Connections Policy Document

Effective from 15 October 2018

Revision 5.0

Contents

Executive Summary

All new connections to the transmission and distribution gas network are the responsibility of Gas Networks Ireland. These connections are managed in conjunction with the Commission for Regulation of Utilities ("CRU") to allow prospective end-users to connect to the transmission and distribution gas networks.

This policy is a single connections policy dealing with connections to the transmission and distribution gas networks. The intent of this policy is to make connection charges easy for customers to understand and estimate, and to ensure that there is a clear and transparent policy in place in relation to all new connections to the network. The policy should also encourage the connection of new loads to the network where such connections are economically efficient over a CRU approved time period. The policy sets out the detailed criteria for the evaluation of extensions to the gas network, including connections to towns not currently served by the natural gas network. The policy also details how connection charges are calculated and how the costs are recovered by the various categories of customers.

An outline of how the charges are set for the categories of connections is set out below:

- **Large Industrial and Commercial customers**: customers with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above. The connection charges applied to these customers will cover the full capital costs attributable to meeting customer requirements, including reinforcement required upstream of the customer;
- **Medium and Small Industrial and Commercial customers:** customers whose peak hourly demand is equal or less than 50MW thermal input or their connection pressure is lower than 16 barg. For these customers, connection charges will comprise of an upfront charge of 30% of the cost of the connection, plus a supplemental charge based on an economic test evaluated over seven years where appropriate;
- **Institutional Industrial and Commercial customers**: customers who could be expected to be connected to the network for longer than a normal commercial enterprise. For these customers the economic test will be evaluated over 20 years if the cost of connection less the customer contribution paid is less than or equal to €500K. If the cost of connection less the customer contribution paid is greater than €500K, the economic test will be evaluated based on a tiered threshold, where the level of financial security required is dependent on how long it takes the site to become positive on a net present value (NPV) basis. Similarly, these customers will pay 30% of the cost of the connection, plus a supplemental charge where appropriate.
- **Domestic customers**: Domestic customers are charged based on a standard charge for those within 15m of the network and an additional charge per metre for connections longer than 15m. A connection allowance is applied to incentivise these customers to convert to gas. The connection allowance is determined to ensure an average breakeven of the NPV for the cost of the connection within 10 years. The standard domestic connection charge is outlined in the Gas Networks Ireland Network Operations Siteworks Charging Document[1];
- **New Housing**: Developers will pay the same standard domestic connection charge for each connection as domestic customers. In addition, there will be a supplemental charge based on an economic test calculated over 20 years;
- **Non-Gas Estates**: The standard domestic charge will be supplemented by an additional charge to cover the cost of mains extension to the estate, the charge being paid by all customers connecting in the first 10 years. The connection of the estate will require a minimum number of customers to sign-up;
- **Mixed Developments and Mixed Non-Gas Estates**: Where there is a mixture of industrial/commercial and domestic end users, the developer will pay a standard contribution and a supplemental 'economic test' contribution;
- **New Towns**: The economic test will include both Transmission and Distribution tariff revenues and the economic test will be evaluated over 25 years for both Industrial and Commercial customers and new housing to reflect the lower risk and broader growth opportunities of a diversified new town load base.

[1] https://www.gasnetworks.ie/home/gas-meter/meter-services/

Under this policy it will be possible to appraise a new town either on its own or as part of a regional group of towns;

- **Suburbs and group appraisals**: The policy sets out rules/guidelines for suburb projects and group appraisals; and
- **Renewable Gas Connections**: whether connected to the transmission or distribution network, **these** are subject to customer contribution connection components comprising a standard contribution and a supplemental "economic test" contribution. All renewable gas connections will be required to make a standard contribution of 30% of the estimated costs for the injection facility as set out in Section 6 of this document. Thereafter, Gas Networks Ireland will determine whether a supplemental "economic test" contribution is required. In addition financial security will be required to be put in place for all renewable gas connections for a period of seven years. [2]

In developing the network, Gas Networks Ireland will agree prudent criteria with the CRU for the construction of pipelines with spare capacity where there is an expectation of future load growth. Pipelines may also be constructed ahead of sign-up by customers where there is a strong expectation of such sign-up and where early construction would reduce overall long term costs.

Under this policy customers will be charged full connection costs for specific connection designs which are more expensive than Gas Networks Ireland's view of the least cost connection and for the administrative costs of initial connection design work (to be offset against connection costs).

[2] This policy may be subject to a review and may be incorporated into an Entry Connections Policy at a later date.

1. Introduction

This Gas Networks Ireland Connections Policy covers the connection of all loads to the transmission and distribution gas networks. This policy document therefore considers the proposed commercial terms which are relevant for the connection of loads to any part of the Gas Networks Ireland network. Technical design of connections are not considered in this document – unless otherwise requested by the customer, Gas Networks Ireland will procure the construction of connections on a least cost basis, taking into account the specific characteristics of each load.

The previous Version 4.1 of the Connections Policy reflected the introduction of initiatives to help ensure the full realisation of potential economically efficient demand and load growth available for the gas network in Ireland. The key changes that were introduced in the previous version of the Connections Policy were;

(i) amendment the Financial Security provisions to include tiered thresholds;
(ii) recognition of transmission revenue in all appraisals;
(iii) an extension of the list of Industrial and Commercial (I&C) institutional customers;
(iv) formalising the development of infill suburb/urban projects; and
(v) clarifying the treatment of group sites.

This new version 5.0 of the Connections Policy introduces a section for renewable gas connections to provide clear rules and guidelines for these connections.

This document outlines the following at a high level:

- Objectives of the Connections Policy;
- Guiding principles of connection charges;
  - Categorisation of customer types;
- The approach to a number of non-customer-category-specific elements of the connection policy;
  - The costs of spare pipeline capacity;
  - Customer requested non-least cost connection design;
  - Design charges; and
  - Opportunistic network development.

This document sets out policies relating to the connection of new loads to the transmission and distribution network and the related commercial arrangements between Gas Networks Ireland and the customer including Shippers, End Users and developers. This document is not intended to deal with the ongoing relationship with customers once they have been connected to the network.

1.1 Objectives of the Connections Policy

Gas Networks Ireland believes that any connection policy should facilitate a number of high level objectives. These include:

- being clear, transparent, and eliminating any potential customer confusion over the applicable charges;
- being cost effective to implement;
- applying similarly to both transmission and distribution connections for the same customer type;
- encouraging the connection of new customer load where it is efficient. This should apply both within the existing gas supply area, in new areas, and across customer categories. The objective of connecting efficient new customer loads should, in the medium and long term, increase throughput and reduce unit tariffs for all gas customers;
- minimising any adverse impact of changes to the connections policy on network tariffs in the short and medium term; and
- ensuring that connection charges provide an appropriate signal of the costs of connections to shippers and consumers;
- retaining economic criteria for the selection of expansion projects with which to proceed in order to avoid uneconomic development; and
- treating connections consistently through time, in order that similar customers connecting at different times do not face arbitrarily different charges.

1.2 Guiding Principles of Connection Charges

This section sets out the key principles that govern Gas Networks Ireland's connection charging methodology. These principles include:

- Connection charges should encourage the connection of new loads to the network in an efficient manner:
  - Connections are designed based on a least cost solution and any excess costs should be reflected in connection charges payable;
  - Economic tests ensure general tariff payers are not unduly burdened by uneconomic connections;
- Connection charges are designed to ensure that future transportation tariffs paid by the customer recover residual connection costs in the medium term:
  - Recovery of connection costs is split between upfront charges, supplemental charges (based on an economic test) and tariffs;
- Customers with similar capacity requirements should face similar connection charges subject to considerations of economic efficiency:
  - Domestic customers should be evaluated consistently across categories and should face similar connection charges;
  - Large customers, that could have a significant impact on the network, should pay full connection costs upfront to incentivise location near the network;
- Joint cost sharing mechanisms for simultaneous multiple connections from one aggregate project should be encouraged (e.g. a joint proposal from multiple potential customers on the same corridor). The key component is that the aggregate cost of the connection is fully paid through an appropriate cost sharing mechanism funded by the various clients. This cost sharing mechanism can be reviewed on a case by case basis;
- Connection charges should reflect the differential life of customers:
  - Commercial customers typically do not have the same longevity as domestic customers and therefore should be evaluated over a shorter time horizon;
  - Certain types of I&C customers have a longer lifetime than a typical I&C customer and therefore should be evaluated over a longer time horizon (e.g. schools, prisons, hospitals, etc.);
- Connection charges should aim to treat similar categories of customers equitably through time regardless of when they connect to the network (some standard cut-off criteria may be set for practical reasons);
- Investment appraisal methodology should take into account appropriate recovery of costs related to upstream assets utilised by new connections; and
- Connection charges should be designed to facilitate easy-to-understand quotations for the customer without excessive administration for Gas Networks Ireland.

1.3 Categorisation of Customer Types

For the purposes of this Connections Policy, two distinct customer categories are considered:

- **Industrial and Commercial (I&C) customers**: These are defined as those customers whose primary use of gas is for non-domestic purposes. Three types of I&C customers are considered:
  - **Large I&C customers**: Defined as those with a peak hourly demand greater than 50MW and a connection pressure of 16 barg or above[3] (Large Connections) It should be noted that the 50MW figure applies to thermal input and that it is a measure of customer's maximum hourly requirements;
  - **Medium and small I&C customers:** These are defined as I&C customers who are not Large I&C customers, but whose primary use of gas is non-domestic;
  - **Institutional I&C customers:** These are defined as customers who are not domestic but who, as a result of their load characteristics, are likely to remain connected to the network for a longer period of time than a typical commercial enterprise. Examples of such customers might include schools, hospitals and prisons; and
- **Domestic customers:** These are defined as those customers whose primary use of gas is domestic.

