Moyle and North/South Interconnectors

Trading Arrangements from 1 April 2002

A Consultation Paper issued by the
Director General of Electricity Supply
for Northern Ireland

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1 Introduction

On 19 February 1997 the EU Directive on electricity market liberalisation (the IME Directive) became law. This Directive contributes to the completion of the single market while encouraging competition in the generation and supply of electricity. As a means of developing the internal market in electricity within Europe the Directive has promoted open access to transmission systems including interconnectors.

Trading arrangements for the Moyle and North/South (N/S) Interconnectors are being considered in two stages, with the interim strategies for trading up until 31 March 2002 employed as stage one. This consultation paper sets out the issues in order to seek views considering the second stage of a fully detailed trading system for both the Moyle and the N/S Interconnectors for adoption from 1 April 2002.

2 North/South Interconnector

Prior to 1 April 2002

The main N/S Interconnector currently has a theoretical available transfer capacity of 330MW although not all of this is currently available for trading. Investments are scheduled which will strengthen the theoretical capacity of the main N/S Interconnector to 660MW. In addition, the two present standby connections to the West are being upgraded to become full system interconnectors each with a capacity of 125MW. For the purposes of this paper Ofreg are considering all North/South interconnections as a single entity for trading purposes.

Interconnector trading has been under way between the two electricity systems in Ireland since the restoration of the N/S Interconnector in 1995. Until February 2000 the N/S Interconnector had been used mainly for providing mutual support for the two electricity systems and limited trading between the utilities.

In February 2000, with both the Northern Ireland (NI) and Republic of Ireland (RoI) electricity markets open to competition the potential increased for the two parts of the island to benefit from

cross-border trade via the N/S Interconnector. Ofreg and the RoI regulatory body, the Commission for Electricity Regulation (CER) agreed interim interconnector trading arrangements in order to adopt a harmonised approach with third party access capacity allocated by auction.

The N/S Interconnector export capacity rights for 100MW capacity from February 2000 to March 2001were awarded via an auction. A reserve price of £100/MW per month was set with capacity allocated in 1MW tranches. The N/S export capacity rights from April 2001 to March 2002 were auctioned on similar terms as before with 120MW now being made available.

3 Moyle Interconnector

Prior to 1 April 2002

The Moyle Interconnector, with a capacity of 500MW has been developed as a strategic infrastructure project to link the previously isolated NI electricity system to the systems of Great Britain (GB) and the European mainland. The potential benefits of access to these larger systems for the NI electricity consumer include downward pressure on electricity prices from increased competition in generation along with enhanced security and diversity of supply.

NIE Power Procurement Business (PPB) has contracted with Scottish Power (SP) for an amount of energy equalling an average 125MW of the 500MW capacity. This Electricity Supply Agreement (for a period of 70 months from the date of commissioning) will leave the remaining capacity available for use by third parties on a non-discriminatory basis.

It is anticipated that the Moyle Interconnector will be available for use for trading from 1 January 2002. For the first 3 months of operation up until 31 March 2002 a simplified form of access and allocation has been adopted. The practical ATC for this period has been determined as 300MW with 175MW of capacity being auctioned to third parties. Capacity has been allocated in tranches of 5MW with a reserve price of £1,000/MW per month, pay as bid. PPB will pay this reserve price for it's 125MW of reserved capacity for the first 3 months of 2002.

4 The Consultation

This consultation process aims to produce an open, transparent and competitive Moyle and N/S Interconnector trading model for access, allocation and transmission pricing which will take account of the new trading environment brought about by the Moyle Interconnector.

This new environment will see NI (and hence RoI) connected to GB for the first time with NI becoming one of the most open systems in Europe in terms of total interconnector capacity as a % of maximum demand.

Views are sought in order to develop a model for Moyle and N/S Interconnector trading that can be continuously developed to meet the ever changing needs of the market.

Comments on the views contained in this paper are sought from the industry and other interested parties by Tuesday 31 July 2001.

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Once the consultation period is concluded and responses considered proposals for cross border trading from April 2002 will be published.

Please Note:

The Commission for Electricity Regulation (CER) in Dublin can be contacted for details of South-North interconnector capacity (Tel 00 353 1 4000 800).

