VT's ▪ Main and check meter included ▪ Power quality meter and transducer included ▪ KKK unit included ▪ EGIP not installed or Charge Number 43 applied for EGIP	36,610
45.	MV metering and Power Quality >=10MVA (where MV CB is being charged as part of EGIP installation, no need for KKK See Note 5)	▪ Includes CT/VT's ▪ Main and check meter included ▪ Power quality meter and transducer included ▪ EGIP Charge Number 44 applies. See Note 5	19,130
	Communications/Protection		
46.	Protection Implementation for MV connections with MEC <2MW	▪ Nulec recloser to be installed ▪ Recloser to be installed between the metering CT/VT and the customer MV tail cables	15,730

[15] Metering costs assume only one set of meters installed. (in the case of >10MVA the set also includes check meters). In the event that additional meter sets are required (for reasons of supplier contracts for example) then additional charges will apply.

	Item	Description	Total (€)
47.	SCADA and Protection Implementation for MV connections with MEC >=2MW	▪ Nulec recloser to be installed ▪ Remote control facilities for NULEC recloser required ▪ Recloser to be installed between the metering CT/VT and the customer MV tail cables	17,190
48.	SCADA Implementation for 38kV connections between 2MW and 5MW (and MV connections >=2MW and < 5MW where there is no GPRS coverage)[16]	▪ Installation of SCADA RTU ▪ DC power required ▪ Satellite unit to be installed	57,000
49.	Embedded Generation Interface Protection (EGIP) for an MV connection.	▪ Charge assumes NULEC option is LCTA.	70,080
50.	Embedded Generation Interface Protection (EGIP) for an MV connection.	▪ Charge assumes NULEC option is not a technically acceptable option. See Note 5.	124,620
51.	Embedded Generation Interface Protection (EGIP) for 38kV connection.		46,130
52.	Embedded Generation Interface Protection (EGIP) for 110KV connection.		62,450

[16] Installations >5MW require a TSO RTU to be installed.

	Item	Description	Total (€)
38kV Customer Compound [at windfarm site]			
53.	ESB Networks compound with over the fence connection to developer – overhead connection	▪ Compound required to be fenced and stoned.[17] ▪ Earth Grid included ▪ Incomer is overhead ▪ Outgoer to customer may be overhead or cable ▪ Control room to be equipped with appropriate control, protection and SCADA systems. ▪ 38kV cubicle to be equipped with Circuit breaker, protection CTs and VTs and Metering CTs and VTs ▪ Civil Works excluded	322,360
54.	ESB Networks compound with over the fence connection to developer – underground connection	▪ Compound required to be fenced and stoned[17]. ▪ Earth Grid included ▪ Incomer is cabled ▪ Outgoer to customer may be overhead or cable ▪ Control room to be equipped with appropriate control, protection and SCADA systems. ▪ 38kV cubicle to be equipped with Circuit breaker, protection CTs and VTs and Metering CTs and VTs ▪ Civil Works excluded	326,200

Notes

1. As per other charges these charges will be reviewed and revised on an annual basis
2. Unless otherwise stated costs on new stations do not include any civil works.
3. Unless otherwise stated costs do not include any site purchase
4. Costs do not include any ducting, trenching or re-instatement for cable work
5. Adjustments to MV Metering and MV EGIP Charge to cater for KKK Cost of € 18,200 are in 2013 monies.

[17] This will be undertaken as part of the civil works to be completed by the developer

Appendix 1 Extract of Section 5.1 from CER 04/317

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 Assets[12] 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 basis[14] in accordance with the following formula:

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[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 policy[15].
- Following connection, the generator[16] 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 then the TSO would charge 1.25 times the pro-rata cost in each offer (1/0.8 = 1.25).

[+] 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

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.