Business Parks will be treated as either Medium & Small I&C customers or Large I&C customers depending on their specific load characteristics. To facilitate the commencement of works for the provision of gas infrastructure to Business Parks before the relevant connection agreements are signed, Gas Networks Ireland will accept a

[3] The 16 barg relates to the off-take pressure downstream of the AGI.

bond covering the value of preliminary works to be undertaken in relation to the connection. Preliminary works covered will include wayleave acquisition, environmental studies, planning and design but not construction or material procurement. The form of such a bond will be in line with the latest version of Gas Networks Ireland's published financial security policy (available on www.gasnetworks.ie).
For the purposes of determining the network tariffs payable for newly connecting loads, the following principle (based on the licence definitions of the transmission and distribution businesses) will be applied:

- Customers will be liable for **transmission tariffs only** if their load is connected at 16 barg or above; and
- Customers will be liable for **both transmission and distribution tariffs** if they are connected below 16 barg.

1.4 Transition to the New Connections Policy

From the date the Commission directs this policy to come into force, all new connection enquiries will be dealt with under the new policy.

For connection enquiries already in progress at the implementation date (i.e. where there has been formal acceptance of a valid quote but the final completion of the physical connection has not taken place), transition arrangements will apply. These transition arrangements are intended to reduce the extent of any adverse impact of the change for any customer that has made a connection application and would face significantly different terms under the old and new policies.

2. Industrial & Commercial Connections

2.1 Large I&C Customers

Large I&C Customers are defined as those with a peak hourly demand greater than 50MW thermal input and a connection pressure of 16 barg or above.

Connecting Large I&C Customers to the network typically involves significant costs. Where these customers decide to locate in terms of proximity to the network can result in substantial connection and reinforcement costs. If these costs are not fully recovered through connection charges, it can lead to an adverse impact on the level of overall tariffs. Therefore, to protect general tariff payers from the decisions of large users and to provide an incentive for large users to locate near the network, it is proposed that these customers will be required to make payments equal to the full pipeline and Above Ground Installation (AGI) capital costs attributable to meeting the load and pressure requirements of the facility in question. Such costs will include the present value of any attributable upstream (deep) reinforcement costs.[4]

A refund mechanism will operate where other new loads benefit subsequently from the deep reinforcements built to meet the load requirements of the new facility. The refund mechanism could become increasingly burdensome to administer as the use of reinforcements becomes less clear and more remote. Therefore, the mechanism will contain a remoteness limit beyond which there is no refund, and a time limit for refunds of 5 years. The refund mechanism will be included as part of the Large Network Connection Agreement for Large I&C Customers.

In relation to Large I&C Customers, Gas Networks Ireland will require the connecting party to enter into a Large Network Connection Agreement. This agreement will capture all of the commercial issues surrounding the connection including, among others, terms relating to the construction, payment (including phasing), and financial security. For such Large Connections on the network, there will normally be an AGI lease entered into between the customer and Gas Networks Ireland. The terms of this lease will give Gas Networks Ireland a lease of the lands for the purpose of the construction of an Above-Ground-Installation in connection with the supply and conveyance of natural gas.

The phasing of payments under the Large Network Connection Agreement will be as follows:

- 10% of the total will become payable on conclusion of the agreement;
- 30% of the total will become payable upon receipt by Gas Networks Ireland of the materials for the construction of the connection;
- 40% of the total will become payable upon mechanical completion of the connection; and
- The remainder will become payable upon receipt by Gas Networks Ireland of the final invoices from its suppliers in relation to the connection.

For Large I&C Customers, Gas Networks Ireland will enter into a Large Network Connection Agreement with any party which fulfils the necessary financial criteria including Shippers, End Users, developers etc. Gas Networks Ireland will apply its published financial security policy to parties seeking connections.

2.2 Medium and Small I&C Customers

These customers are defined as commercial enterprises who are not Large I&C Customers (i.e. if their peak hourly demand is equal or less than 50MW thermal input or their connection pressure is lower than 16 barg), but whose primary use of gas is non-domestic.

For Medium and Small I&C Customers, the customer contribution in relation to a connection includes two components:

- A standard contribution; and
- A supplemental “economic test” contribution.

All Medium and Small I&C Customers will be required to make a standard contribution of 30%[5] of the estimated full pipeline and ancillary equipment (including AGI) capital costs attributable to meeting the load and pressure

[4] For further clarification of the allocation of reinforcement costs, refer to Annex 7.
[5] For standard contribution payment options for the transmission connection element for Medium & Small I&C customers requiring a large Network Connection Agreement (LNCA), i.e. customers where the total cost of the connection less the contribution paid is greater than €500k, see Annex 8.

requirements of the facility in question including the present value of any attributable upstream (deep) reinforcement costs[6]. For loads with an annual consumption of greater than 57.5GWh (lower threshold for Large Daily Metered customers) and for loads less than or equal to 57.5GWh requiring investment in transmission assets to facilitate the connection, the standard contribution will be based on both transmission and distribution costs.[7] For loads with annual consumption of less than or equal to 57.5GWh and not requiring investment in transmission assets, the standard contribution will be based on distribution costs only. Please see the flow diagram (figure 1) below.

In addition, Gas Networks Ireland assesses whether a supplemental "economic test" contribution is required.

The supplemental "economic test" contribution will consider the present value of the full connection cost estimate (as defined above plus operating costs, but less the standard 30% contribution) against the present value of the tariff revenue attributable to the facility. The present value in both cases will be evaluated over a 7-year time horizon and using Gas Networks Ireland's regulated rate of return as the discount rate. The 7-year appraisal horizon is considered appropriate to reflect an average life of a typical I&C connection and is consistent with the methodology used in the existing connection policy. Extending the appraisal horizon will defer the time when customers start to contribute to the network (i.e. existing customers will have to wait longer to receive any shared benefits in the form of lower tariffs from the added load). The purpose of the supplemental "economic test" is to provide for the shortfall in the remaining capital costs of the connection that will not be recovered through attributable tariff payments by the customer over a 7 year period.

For loads with an annual consumption of greater than 57.5GWh and for loads less than or equal to 57.5GWh requiring investment in transmission assets to facilitate the connection, the economic test will consider transmission and distribution costs against transmission (entry and exit) and distribution tariff revenues. For loads less than or equal to 57.5GWh not requiring investment in transmission assets, only distribution costs and the aggregate of 100% transmission exit revenue, 75% transmission entry revenue and 80% of distribution tariff revenues will be considered. The diagram below illustrates the methodology for the economic test.

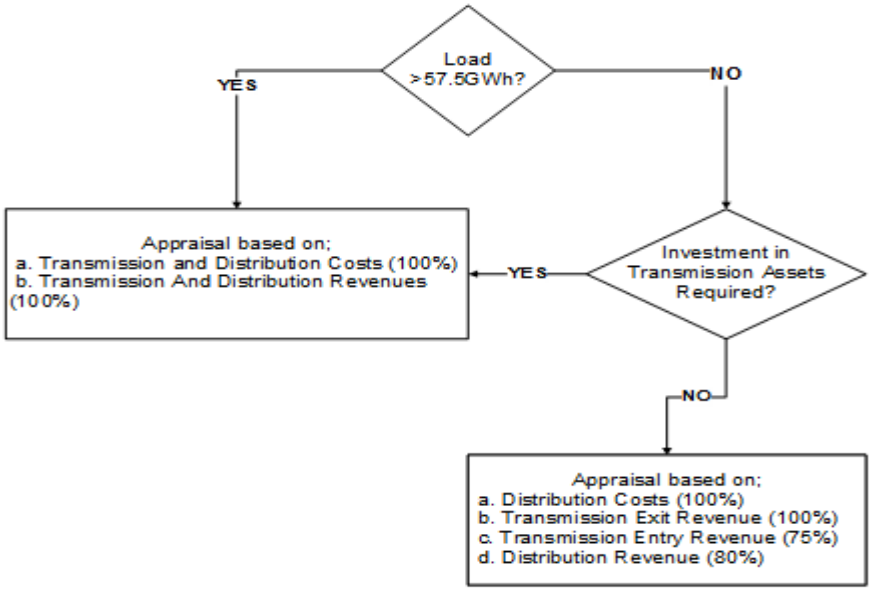

Figure 1. Flow diagram of the methodology for the economic test.

The purpose of including all relevant transmission costs in the economic test is to ensure that the existing customers are not burdened by the costs directly attributable to new connections.
The use of the 100% factor for transmission exit is appropriate to reflect both recent market changes (which now prohibit the trading of transmission exit capacity on a secondary basis) and the application of a de minimus booking for transmission exit for LDM and DM customers.

[6] For further clarification of the allocation of reinforcement costs, refer to Annex 7.
[7] For the avoidance of doubt, this is not intended as an alternative definition of distribution and transmission connection. Rather, it is intended to ensure that *de minimus* transmission costs and revenues are not considered unnecessarily

The use of the 75% factor in relation to transmission entry capacity is appropriate when one reviews the ratio of entry to exit bookings in recent times.

The use of the 80% factor in relation to distribution revenues ensures that new loads served using mainly existing distribution spine main assets provide some remuneration to these assets. This is consistent with the investment appraisal principles for network extensions connected to an existing distribution spine main in the old connection policy.

Where the present value of projected revenues is greater than or equal to the present value of the cost estimate then no supplemental contribution will be required. However, where the present value of revenues is lower than that of costs, the customer will be required to make a supplemental contribution to the extent required to bring the Net Present Value[8] of the appraisal to zero.

The actual connection costs, over and above the standard contribution and any supplemental economic test contribution, will be recovered through general tariff payments.

2.3 Cost of Connection Less Customer Contribution >€500,000

Where the total cost of the connection less the customer contribution paid is more than €500K, a Large Network Connection Agreement will be required. As for Large I&C loads, this Agreement will capture all of the commercial issues surrounding the connection including, among others, terms relating to the construction, payment, and financial security. For such Large Connections on the network, there may also be an AGI Lease entered into between the customer and Gas Networks Ireland.