Parties wishing to trade on the Moyle Interconnector are advised to familiarise themselves with the access and transmission pricing arrangements for the Scottish transmission system. Ofgem Scotland will publish details relevant for those wishing to trade on the Moyle Interconnector at the end of June (Tel 0141 3312678).

The Issues for Consideration:

5. The determination of Available Transfer Capacity (ATC)

Not all the technically available capacity of an interconnector can be used for the physical movement of electricity across it in any one period. For each interconnector the available capacity will depend on a number of factors, including the particular configuration of load flows in the two transmission systems and the reserve requirements of the two Transmission System Operators (TSOs) for security of supply reasons.

The European Transmission System Operators (ETSO) have put forward a proposal for determining ATC on interconnectors.[1] They propose that ATC is determined as the total transfer capability less the transmission reliability margin less existing transmission commitments, where:

- The total transfer capability is the maximum capacity that can flow from one regulatory zone to another, taking account of the operational limits of the network (thermal, voltage and stability limits) and the uniform breakdown criterion;[2] [3]
- The transmission reliability margin is a safety reserve to enable the consequence of changes in the network load or unit breakdowns to be partially absorbed by flows across the interconnector;
- Existing transmission commitments are the demands placed on available capacity by existing contracts.

ETSO note that the ATC can vary, depending on the time, direction of flow and the forecasting horizon. They argue that this limits the ability to offer guaranteed rights of access to and use of an interconnector.

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1 *International Exchanges of Electricity*: Rules proposed by the European TSOs, 23 March 1999.

2 A regulatory zone is defined as a region within which a single TSO is responsible for electricity exchanges with other regulatory zones.

3 Under the uniform breakdown criterion, no breakdown in either transmission system, or in the interconnector, is allowed to lead to transmission problems at any time.

Views of respondents are sought on:

5.1.1 Whether the ETSO methodology, as outlined above, is an appropriate one to adopt for both the interconnectors?

5.1.2 Who should be responsible for determining the ATC? and what systems should be put in place to ensure transparency in this process?

5.1.3 How far in advance it should be determined and how often it should be updated (e.g., a day ahead)?

5.1.4 Whether existing contracts should be taken into account in determining the ATC?

5.1.5 How much of the total capacity of the interconnectors should be reserved for the use by the utilities for mutual assistance and support (i.e. spinning reserve)?

5.1.6 Should there be scope for the ATC to be varied upwards above the nominated level according to system constraints and e.g. adjusted monthly?

5.2 Superposition

Interconnector trading is capable of facilitating the development of sophisticated market behaviour allowing trading transactions greatly in excess of physical limits on flows of electricity. Consideration is required on whether arrangements for superposition should be provided at this stage. While noting the potential benefits which superposition may bring, Ofreg also note the practical difficulties which it presents, and consider superposition to be a longer term option, to be based on experience of actual flows and trades.

Views of respondents are sought on:

5.2.1 Should superposition be allowed for at this stage? And if so how?

6. The Allocation of Capacity

A distinction can be made between ***transaction*** and ***non-transaction*** based methods for allocating capacity.

The distinguishing feature of ***transaction based*** methods is that the ATC is allocated on the basis of transactions contracted by market participants. Responsibility for managing the limited capacity of the interconnector is borne by market participants. Various transaction based methods are possible. They include allocating capacity:

- On a first-come, first-served basis;
- Long before short, i.e., applications for transport capacity for long term contracts are honoured first. If any capacity is still left, it is allocated to spot applications;
- On a pro rata basis, in which applications are adjusted pro rata downwards if the sum of applications exceeds available capacity;
- By category, i.e., some for annual contracts, some for spot contracts;
- By merit order, i.e., the lowest priced contracts are allocated first. This method requires confidential information to be disclosed and may be more appropriate when selling into a mandatory electricity market.
- By auction, under which market participants would pay the real market value of the available transport capacity. Conditions could be imposed on the auction. For example, some capacity could be auctioned once a year for annual contracts, with the remaining capacity auctioned a day ahead of trading for spot transactions or all available capacity could be auctioned on a day ahead basis.

An advantage of transaction based methods of allocation is that market participants adjust their trading to the available capacity. A particular advantage of auctioning capacity is that it is allocated to the parties that value it most, i.e., those who would benefit most from using it. Disadvantages include the possibly high transactions costs of organising and reporting on auctions and the other transaction based methods. This may also slow down the contracting process.