A tiered threshold will also apply to reflect the relative payback period of the project as follows:

- If the project becomes NPV positive in 7 years or more, and/or a supplemental contribution is required, the proposed threshold for Financial Security is €500K
- If the project becomes NPV positive in years 4, 5 or 6, the proposed threshold for Financial Security is €750K
- If the project becomes NPV positive in 3 years or less, the proposed threshold whereby Financial Security is required, is €1m

The following table summarises the tiered thresholds

NPV Positive in	Threshold	LNCA Required	FS Required
>= 7 years	€500k	Yes (above threshold only)	Yes (above threshold only)
4-6 years	€750k	Yes (above threshold only)	Yes (above threshold only)
<= 3 years	€1m	Yes (above threshold only)	Yes (above threshold only)

Table 1: Thresholds for connections >€500,000

Customers requiring a Large Network Connection Agreement will be required to commit to capacity purchases for a sufficient term to ensure recovery of the connection costs over and above the standard and supplemental economic test contribution. The volume and duration of capacity bookings required will be defined by Gas Networks Ireland on the basis of the load profile requirements identified by the customer in their formal connection application. The requirement to commit to these capacity purchases will form part of the connection agreement.

The Large Network Connection Agreement will, in turn, refer to Gas Networks Ireland's published financial security policy. Financial security will be required to cover the construction period and the period over which the commitment to purchase capacity is made.

Since the initial term for which a customer will be required to commit to capacity purchases is set based on Gas Networks Ireland's published tariff (as approved by the Commission) at the time of the connection appraisal, the outstanding liability under the connection agreement will be affected by subsequent changes in the tariff. Therefore, for the purposes of determining any outstanding liability under the connection agreement, an annual reconciliation of the tariff revenue anticipated at the time of connection appraisal to the actual tariff revenue will be performed.

[8] NPV – Net Present Value is the sum of the present value of costs plus the sum of the present value of revenues.

If the anticipated tariff revenue fails to materialise in any one year of the capacity booking as a result of an exit capacity transfer, the revenue shortfall will be made up by a drawdown of the financial security provided under the connection agreement.

Gas Networks Ireland will enter into a Large Network Connection Agreement with any party; including Shippers, End Users, developers etc., which fulfils the necessary financial criteria as per the Gas Networks Ireland Financial Security Policy as published on www.gasnetworks.ie.

2.4 Cost of Connection Less Customer Contribution <=€500,000

For all other Medium and Small I&C customer connections, where the total cost of connection less the customer contribution paid is less than or equal to €500K, there will be an I&C Network Connection Agreement. This agreement will detail all of the relevant commercial terms relating to the connection and these will include terms relating to the construction and payment. Financial security related to connection costs will not be required for these connections.

For Large Daily Metered and Daily Metered customers, a de minimus level of capacity (for both Supply Point Capacity (Distribution) and Transmission Exit) will be set in the Capacity Register for the term required to pay back the outstanding connection costs. The de minimus level of capacity will be based on the projected load profile provided by the customer and used in the connection appraisal. For Non-Daily Metered customers, connection appraisal will be based on the load requirements identified by the customer in their formal connection application and no de minimus level of capacity will be set in the Capacity Register (see Annex 2). For the avoidance of doubt, no annual reconciliation to account for changes in the level of general tariffs will be performed for customers where the total cost of connection less the customer contribution paid is less than or equal to €500K. Payments related to all Medium and Small I&C customer connections will fall due prior to the commencement of connection works.

2.5 Institutional I&C customers

Institutional I&C customers are defined as those who are not domestic but who, as a result of their characteristics, are likely to remain connected to the network for a longer period of time than a typical commercial enterprise. Examples include schools, hospitals and prisons. A comprehensive list of institutional customers is included in Annex 2.

For Institutional I&C customers where the total cost of connection less the customer contribution paid is less than or equal to €500K, the calculation of the standard contribution is identical to that for Medium & Small I&C loads (i.e. a combination of a 30% payment and, potentially, a supplemental contribution based on the economic test). For these customers, the supplemental contribution is calculated as for Medium & Small I&C loads, save that the NPV will be calculated over a 20-year period. Based on a lower risk profile of Institutional I&C customers, no capacity booking and no financial security will be required.

For Institutional I&C connections where the cost of connection less customer contribution is greater than €500K and, hence, a Large Network Connection Agreement is required, connection appraisal will be identical to that for Medium and Small I&C loads, and a tiered threshold for Financial Security will apply.

The tiered threshold will reflect the relative payback period of the project as follows:

- If the project becomes NPV positive in 7 years or more, and/or a supplemental contribution is required, the proposed threshold for Financial Security is €500K;
- If the project becomes NPV positive in years 4, 5 or 6, the proposed threshold for Financial Security is €750K; and
- If the project becomes NPV positive in 3 years or less, the proposed threshold whereby Financial Security is required, is €1m.

The following table summarises the tiered thresholds:

NPV Positive in	Threshold	LNCA Required	FS Required
>= 7 years	€500k	Yes (above threshold only)	Yes (above threshold only)
4-6 years	€750k	Yes (above threshold only)	Yes (above threshold only)
<= 3 years	€1m	Yes (above threshold only)	Yes (above threshold only)

Table 2: Threshold for Institutional Connections

3. Domestic Connections

Domestic connections consist of four separate connection classes which we consider within this policy:

- One-off housing;
- New housing;
- Non-gas estates; and
- Local authority premises.

For all classes of domestic connection, part of the connection charge will consist of a standard domestic connection charge. The standard domestic connection charge is a charge that will be set by Gas Networks Ireland and approved by the Commission. The standard domestic connection charge will only be waived in certain circumstances with the prior approval of the Commission. The current standard connection charge is set out in detail in the Gas Networks Ireland Network Operations Siteworks Charging Document[9] which is available on the Gas Networks Ireland website

Detail of the approach in relation to each of the domestic customer classes is given below.

3.1 Domestic Connections: One-Off Housing

One-off housing connections are those within the existing gas area (i.e. an existing house where no extension of main is required) and where no new housing development is taking place.

All loads with an expected annual consumption of up to 73,250 kWh will be liable for the standard domestic connection charge of €249.70 (incl. VAT) for the first 15 metres of service pipe. Customers requiring a service connection (with no gas mains extension) of greater than 15 metres will be required to pay an incremental fixed charge per metre of €51.32 (incl. VAT) in addition to the standard connection charge. The length criteria and the fixed incremental charge per metre will be reviewed and reset periodically and hence the charges presented in the Gas Networks Ireland Network Operations Siteworks Charging Document[10] are subject to change in line with the approved siteworks charging document.

For loads with an expected annual consumption above 73,250 kWh, the connection charge will be the greater of:

- The standard domestic connection charge; and
- The extent to which the present value of the full connection capital and operating costs outweighs the present value of the transmission and distribution tariff revenue attributable to the load both over a twenty year time horizon, and using Gas Networks Ireland's regulated rate of return as the discount rate.

In all cases, payment would be required prior to the commencement of work on the connection.

3.2 Domestic Connections: New Housing

Connections to new housing developments are commissioned by housing developers, normally via an infrastructure agreement that commits the developer to ensure that houses in the development are connected to natural gas.

For new housing connections, the developer contribution in relation to a connection will include two components:

- The standard domestic connection charge in relation to each connection; and
- A supplemental "economic test" contribution.

The supplemental "economic test" contribution will consider the present value of the full connection costs (the full pipeline capital and operating costs directly attributable to the housing development, less the total of standard contributions) against the present value of 80% of the distribution tariff revenue[11] attributable to the facility, together with 100% of the transmission exit tariff revenue and 75% of the transmission entry tariff revenue, all over a twenty year time horizon and using Gas Networks Ireland's regulated rate of return as the discount rate.

[9] https://www.gasnetworks.ie/home/gas-meter/meter-services/
[10] https://www.gasnetworks.ie/home/gas-meter/meter-services/
[11] The use of the 80% factor in the economic test ensures that 20% of the revenue from new extensions of the distribution network is allocated to the remuneration of existing spine main assets.

For the purposes of the revenue component of the economic test, standard assumptions on the annual consumption of different types of domestic property will be used. These assumptions will be reviewed periodically and agreed with the CRU. Current assumptions for the annual consumption levels of different types of domestic property are set out in Annex 6.

Where the present value of revenues is greater than or equal to the present value of costs then no supplemental contribution will be required. However, where the Net Present Value is negative, the developer will be required to make a supplemental contribution to the extent required to bring the Net Present Value to zero.

Payment will be required in advance of work commencing on the connection.

Table 3 below provides an illustrative worked example of the calculation of charges for a housing development with 10 meter connections.

Element of Calculation	€	Formula
FPresent value of 80% of Distribution Tariff Revenues, 100% Transmission Exit Tariff Revenues, 75% Transmission Entry Tariff Revenues	10,987	[1]
Present Value of Standard Contribution (assuming a standard charge of €220 ex VAT)	2,200	[2] = 220 * 10
Present Value of Costs (Capex + Opex)	-14,687	[3]
Net Present Value	-1,500	[4]
Supplemental "Economic Test" Contribution	1,500	[5] = -[4], if [4]<0, otherwise 0
Summary of Contribution Payable		
Standard Contribution	2,200	[6] =[2]
Supplemental "Economic Test" Contribution	1,500	[7] = [5]
Total Contribution Payable	3,700	[8] = [6]+[7]

Table 3: Illustrative example of charges for a housing development

3.3 Domestic connections: Non-Gas Estates

Non-gas estates are areas of existing housing estates outside the current gas area (i.e. they are not served by an existing mains pipeline) requesting connection to the gas network. The connection of non-gas estates requires investment in both new mains pipelines and, over time, new service pipes, meters, etc. (as the penetration of gas into the estate increases).

Enquiries in relation to the connection of non-gas estates will be considered from both residents associations and from individuals within the estate. However, the design of the local estate network, used for the purposes of deriving a connections quote, will be that which represents least cost optimal grid design for the estate and any appropriate contiguous areas as a whole rather than for individual connections.

The connection charges for the initial gas connection offers and for any premises connecting within 10 years of the initial offers will consist of two elements:

- The standard domestic connection charge in force at the time; and
- A supplemental charge which will apply to any user in the estate.

For connections after the 10th year of the initial connections, the supplemental connection charge may be reduced.

The purpose of the supplemental charge is to recover the cost of mains extension from all members of the estate connecting to the network on an equitable basis, while the standard domestic connection charge (as outlined in the Gas Networks Ireland Network Operations Siteworks Charging Document[12]) is intended to contribute to the cost of meter and service pipe required for each connection.

[12] https://www.gasnetworks.ie/home/gas-meter/meter-services/

The supplemental charge applicable in years 1-10 would be calculated in two stages.

Firstly, the difference between the present value of the full capital and operating costs required to expand the mains network to the non-gas estate and the present value of the transmission and distribution tariff revenue attributable to the estate once the supplemental charge has ceased to apply (i.e. in years 11-20 as revenues for years 1-10 are used to pay for the meter and service costs) will be calculated, both over a twenty year time horizon and using Gas Networks Ireland's regulated rate of return as the discount rate.

The tariff revenue attributable to the estate will depend on the following standard assumed penetration assumptions:

- Initial connection take up: greater than or equal to 20% of residences; and
- Annual connection take up for years 1-10: 5% of residences per annum.

Again, standard assumptions on annual consumption would be used. These assumptions will be agreed with the CRU. Our initial proposals for these assumptions are set out in Annex 6.
Secondly, this difference between the present value of costs and revenues will be divided by the expected total number of connected premises at the end of the initial 10 year period (based on the assumption of a final connection take up of 70%). A fixed supplemental charge will then be calculated such that it would, given the initial take up and growth assumptions, generate revenue equal to this present value difference.

Table 4 below provides an illustrative worked example of the calculation of charges for a non-gas estate with 80 houses.

Element of Calculation	Value	Formulae
Present value of mains investment cost	€ 75,000	[1]
Initial take up (>= 20% of total customers)	16	[2]
Estimated final take up (70% of total customers)	56	[3]
Present value of expected transmission and distribution tariff revenue after initial 10 year period (i.e. in years 11-20)	€ 28,000	[4]
Excess of cost over expected revenue	€ 47,000	[5] = [1] - [4]
Present value of supplemental charge per customer	€ 839	[6] = [5] / [3]
Fixed supplemental charge per customer	€1,026	[7] = [6] * PV factor[13]
Standard domestic connection charge (covers meter and service) (assuming a €220 ex VAT charge)	€ 220	[8]
Cost for individual connection (excl. VAT) during years 1-10	€ 1,246	[9] = [7] + [8]

Table 4: Illustrative charges for a non-gas estate

The figures above do not include inflation.

While enquiries will be dealt with from individuals, work to connect the non-gas estate will only commence when the initial take-up requirement has been reached (i.e. 20% of customers on the estate must formally commit – including payment of requisite contribution in advance – to connect to the network). The required minimum number (20%) of contributions must be lodged with Gas Networks Ireland within 4 months of quotation/offer to the residents in order for the project to proceed. If the minimum is not achieved after 4 months all contributions will be returned. The details of the process to be followed will be made available through the Gas Networks Ireland website and provided to customers in writing upon request.

3.4 Domestic connections: Local Authority Premises

New local authority developments, or local authority developments where conversion to gas of 100% of consumers is taking place as part of a single conversion project requiring mains extension, will be treated as new housing developments for the purposes of this connection policy.

Local authority developments requiring mains extension where fewer than 100% of consumers will convert to gas, or where the conversion will not take place as part of a single conversion project, will be treated as non-gas estates for the purposes of this connection policy.
Local authority conversion projects where no mains extension is required will be treated as one-off domestic connections for the purposes of determining applicable connection charges.

[13] The PV factor is the factor used to derive a supplemental charge which, if fixed over years 1-10, results in a present value supplemental charge equal to that required.

4. Mixed Connections

4.1 Mixed Developments

There are some new developments which will contain a mixture of I&C and domestic sites. In the case of such developments, the developer will face charges calculated as follows:

- A standard contribution; and
- A supplemental "economic test" contribution.

The standard contribution will be the sum of charges relating to the number of domestic connections and the proportion of the site peak load which will be from I&C customers, calculated as follows:

- The charge relating to each domestic connection will be the standard domestic connection charge as outlined in the Gas Networks Ireland Network Operations Siteworks Charging Document[14]; and
- The charge relating to I&C load will comprise two elements:
    - For capital cost which cannot be directly attributed to any customer (e.g. feeder main), the percentage of the total projected development peak load which will be from I&C sites multiplied by the standard Medium & Small I&C contribution of 30% of the full pipeline and ancillary capital equipment (including AGI) capital costs attributable to meeting the requirements of the development in question including the present value of any attributable upstream (deep) reinforcement costs; and
    - For capital cost which can be directly attributed to particular customers (e.g. service pipes, meters, etc.), 30% of the relevant pipeline and ancillary equipment capital costs.

The supplemental "economic test" contribution for the Medium & Small I&C loads will consider the present value of the full connection costs attributable to these customers against the present value of 80% of the distribution tariff revenue attributable to the facilities, 75% of transmission entry tariff revenue and 100% of transmission exit tariff revenue for 7 years, using Gas Networks Ireland's regulated rate of return as the discount rate. The full connection costs attributable to Medium & Small I&C customers will be calculated as:

- The directly attributable capital costs and the relevant proportion (based on contribution to peak load) of other capital costs which cannot be directly attributed (e.g. feeder main); plus
- Attributable operating costs; minus
- The standard Medium & Small I&C contributions as calculated above.

The supplemental "economic test" contribution for the domestic loads will consider the present value of the full connection costs attributable to these customers against the present value of 80% of the distribution tariff revenue attributable to the facilities, 75% of transmission entry revenue and 100% of transmission exit revenue for 20 years, using Gas Networks Ireland's regulated rate of return as the discount rate. The full connection costs for domestic customers will be calculated as:

- The full capital pipeline and ancillary equipment capital and operating costs of the development; minus
- The full connection costs attributable to Medium & Small I&C customers; minus
- The standard domestic contributions as calculated above.

Across both tests, where the present value of revenues is greater than or equal to the present value of costs then no supplemental contribution will be required. However, where the NPV is negative, the developer will be required to make a supplemental contribution to the extent required to bring the NPV to zero.

Where there are a number of developers on a site, the shared costs (i.e. those relating to more than one developer) will be attributed on the basis of peak load.

Table 5 below provides an illustrative example of the calculation of connection contributions for a mixed development.

[14] https://www.gasnetworks.ie/home/gas-meter/meter-services/

Mixed Development	Domestic	I&C 1	I&C 2	Total	Ref.
No. Customers	283	1	1		[1]
Capacity (MWh/pk-day	36	2	27	65	[2]
Capex					
Feeder Main (allocated based on capacity)	181,128	8,233	137,501	326,862	[3] = Total Main Cost x % Capacity
Specifically Attributable	155,582	4,786	13,631	173,999	[4]
Total Capex	336,710	13,019	151,132	500,860	[5] = [3] + [4]
Standard Contribution	€220	30%	30%		[6]
Present Value of Standard Contribution	62,260	3,906	45,340	111,505	[7] = [1] * [6] for Domestic, [7] = [5] * [6] for I&C
Present Value of Transmission and Distribution Revenues	472,020	9,478	150,168	631,666	[8]
Present Value of Costs (Net Capex + Opex)	-425,064	-13,864	-154,231	-593,158	[9]
Net Present Value	109,216	-480	41,277	150,013	[10]
Supplemental "Economic Test" Contribution	0	480	0	480	[11] = -[10], if ([10])<0, otherwise 0
Summary of Contribution Due					
Standard Contribution	62,260	3,906	45,340	111,505	[12] = [7]
Supplemental "Economic Test" Contribution	0	480	0	480	[12] = [11]
Total contribution Due	€62,260	€4,386	€45,340	€111,986	

Table 5: Illustrative example for a mixed development

4.2 Mixed Non-Gas Estates

For a mixed non gas estate, confirmed Medium & Small I&C loads will face charges calculated as follows:

- A standard contribution; and
- A supplemental "economic test" contribution.

The standard contribution will include two components:

- For capital cost which cannot be directly attributed to the customer (e.g. feeder main), the percentage of the total projected development peak load from confirmed I&C sites multiplied by the standard Medium & Small I&C contribution of 30% of the full pipeline and ancillary equipment (including AGI) capital costs attributable to meeting the requirements of the estate in question including the present value of any attributable upstream (deep) reinforcement costs; and
- For capital cost which can be directly attributed to the customer (e.g. service pipes, meters etc.), 30% of the relevant pipeline and ancillary equipment capital costs.

The supplemental "economic test" contribution for the Medium & Small I&C loads will consider the present value of the full connection costs attributable to these customers against the present value of the transmission and distribution tariff revenue attributable to the facilities for 7 years, using Gas Networks Ireland's regulated rate of return as the discount rate. The full connection costs attributable to Medium & Small I&C customers will be calculated as:

- The directly attributable capital costs and the relevant proportion (based on contribution to peak load) of other capital costs which cannot be directly attributed (e.g. feeder main); plus
- Attributable operating costs; minus
- The standard Medium & Small I&C contributions as calculated above.

As with domestic non-gas estates, for domestic customers it is proposed that the connection charges will consist of two elements:

- The standard domestic connection charge; and
- A supplemental charge which will apply to any user in the estate connecting within 10 years of the initial non-gas estate connection offers.

The supplemental charge will then be calculated as for a domestic non-gas estate, save that for appraisal purposes the capital costs required to extend mains network to the non-gas estate will exclude the portion attributable to Medium & Small I&C customers.

Any Medium & Small I&C loads which were not confirmed at the time of the initial connections but which subsequently connect during the 10-year period will be charged a supplemental connection charge (in addition to the standard I&C charge of 30% based on their specific meter and service costs). The supplemental connection charge will be calculated as follows:

- Domestic Supplemental Charge x I&C Specific Capacity / Average Domestic Capacity

Table 6 of below provides an illustrative example of the calculation of connection contributions for a mixed non-gas estate.