Market parties may not actually use all the transport capacity that is allocated to them. One possibility is to implement a 'use it or lose it' principle, under which unused capacity is made available to the market again for short term or spot transactions.

In ***non transactions based*** methods of allocation, responsibility for resolving transport restrictions across the interconnector is borne by the TSOs or some other body such as an electricity exchange, and not by market participants. All transactions, in either direction, are executed, such that there is no need to allocate capacity.

At this time the nature of the electricity system, the development of the markets and the roles and duties of respective TSOs is such that a non-transactions based means of allocation has been ruled out of consideration.

Note: Whatever method is chosen for allocating capacity on the interconnectors it must meet the following criteria:

- Be objective and non-discriminatory;
- Be published and transparent for all market participants;
- Promote competition in the generation and supply markets in NI, RoI and Scotland and trade between them;
- Enable sufficient competition, in the sense that one party should not be able to acquire a disproportionately large share of the available capacity for a long period;
- Minimise the opportunities for gaming.

Views of respondents are sought on:

6.1.1 Are pay as bid auctions, employed to date for interconnector capacity and allocation, considered appropriate by market participants? If not, what would be an alternative approach?

6.1.2 Whether a 'use-it-or-lose' rule should be applied and, if so, how might it be implemented such that market participants have an incentive to release unused capacity with sufficient advance warning. For example, would the unused capacity be auctioned off? Would the proceeds go to the original holder of the rights?

6.1.3 In the event that capacity is auctioned or otherwise sold off, what should happen to the receipts from the auction? Should they go to reduce transmission tariffs in the two jurisdictions? Or into a ring-fenced fund to pay for future expansions of interconnector capacity?

6.1.4 Do market participants expect the net export arrangement as part of the NIE/SP supply agreement to impact on their decision making on capacity on the Moyle Interconnector? Who would be responsible if trade has to be restrained to meet this agreement and who would be responsible for any penalties incurred?

6.1.5 Who should be responsible for allocating capacity on the interconnectors?

- Should this fall to the two TSOs, who under the terms of the IME Directive are charged with despatching functions?
- If so, how should they co-operate?
- What is an appropriate means of regulatory oversight?

6.2 Interconnector Products

There are a number of different types of interconnector capacity products which may be sold. Capacity may be firm or interruptible, it may be sold in periods of the year, month, week or a day ahead. There may be provision for assignments of rights, so that unused interconnector capacity may be sold on by its owners. Consideration should be given by respondents to an appropriate means to apportion interconnector ATC into a suitable product range, and the capacity which should be made available to each. It is assumed that these products will attract different prices at allocation. Arrangements may be considered to support several interconnector products, for example, at least one auction for each type of product could be held.

An additional issue for consideration is the allocation of capacity across both interconnectors together. A product of one capacity agreement for both interconnectors would guarantee joint

access. Separate capacity arrangements on the two interconnectors would leave all risk to participants.

Views of respondents are sought on:

6.2.1 Which interconnector products should be sold?

6.2.2 Should a product be offered where participants can pay a premium for the option to go all the way through both interconnectors with guaranteed access?

6.2.3 Is 12 months a suitable maximum capacity allocation period, and if not what would be a reasonable alternative?

6.3 Frustration of Trades

Booking capacity for the interconnector can be based on a number of alternatives including:

- A firm basis, where customers are guaranteed capacity, except under certain circumstances, such as *force majeure*;
- A non-firm basis, where capacity is bid for on the understanding that it may not be available, and in such circumstances there is no entitlement to compensation. Participants must bear their own risk in the transaction if a trade is frustrated.

With the possibility of energy being sourced in GB and sold in NI or RoI, the inherent risk of failure which frustrates trade should be considered by market participants. The cost of insuring against such risk will fall on capacity acquirers either through higher reserve prices on interconnectors or via their own risk management strategy. Ofreg favours a non-firm, non-guaranteed allocation, as participants are best placed to manage their own risk.

Views of respondents are sought on:

6.3.1 Whether capacity should be allocated on a firm basis and, if so, what rules should apply in the event that available capacity falls short of allocated capacity on the day, e.g., because of unexpected maintenance work on the transmission networks either side of the interconnector or on the interconnector itself?