Mixed Development	Domestic	I&C 1 (Confirmed)	I&C 2 (Confirmed)	I&C 3 (Not Confirmed)	Ref.
No. Customers	80	1	1	1	[1]
Take-up %	70%	100%	100%	0%	[2]
Total No. Customers	56	1	1	0	[3] = [1] * [2]
Capacity (kWh/pk day)	7,527	1,320	1,650	0	[4]
Capacity (%)	72%	13%	16%	0%	[5]
Capex					
Feeder Main	100,381	17,608	22,011	0	[6] = Total Main Cost x [5]
Specifically Attributable		4,786	4,786	0	[7]
Total Capex	100,381	22,394	26,797	0	[8] = [6] + [7]
Standard Contribution	€220	30%	30%		[9]
Present Value of Revenues	61,731	9,625	12,031	0	[10]
Present Value of Opex	-8,743	-845	-845	0	[11]
Present Value of Capex[15]	-100,381	-15,676	-18,758	0	[12]
Net Present Value	-47,392	-6,896	-7,571	0	[13] = [10] + [11] +[12]
Supplemental Contribution per customer	1,094	6,896	7,571		[13] = for IC: if ([12])<0, -([12]), otherwise 0 For Domestic: -([12])/[3] * PV Factor
Contribution Due per customer					
Standard Contribution	220	6,718	8,039	0	[14] = [9] for Domestic, [8] * [9] for IC
Supplemental Contribution	1,094	6,896	7,571	0	[15] = [13]
Total Contribution Due	€1,314	€13,614	€15,610	€0	[16] = [14] + [15]

Table 6: Illustrative example of a mixed non-gas estate

[15] For I&Cs, Capex is net of standard contribution.

5. Connection of New Towns

The economic viability of new town connections will be determined by the economic test. In carrying out economic test appraisals of new town connections, or regional groups of such towns, the investment appraisals will compare:

- The present value of full pipeline and ancillary capital equipment (including AGI) and operating costs (both transmission and distribution) attributable to meeting the projected load. Capital costs include local authority charges associated with road openings. The present value of any attributable upstream (deep) reinforcement costs will also be included; and
- The present value of, in all cases, 100% of distribution and transmission (entry and exit) tariff revenue attributable to the projected load.

In relation to evaluating potential new town load, only new housing and I&C loads will be considered. All existing housing will be treated as non-gas estates in accordance with Section 3.3.

To reflect the relatively lower risk of the diversified load base represented by a new town and the broader opportunities for growth of load, the present value appraisal for both domestic and I&C customers will be carried out over a 25-year period, and using Gas Networks Ireland's regulated rate of return as the discount rate. An illustrative example of a new town appraisal are shown in Annex 5A.

As an option, it will be possible to appraise a new town either on its own or as part of a regional group of towns. In order for the connection of a new town or a regional group of new towns to proceed, the **present value** of the revenues has to exceed the present value of the costs as determined above.

As a group of towns can be appraised as a single project, it will be possible for some towns that would not otherwise be economically viable on their own, to become viable when considered as part of a regional group. Whether or not a town is included in the group will depend on a number of factors including: relative proximity to the network, size and load growth potential, connection costs involved and a town's ability to share the same operating costs with adjacent towns. For example, a town which does not have a sufficient load could be included into the group if it is located en-route to a town which does have a significant load potential. However, in all cases the relative contribution of a town to the group of towns is the ultimate determining factor, i.e. a town with a higher present value of revenues less present value of costs will be given priority. The total group must work within the terms of the connection policy, i.e. the present value of total revenues less total costs must be positive.

Whether new towns are appraised individually or as part of a group, their connection would be expected to lead to a short-term increase in tariffs. This is due to the fact that connection of new towns is typically associated with a high upfront investment and low initial load which can take a number of years to build up. However, as the load in newly connected towns builds up, it will push general tariffs down in the longer term, hence benefiting all network users.

Towns which are likely to meet the economic criteria are those which are relatively close to the network, or which have large loads, or where there is a supplemental contribution available.

6. Renewable Gas Connections

Renewable gas is an indigenous, renewable, sustainable, and potentially carbon neutral source of energy. It can be produced from many organic waste materials and upgraded to a standard which is identical to natural gas. Renewable gas is delivered to the gas network through network injection facilities which can be either direct injection facilities or central injection facilities.

For renewable gas connections, whether they are connected to the transmission or distribution network, the customer contribution in relation to a connection includes two components:

- A standard contribution; and
- A supplemental "economic test" contribution.

6.1 Standard Contribution

All renewable gas connections will be required to make a standard contribution of 30% of the estimated costs for the injection facility. This includes full pipeline and ancillary equipment capital costs attributable to meeting the requirements of the facility in question, and the present value of any attributable downstream (deep) reinforcement costs. For connections that can provide an annual supply of greater than 57.5GWh and for connections that can supply less than or equal to 57.5GWh but require investment in transmission assets to facilitate the connection, the standard contribution will be based on both transmission and distribution costs. For connections that can provide an annual supply of less than or equal to 57.5GWh and not requiring investment in transmission assets, the standard contribution will be based on distribution costs only.

6.2 Supplemental "Economic Test" Contribution

In addition to the standard contribution, Gas Networks Ireland will determine whether a supplemental "economic test" contribution is required. The supplemental "economic test" contribution will consider the present value of the full connection cost estimate (as defined above plus operating costs, and less the standard 30% contribution) against the present value of the tariff revenue attributable to the facility. The present value in both cases will be evaluated over a ten year time horizon using Gas Networks Ireland's regulated rate of return as the discount rate. The purpose of the supplemental "economic test" is to provide for any shortfall in the remaining capital costs of the connection that will not be recovered through attributable tariff payments over a ten year period.

As part of the economic assessment, entry revenue and a portion of exit revenue is attributed to the new entry point. For connections that provide an annual supply of greater than 57.5GWh and for supply of less than or equal to 57.5GWh, which requires investment in transmission assets to facilitate the connection, the economic test will consider transmission and distribution costs against transmission (entry and exit) and distribution revenues. For connections that provide an annual supply of less than or equal to 57.5GWh not requiring investment in transmission assets, only distribution costs and the aggregate of 100% transmission exit revenue, 75% transmission entry revenue and 80% of distribution tariff revenues will be considered. Please refer to figure 2 for a flow diagram explanation. The flow diagram below outlines the costs and revenues that can be included in the assessment depending on the type of connection.

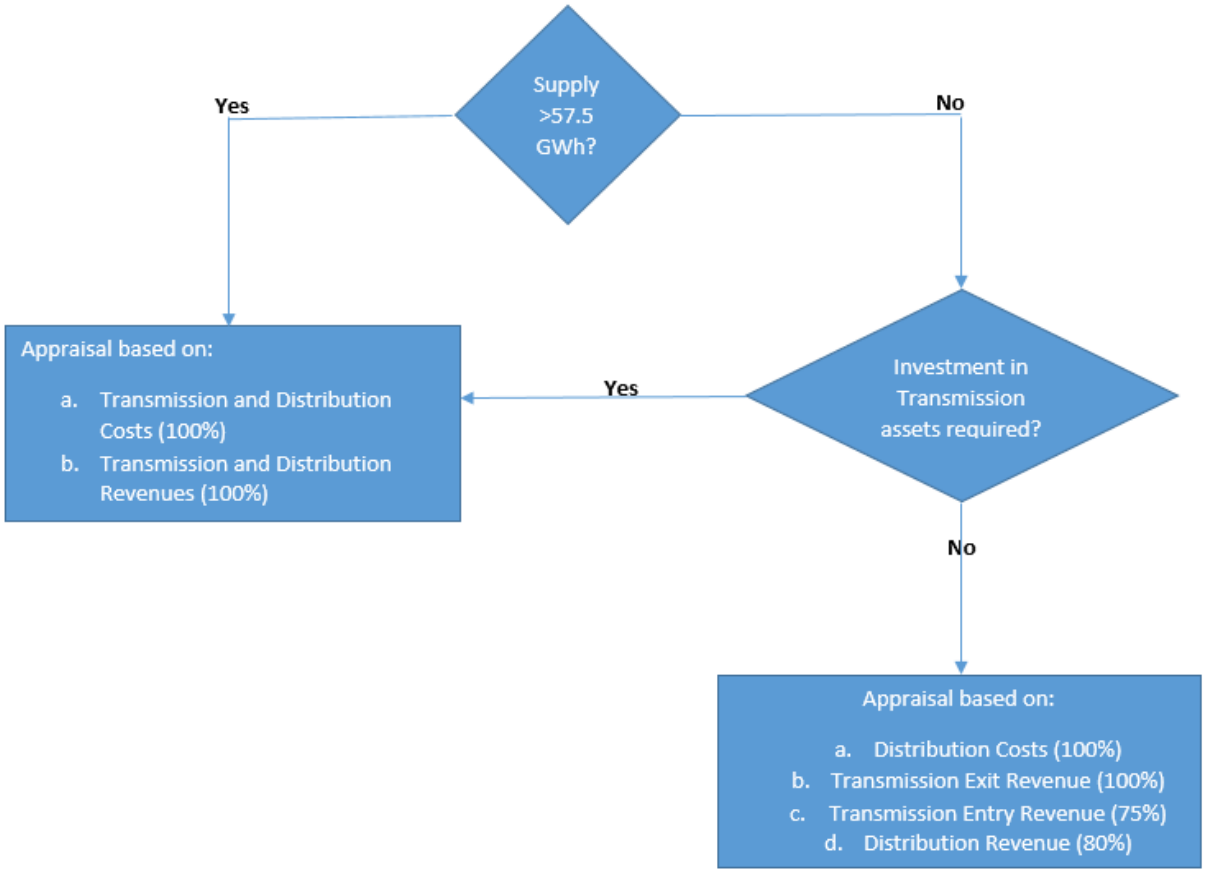

Figure 2 Flow diagram of the methodology for the economic test relating to how much annual supply the connection can provide

Where the present value of projected revenues is greater than or equal to the present value of the cost estimate then no supplemental contribution will be required. However, where the present value of revenues is lower than the present value of costs, the customer will be required to make a supplemental contribution to the extent required to bring the Net Present Value[16] of the appraisal to zero. The actual connection costs, over and above the standard contribution and any supplemental economic test contribution, will be recovered through general tariff payments.

6.3 Financial Security

Financial security will be required to be put in place for all renewable gas connections for a period of seven years. The CRU will review the structure and timing of the financial security for renewable gas connections during the next Gas Networks Ireland Price Control Review.

6.4 Application Process

Those wishing to connect renewable gas to the gas network will need to fill out an initial enquiry form. Based on this information Gas Networks Ireland will prepare an initial indicative quote (non-binding). This part of the process does not incur a fee. Once the initial quote has been received and if the applicant wishes to proceed with the connection then they must fill out an application form and pay a fee[17] to allow the necessary network analysis to be carried out prior to a connection agreement being issued. If the applicant decides to go ahead with the project and signs a connection agreement, then the fee counts towards their 30% customer contribution. If the applicant decides not to go ahead with the connection, then the fee is non-refundable.

[16] Net Present Value = sum of the present value of costs plus the sum of the present value of revenues.
[17] The fee associated with the application form will initially be set at €10,000. This fee may change from time to time with the approval of the CRU.

7. Miscellaneous Connections Changes

7.1 Treatment of Suburb Projects

This relates to the ability to extend the network to industrial zones/street/regions that are close but not connected to the gas network and could be connected with a minimal increase to the existing infrastructure. An infill policy will be applied as follows:

- The appraisal will mirror that used in the New Towns model above i.e. the present value appraisal for both domestic and I&C customers will be carried out over a 25-year period, and using Gas Networks Ireland's regulated rate of return as the discount rate; and
- The criteria for each infill project will be as follows:
    - The overall investment to connect the infill project to the grid will not exceed €1m;
    - The upstream investment in the network will not exceed €100k; and
    - The largest gas off-taker in the infill project will represent no more than 50% of overall incremental load arising from the infill project.

7.2 Treatment of Group Appraisals

In circumstances where there is a simultaneous joint proposal to connect from various industrial type entities on the same corridor, the project will be appraised on an aggregate basis to reflect the aggregate cost of connecting all sites on that corridor and a proposed distribution of costs will be provided to the customers on the basis of relative load/relative distance. In certain circumstances, if the multiple clients want to propose an alternative mechanism, this would be reviewed by Gas Networks Ireland on a case by case basis (whilst retaining the principle of full remuneration of aggregate connection costs).

7.3 Treatment of Costs of Spare Pipeline Capacity

In certain cases, it will be appropriate from the point of view of the efficient and economic development of the pipeline network to design extensions in anticipation of future load not yet connecting to the system (i.e. to design pipelines with additional capacity than that strictly required by the currently connecting parties). This avoids more costly stand-alone reinforcement at a future date.

For transmission pipelines, the approval of such projects will be dealt with on a case by case basis with the Commission. For distribution pipelines, the proposed operational criteria, which will provide a framework for determining when such network development is appropriate, are as follows:

- The network being extended to new development in areas of future growth;
- The network being extended to a new development along route(s) identified as having strategic network reinforcement significance; and
- Infrastructure being rolled out to Phase 1 of multi-phase developments.

These criteria would be reviewed periodically to ensure that they continue to reflect the developing network.

Customers connecting to the pipeline during the first phase will not bear the incremental costs of the additional capacity in their connection charges. In such a situation, connection charges will be determined with reference to the costs which would have been incurred had the pipeline and associated infrastructure been sized to deal with the specified requirements of the customer connection application for the load connecting immediately. For future developments, the incremental costs of the additional capacity will be included as part of connection appraisal costs.

7.4 Customer requested Non-Least Cost Connection Design

When determining the design and cost of a connection, the capital and operating cost of the pipeline and associated infrastructure referred to above is intended to refer to the least cost design solution for the connection of the load(s) in question.

In the event that a customer requests a connection to be constructed which is not, in Gas Networks Ireland's view, the least cost approach to connection (given the load type, characteristics and network location), irrespective of the customer type, the connection charge will comprise:

- The connection charge as per the least cost approach for the particular customer type; and

- 100% of the incremental connection cost over and above the cost of the least cost solution.

For example, a Medium and Small I&C requesting a non-least cost connection will pay 100% for the incremental cost as well as the 30% plus supplemental charge required for the least cost solution.

7.5 Design Charges

For connections, a charge will be made to cover the effort required to carry out the initial desktop work required as an input to the initial offer letter.

Design & Estimation (An up-front fee may apply to requests for design / estimation dependent on their Estimated Annual Consumption as outlined below)	**Proposed Contribution (Excl. VAT)**	**Proposed Contribution (Incl. VAT)**
≤ 4,500,000 kWh's	No Charge	No Charge
>4,500,000 & ≤ 22,000,000 kWh's	€751.77	€924.68 (VAT at 23%)
>22,000,000 kWh's	€3,758.84	€4,623.37 (VAT at 23%)

Table 7: Design & Estimation charges

These charges are set out in the Gas Networks Ireland Network Operations Siteworks Charging Document[18] and are payable when the enquiry form is submitted. The charges will be offset against connection contributions where the customer proceeds with the connection. The levels will be reviewed and reset periodically, with the agreement of the CRU.

7.6 Opportunistic Network Development

In some situations, it will make sense from an efficiency viewpoint for Gas Networks Ireland to procure the undertaking of the work in advance of formal connection enquiries from customers. This may be the case, for example, where a Local Authority or developer is undertaking works in the relevant area and, by working at the same time, Gas Networks Ireland can reduce the cost of trenching or reinstatement.

Such opportunities require Gas Networks Ireland to be able to confirm relatively quickly to the relevant party that connection works can take place in parallel with the other scheduled works. For transmission pipelines, projects will be dealt with on a case by case basis with the Commission. For distribution pipelines, the proposed criteria, which would determine when such development will be considered appropriate, are as follows:

- Contact with or request from a Local Authority or information from a Developer/Builder or Local Authority development zoning map (or other planning information);
- Consistency of project with requirements identified from Distribution Network Capacity Report or strategic network analysis;
- The road infrastructure being constructed ahead of residential, commercial or industrial development;
- The network being extended to a congested town centre location.
- Project capital costs are estimated not to exceed €100k; and
- Estimated network extension length does not exceed 2km;

These criteria would be reviewed periodically to ensure that they continue to reflect the developing network. All other distribution projects outside the criteria specified above will be brought to the Commission for approval on a case by case basis.

For future development-related loads connecting to the network, the costs associated with the relevant opportunistic development projects will be included as part of connection appraisal costs relevant to that part of the network.

7.7 Treatment of Economic Bypass

[18] https://www.gasnetworks.ie/home/gas-meter/meter-services/

In the event that an existing distribution customer requests a connection to the network, Gas Networks Ireland will treat such a request as a service which exceeds the least cost solution i.e. where the existing connection meets the customer requirements for capacity and no new additional load is being added to the system.

In such instances, the connection charge will consist of three elements. The customer will be required to pay 100% of each of the following:

- The full connection cost of meeting the load and pressure requirements of the facility from the transmission network. Such costs will include the full pipeline and Above Ground Installation (AGI) capital costs plus the present value of any attributable upstream (deep) reinforcement costs;
- The residual cost of the stranded distribution asset; and
- The cost of disconnecting the customer from the distribution system.

These charges will become payable upon execution of the relevant connection agreement.

ANNEX 1. QUOTATION DETAILS

In any connection quote issued, it is proposed that the quote is broken down into the following elements.

For Large I&C customers, and for Medium & Small I&C customers where a Large Network Connection Agreement is required:

- Construction
- Materials (broken down into main parts, e.g. pipeline, AGI etc.)
- Engineering & management
- Control & instrumentation
- Wayleaves & site acquisition
- Site investigations & surveys
- Legal costs
- Finance charges

For all other connection quotes an aggregate quotation will be provided by Gas Networks Ireland which will cover all costs pertaining to the connection (e.g. direct labour, materials, and contractor costs). Further breakdown on a quote can be provided to the customer on request.

Allowance will also be made for contingency – this will be indicated specifically in individual quotations.

ANNEX 2. INSTITUTIONAL INDUSTRIAL & COMMERCIAL CUSTOMERS

- Schools
- Third Level Colleges
- Hospitals
- Prisons
- Garda Stations
- Stadiums
- Airports (airport specific infrastructure only)
- Railway Stations
- Museums/Heritage Sites
- Fire/Ambulance Stations
- Army Barracks
- Government Buildings
- Ports
- Bus Stations
- Any other customer classified in this category by Gas Networks Ireland and approved by the CRU

ANNEX 3. INDUSTRIAL & COMMERCIAL SUMMARY TABLE

The following applies to a project which is NPV positive in 7 years or more:

Customer Type	Net Connection Cost Threshold (1)	Connection Type	Connection Agreement	Appraisal (yrs)	Contribution	Capacity Commitment (2)	Financial Security
Large I&C *(Peak Hourly Demand > 50MW AND* Connection *Pressure ≥ 16 barg*	< or ≥ €500,000	LDM	Large Network Connection Agreement	N/A	100%	0%	Yes
Medium and Small I&C Peak Hourly Demand ≤ 50MW OR Connection Pressure < 16 barg	≥ €500,000	LDM, DM, NDM	Large Network Connection Agreement	7 yrs	30%	70%	Yes
	< €500,000	LDM	I&C Network Connection Agreement	7 yrs	30%	70% (De minimus level)	No
		DM	I&C Network Connection Agreement	7 yrs	30%	70% (De minimus level)	No
		NMD	I&C Network Connection Agreement	7 yrs	30%	0%	No
Institutional I&C Peak Hourly Demand ≤ 50MW OR Connection Pressure < 16 barg	≥ €500,000	LDM, DM, NDM	Large Network Connection Agreement	7 yrs	30%	70%	Yes
	< €500,000	LDM, DM, NDM	I&C Network Connection Agreement	20 yrs	30%	No	No

Notes:

(1) Net Connection Costs is the total cost of the connection less the customer contribution paid

(2) Capacity commitment covered by financial security and de minimus capacity level set in the Capacity Register (both SPC and Transmission Exit) are based on the projected load profiles provided by the customer, this load profile is also used in the connection appraisal

The following applies to a project which is NPV positive in 4, 5 or 6 years:

Customer Type	Net Connection Cost Threshold (1)	Connection Type	Connection Agreement	Appraisal (yrs)	Contribution	Capacity Commitment (2)	Financial Security
Large I&C (Peak Hourly Demand > 50MW AND Connection Pressure ≥ 16 barg	< or ≥ €750,000	LDM	Large Network Connection Agreement	N/A	100%	0%	Yes
Medium and Small I&C Peak Hourly Demand ≤ 50MW OR Connection Pressure < 16 barg	≥ €750,000	LDM, DM, NDM	Large Network Connection Agreement	7 yrs	30%	70%	Yes
	< €750,000	LDM	I&C Network Connection Agreement	7 yrs	30%	70% (De minimus level)	No
		DM	I&C Network Connection Agreement	7 yrs	30%	70% (De minimus level)	No
		NMD	I&C Network Connection Agreement	7 yrs	30%	0%	No
Institutional I&C Peak Hourly Demand ≤ 50MW OR Connection Pressure < 16 barg	≥ €750,000	LDM, DM, NDM	Large Network Connection Agreement	7 yrs	30%	70%	Yes
	< €750,000	LDM, DM, NDM	I&C Network Connection Agreement	20 yrs	30%	No	No

Notes:

(1) Net Connection Costs is the total cost of the connection less the customer contribution paid

(2) Capacity commitment covered by financial security and de minimus capacity level set in the Capacity Register (both SPC and Transmission Exit) are based on the projected load profiles provided by the customer, this load profile is also used in the connection appraisal

The following applies to a project which is NPV positive in less than or equal to 3 years:

Customer Type	Net Connection Cost Threshold (1)	Connection Type	Connection Agreement	Appraisal (yrs)	Contribution	Capacity Commitment (2)	Financial Security
Large I&C (Peak Hourly Demand > 50MW AND Connection Pressure ≥ 16 barg	< or ≥ €1,000,000	LDM	Large Network Connection Agreement	N/A	100%	0%	Yes
Medium and Small I&C Peak Hourly Demand ≤ 50MW OR Connection Pressure < 16 barg	≥ €1,000,000	LDM, DM, NDM	Large Network Connection Agreement	7 yrs	30%	70%	Yes
	< €1,000,000	LDM	I&C Network Connection Agreement	7 yrs	30%	70% (De minimus level)	No
		DM	I&C Network Connection Agreement	7 yrs	30%	70% (De minimus level)	No
		NMD	I&C Network Connection Agreement	7 yrs	30%	0%	No
Institutional I&C Peak Hourly Demand ≤ 50MW OR Connection Pressure < 16 barg	≥ €1,000,000	LDM, DM, NDM	Large Network Connection Agreement	7 yrs	30%	70%	Yes
	< €1,000,000	LDM, DM, NDM	I&C Network Connection Agreement	20 yrs	30%	No	No

Notes:

(1) Net Connection Costs is the total cost of the connection less the customer contribution paid

(2) *Capacity commitment covered by financial security and de minimus capacity level set in the Capacity Register (both SPC and Transmission Exit) are based on the projected load profiles provided by the customer, this load profile is also used in the connection appraisal*

ANNEX 4. CONNECTION CHARGES SUMMARY TABLE

INDUSTRIAL & COMMERCIAL (I&C) **Large I&Cs** >16barg, MHQ>50MW	>> Phased Payment = 100% of all capex costs (incl. reinforcement)	Transmission
Medium and Small I&Cs (<16barg, OR MHQ <= 50MW) - AQ > 57.5GWh - AQ <= 57.5GWh, Transmission costs involved - AQ <= 57.5GWh, No Transmission costs involved	>> Standard Contribution (30% of all capex costs, incl. reinf); PLUS >> Supplemental "Economic Test" Contribution (appraised over 7 yrs): based on Transmission and Distribution costs and revenues based on Transmission and Distribution costs and revenues based on Distribution costs and 80% of Distribution revenues, 75% of transmission entry revenues and 100% of transmission exit revenues	Transmission & Distribution
Institutional I&Cs (<16barg, AQ <= 260GWh) AQ > 57.5GWh AQ <= 57.5GWh, Transmission costs involved AQ <= 57.5GWh, No Transmission costs involved	>> Standard I&C Contribution (30% of all costs, incl. reinf); PLUS >> Supplemental "Economic Test" Contribution (appraised over 7 or 20 yrs depending on exposure): based on Transmission and Distribution costs and revenues based on Transmission and Distribution costs and revenues based on Distribution costs and 80% of Distribution revenues, 75% of transmission entry revenues and 100% of transmission exit revenues	Transmission & Distribution
DOMESTIC **One-off Housing** <=73.2MWh	>> Standard Domestic Charge + VAT for the first 15m of service pipe; PLUS >> Incremental Fixed Charge per meter beyond 15m	Transmission & Distribution
> 73.2MWh	Greater of: >> Standard Domestic Charge + VAT; and >> Supplemental "Economic Test" Contribution	
New Housing	>> Standard Domestic Charge + VAT; PLUS >> Supplemental "Economic Test" Contribution: appraised over 20 yrs, 80% of Distribution revenues, 75% of transmission entry revenues and 100% of transmission exit revenues	Transmission & Distribution
Non-Gas Estates	>> Standard Domestic Charge + VAT; PLUS >> Supplemental Charge	Transmission & Distribution
MIXED DEVELOPMENTS	>> Domestic: No. Domestic Connections x Standard Domestic Charge; PLUS Supplemental "Economic Test" Contribution (appraised over 20 yrs, 80% of Distribution revenues, 75% of transmission entry revenues and 100% of transmission exit revenues) >>I&C: Standard I&C Contribution of 30% (mains allocated based on capacity %); PLUS Supplemental "Economic Test" Contribution (appraised over 7 yrs, 80% of Distribution revenues, 75% of transmission entry revenues and 100% of transmission exit revenues)	Transmission & Distribution
MIXED NON-GAS ESTATES	>> Domestic: Standard Domestic Charge; PLUS Supplemental Charge >>I&C: Standard I&C Contribution of 30% (mains allocated based on capacity %); PLUS Supplemental "Economic Test" Contribution	Transmission & Distribution
NEW TOWNS	>> Domestic (appraised over 25 years): Standard Domestic Charge + VAT per connection	Transmission & Distribution

	>>I&C (appraised over 25 years): Standard I&C Contribution of 30% (meter and service costs)	
RENEWABLE GAS CONNECTIONS (i) Supply of > 57.5 GWh (ii) Supply of <= 57.5GWh, Transmission costs involved (iii) Supply of <= 57.5GWh, No Transmission costs involved	>> Standard Contribution (30% of all capex costs, including reinforcement); Plus >> Supplemental "Economic Test" Contribution (appraised over 10 years): (i) based on Transmission and Distribution costs and revenues (ii) based on Transmission and Distribution costs and revenues (iii) based on Distribution costs and 80% of Distribution revenues, 75% of transmission entry revenues and 100% of transmission exit revenues	Transmission and Distribution
SUBURBS BY EXISTING GAS AREAS	>> Domestic (appraised over 25 years): Standard Domestic Charge + VAT per connection >>I&C (appraised over 25 years) Standard I&C Contribution of 30% (meter and service costs)	Transmission & Distribution

ANNEX 5A. NEW TOWN APPRAISAL TEMPLATE – INPUTS

		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8 - 25
1. DEMAND										
New Housing										
No. Connections per yr up to Yr 10	200									
Volume	15,260	kWh per house								
Load Factor	36%									
I&C (Surveyed Load in kWh)										
Large										
Capacity										
Large 1	350,000									
Large 2	35,000									
Large 3	20,000									
Commodity										
Large 1	75,000,000									
Large 2	7,500,000									
Large 3	4,000,000									
Take-up %	80%	of the total load surveyed (approximately) - in this example 2 out of 3								
Large 1		0%	0%	100%	100%	100%	100%	100%	100%	100%
Large 2		0%	0%	0%	0%	0%	0%	0%	0%	0%
Large 3		0%	100%	100%	100%	100%	100%	100%	100%	100%
Medium										
No. customers	15									
Total Capacity	55,000									
Total Commodity	8,000,000									
Take-up %		0%	10%	20%	30%	40%	50%	50%	50%	50%
Small										
No. customers	350,000									
Total Capacity	115,000									
Total Commodity	15,000,000									
Take-up %		0.00%	12.50%	17.50%	20.00%	21.25%	22.50%	23.75%	25.00%	25.00%
2. CONNECTION COSTS (CAPEX in €)										
Distribution										
Feeder & Distribution Main	6,000,000									
Service and Meter										
New Housing	€1,086	per connection								
I&C										
Large	€90,000	for the loads assumed to be connected								
Medium	€150,000	for the total load surveyed (i.e. only the portion related to the take-up % will be included in the appraisal)								
Small	€1,000,000	for the total load surveyed (i.e. only the portion related to the take-up % will be included in the appraisal)								
Transmission										
AGI, etc.	€750,000									
3. CONNECTION CHARGES										
New Housing	€220	per connection								
I&C	30%	of service and meter costs								
4. OPERATING COSTS (OPEX)										
Distribution	€140,000	(incl. first response, callout crew and 3rd party damage)								
Transmission	€11,000									
5. TARIFF										
Distribution										

	Capacity Charge = A - B*Ln(PDV in MWh)	
Volume Range	A	B
0-73 MWh	133.333	
>73-14,653 MWh	118.032	3.432
>14,653-57,000 MWh	294.8852	42.3256
>57,500 MWh	36.3645	-

	Commodity Charge = A - B*Ln(PDV in MWh)	
Volume Range		
0-73 MWh	0.2537	
>73-14,653 MWh	0.2025	0.0197
>14,653-57,000 MWh	0.2361	0.0311
>57,500 MWh	0.0461	-

Transmission		
Entry		
Capacity	336.727	
Commodity	0.139	
Exit		
Capacity	481.879	
Commodity	0.220	

		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8 - 25
1. DEMAND										
New Housing										
No. Connections per yr up to Yr 10	200									
Volume	15,260	kWh per house								
Load Factor	36%									
I&C (Surveyed Load in kWh)										
Large										
Capacity										
Large 1	350,000									
Large 2	35,000									
Large 3	20,000									
Commodity										
Large 1	75,000,000									
Large 2	7,500,000									
Large 3	4,000,000									
Take-up %	80%	of the total load surveyed (approximately) - in this example 2 out of 3								
Large 1		0%	0%	100%	100%	100%	100%	100%	100%	100%
Large 2		0%	0%	0%	0%	0%	0%	0%	0%	0%
Large 3		0%	100%	100%	100%	100%	100%	100%	100%	100%
Medium										
No. customers	15									
Total Capacity	55,000									
Total Commodity	8,000,000									
Take-up %		0%	10%	20%	30%	40%	50%	50%	50%	50%
Small										
No. customers	350,000									
Total Capacity	115,000									
Total Commodity	15,000,000									
Take-up %		0.00%	12.50%	17.50%	20.00%	21.25%	22.50%	23.75%	25.00%	25.00%
2. CONNECTION COSTS (CAPEX in €)										
Distribution										
Feeder & Distribution Main	6,000,000									
Service and Meter										
New Housing	€1,086	per connection								
I&C										
Large	€90,000	for the loads assumed to be connected								
Medium	€150,000	for the total load surveyed (i.e. only the portion related to the take-up % will be included in the appraisal)								
Small	€1,000,000	for the total load surveyed (i.e. only the portion related to the take-up % will be included in the appraisal)								
Transmission										
AGI, etc.	€750,000									
3. CONNECTION CHARGES										
New Housing	€220	per connection								
I&C	30%	of service and meter costs								
4. OPERATING COSTS (OPEX)										
Distribution	€140,000	(incl. first response, callout crew and 3rd party damage)								
Transmission	€11,000									
5. TARIFF										
Distribution		Capacity Charge = A - B*Ln(PDV in MWh)								
Volume Range		A	B							
0-73 MWh		133.333								
>73-14,653 MWh		118.032	3.432							
>14,653-57,000 MWh		294.8852	42.3256							
>57,500 MWh		36.3645	-							
		Commodity Charge								
Volume Range		= A - B*Ln(PDV in MWh)								
0-73 MWh		0.2537								
>73-14,653 MWh		0.2025	0.0197							
>14,653-57,000 MWh		0.2361	0.0311							
>57,500 MWh		0.0461	-							
Transmission										
Entry										
Capacity	336.727									
Commodity	0.139									
Exit										
Capacity	481.879									
Commodity	0.220									

ANNEX 5B. NEW TOWN APPRAISAL TEMPLATE – RESULTS SUMMARY

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11 …	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25
Demand (MWh)																		
Capacity																		
New Housing	0	23	46	70	93	116	139	163	186	209	232	232	232	232	232	232	232	232
Large I&C	0	20	370	370	370	370	370	370	370	370	370	370	370	370	370	370	370	370
Medium I&C	0	6	11	17	22	28	28	28	28	28	28	28	28	28	28	28	28	28
Small I&C	0	14	20	23	24	26	27	29	29	29	29	29	29	29	29	29	29	29
	0	**63**	**448**	**479**	**509**	**540**	**564**	**589**	**612**	**635**	**659**	**659**	**659**	**659**	**659**	**659**	**659**	**659**
Commodity																		
New Housing	0	3,052	6,104	9,156	12,208	15,260	18,312	21,364	24,416	27,468	30,520	30,520	30,520	30,520	30,520	30,520	30,520	30,520
Large I&C	0	4,000	79,000	79,000	79,000	79,000	79,000	79,000	79,000	79,000	79,000	79,000	79,000	79,000	79,000	79,000	79,000	79,000
Medium I&C	0	800	1,600	2,400	3,200	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Small I&C	0	1,875	2,625	3,000	3,188	3,375	3,563	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750
	0	**9,727**	**89,329**	**93,556**	**97,596**	**101,635**	**104,875**	**108,114**	**111,166**	**114,218**	**117,270**	**117,270**	**117,270**	**117,270**	**117,270**	**117,270**	**117,270**	**117,270**
real prices, €000																		
Revenue																		
Distribution																		
Capacity	0	38	425	440	456	472	480	489	497	506	514	514	514	514	514	514	514	514
Commodity	0	11	113	117	120	124	125	126	128	129	131	131	131	131	131	131	131	131
Transmission																		
Capacity	0	52	366	392	417	442	462	482	501	520	539	539	539	539	539	539	539	539
Commodity	0	3	32	34	35	36	38	39	40	41	42	42	42	42	42	42	42	42
Capex																		
Distribution	-6,000	-362	-367	-257	-245	-245	-230	-230	-217	-217	-217	0	0	0	0	0	0	0
Transmission	-750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Connection Charges																		
New Housing	0	44	44	44	44	44	44	44	44	44	44	0	0	0	0	0	0	0
I&C	0	43	45	12	8	8	4	4	0	0	0	0	0	0	0	0	0	0
Opex																		
Distribution	0	-140	-140	-140	-140	-140	-140	-140	-140	-140	-140	-140	-140	-140	-140	-140	-140	-140
Transmission	0	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
Net Cash Flow	**-6,750**	**-321**	**507**	**631**	**685**	**730**	**772**	**803**	**842**	**872**	**902**	**1,075**	**1,075**	**1,075**	**1,075**	**1,075**	**1,075**	**1,075**
Net Present Value @ ROR (S	**€3,790**																	

Note:
The figures presented are for illustrative purposes only

ANNEX 6. STANDARD ASSUMPTIONS ON DOMESTIC CONSUMPTION

In appraising domestic connections, Gas Networks Ireland will utilise the latest default house profile settings.

These are set out in the FAR MDS procedures on the Gas Networks Ireland website.

See link below:
https://www.gasnetworks.ie/corporate/gas-regulation/service-for-suppliers/capacity-register-and-far/

ANNEX 7. ALLOCATION OF REINFORCEMENT COSTS

It is imperative from a policy perspective that there is a clear identification of the attributable upstream reinforcement costs to the customer. Reinforcements can be identified through consulting the Gas Networks Ireland Development Plan. This is a plan of works to be carried out in future periods which identifies reinforcements, network extensions and other planned connections. The Development Plan examines expected load growth and reinforcement requirements and the timings thereof are outlined in the Plan.

Example
Consider a customer who intends to locate a factory in a town which is connected to the network. The size of the proposed load is such that the pressure and/or the available capacity criteria would be breached in the network, thus triggering the reinforcement requirement. The present value of the cost of the reinforcement is €20m. The shallow connection cost is €3m.

Scenario 1:
In this scenario the reinforcement is identified in the Gas Networks Ireland Development Plan, to occur in 2016. The present value of the reinforcement is €20m. The connection would advance the planned reinforcement by 4 years to 2012. The attributable upstream reinforcement cost in this case is the cost of accelerating the reinforcement by 4 years.

A large I&C customer will pay upfront for the full cost of the connection (€3m) plus the present value of the cost of accelerating the timing of this reinforcement by 4 years.

A Medium/Small I&C or Institutional I&C customer will pay 30% upfront for the direct cost of the connection (circa €1m) plus 30% of the present value of accelerating the timing of the reinforcement by 4 years. They will also pay a supplemental “economic test” contribution if required. The outstanding costs, both shallow and deep, will be recouped through the Regulated Asset Base (RAB) via capacity payments.

In both cases the cost of the reinforcement is absorbed earlier into the RAB than what was originally envisaged in the Gas Networks Ireland Development Plan. The cost of the acceleration is the difference in the financing costs of advancing the reinforcement by 4 years. The rest of the Network users should be kept cost neutral with respect to the acceleration, i.e. not be exposed to any additional costs as a result of bringing the reinforcement forward. They will be exposed to the early onset of the depreciation costs which will be treated as normal depreciation of an asset via the RAB.

Scenario 2:
In this scenario the reinforcement is not highlighted in the Gas Networks Ireland Development Plan. In this case the attributable upstream reinforcement cost is the total cost of the reinforcement.

A large I&C customer will pay the full connection cost (€3m) upfront for the direct cost of the connection plus the full cost of the upstream reinforcement (€20m).

A Medium/Small I&C or Institutional I&C customer will pay 30% (circa €1m) upfront for the direct cost of the connection plus 30% (circa €6m) of the present value of the upstream reinforcement plus any supplemental contribution if required. The other 70% (circa €16m) of the costs, both shallow and deep, would be recouped from capacity payments.

Application of Policy
This policy applies to all connections whose load exceeds the LDM (57.5 GWh) threshold. Below this threshold, all reinforcement costs are addressed as part of the overall planning process and the costs will be allocated to either the Transmission and/or Distribution RAB as appropriate.

ANNEX 8. OPTIONS FOR INDUSTRIAL & COMMERCIAL CUSTOMERS REQUIRING A LARGE NETWORK CONNECTION AGREEMENT

Medium and Small Industrial Commercial customers requiring connection to the transmission pipeline entering into a Large Network Connection Agreement (LNCA) are required to make a standard contribution of 30% of the connection cost estimate plus a supplemental "economic test" contribution (if necessary). The outstanding connection costs, over and above the contribution paid are recovered through general tariff payments, i.e. actual costs less contribution is capitalised to the Regulated Asset Base (RAB). The customer is also required to book capacity and provide financial security for a sufficient period to ensure recovery of all the outstanding costs.

Medium and Small Industrial Commercial customers entering into an LNCA may elect to pay the standard contribution of the **transmission** element of their connection through 3 different options. The options available are as follows[19]:

- **Initial Price**. The customer pays 30% of the centreline estimate of the full pipeline and ancillary equipment (including AGI) capital costs attributable to meeting the load and pressure requirements of the facility, plus 25% contingency. The outstanding actual costs are recouped through general tariff payments.

- **Actual Price**. Initially the customer pays a standard contribution of 30% of the centreline estimated cost of connection plus 10% contingency. Once the actual costs are known on completion of the connection, the customer's initial standard contribution shall be reconciled against the actual costs. Therefore in effect the customer pays 30% of the actual costs. The outstanding actual costs are recouped through general tariff payments.

- **Fixed Price**. The customer pays a standard contribution based on 30% of the control budget[20] once it is established plus a contingency of 10%. The outstanding actual costs are recouped through general tariff payments. The LNCA will contain an obligation on the customer to pay the standard contribution once the control budget is established.

[19] All options will have to pay a supplemental "economic test" contribution if required.
[20] The control budget is established post execution of the Large Network Connection Agreement.