6.4 Green Corridor

The role of renewable generation in the GB, NI and RoI markets must be noted when developing interconnector trading arrangements. Ofreg is considering the merits of reserving capacity or offering preferential rates for renewable trades. The possibility therefore exists for a 'green corridor' which could extend from Scotland into NI, and potentially on into RoI, and vice versa.

Views of respondents are sought on:

6.4.1 Should provision be made for a 'green corridor' across each interconnector which would reserve capacity to facilitate trades in renewable electricity?

6.5 Exports to Scotland

For the first three months of Moyle Interconnector operation, only import capacity has been allocated as it was not considered feasible to offer export capacity to Scotland initially. However, from 1 April 2002 exports should be considered in order to provide open interconnector access and maximise trading potential. When determining export ATC, consideration should be given to the requirement in the NIE/SP Supply Agreement requirement of a 125MW net inflow into NI.

Views of respondents are sought on:

6.5.1 Should export capacity be available from 1 April 2002?

6.5.2 If so, on what terms, and how should this export be managed given the requirement in the NIE/SP Supply Agreement requirement of a 125MW net inflow into NI?

7 Transmission Pricing

There are three inter-related but distinct costs incurred in transporting electricity from a generator to a consumer across a transmission system. One is the energy lost as a result of resistance in the transmission lines. A second is the cost incurred in resolving network constraints to maintain voltage and frequency. Part of these costs are marginal in the sense that they vary directly with the amount of energy being transported. The third type of cost is the cost of providing, maintaining and developing the network itself. This cost is generally invariant to the amount of energy being transmitted.

These costs are generally recovered in the form of three or four charges:

- Connection charges, which recover the costs of particular assets required to connect generators and consumers to the high voltage network;
- So called entry and exit charges, which recover the fixed costs associated with the transport of energy; and possibly
- A per kWh charge levied on the amount of energy transported, to recover the cost of losses and congestion.[4]

In a typical configuration generators might pay an entry charge for access to the network and consumers pay an exit charge. Both entry and exit charges are typically non-marginal, in the sense that they are based on a measure of capacity or peak demand. Most cost-reflective network tariffs include a high proportion of capacity (kW) and fixed monthly and annual charges, rather than energy (kWh) charges.

7.1 Harmonisation of Tariffs

It is important that the structure of transmission tariffs in RoI, NI and Scotland do not inhibit trading. This would be the case if either a generator (or a consumer) paid more in entry (exit) charges in exporting to (importing from) the other jurisdiction than it would if it supplied a customer in its own jurisdiction. In other words, to avoid distortions to trade, a generator in

[4] In some systems, these costs are recovered through the spot market in electricity.

RoI/Scotland wishing to supply a customer in NI must be treated in NI as if he were a generator in NI wishing to supply a customer there; and vice versa. Similarly, a consumer in RoI/Scotland wishing to buy from a generator in NI must be treated the same as a customer in RoI/Scotland wishing to buy from a generator in RoI/Scotland.

Inhibited trade is avoided by harmonising the relative components of the 'entry' and 'exit' charges in the two jurisdictions to avoid any competitive distortion. In NI a split transmission charge of 25% entry falling on generators and 75% exit falling on suppliers has been adopted. As this structure is compatible with Irish charging methodology it allows a single entry and exit charge to apply in each jurisdiction and thus avoid competitive distortions such as pancaking or double charging of tariffs. This means that a customer in NI should be relatively indifferent between buying from a generator in NI or from a generator in RoI (and vice versa). Equally, a customer in RoI should be relatively indifferent between buying from a generator in the RoI or in NI.

Tariff harmonisation should be based on the principle of appropriate charges to reflect the actual economic cost of transmission in each area. As long as tariffs recover sufficient revenue to meet costs incurred, they need not necessarily be of identical structure in each interconnected area. Harmonisation should be satisfied when the economic cost of system use is recovered.

A system is required to interface the Moyle Interconnector with the Ireland model of transmission charging to enable trade with Scotland, NI and RoI while meeting EU rules on cross border transmission pricing. This system must enable trade while avoiding competitive distortions such as pancaking or double charging of tariffs with the result that a customer in NI (RoI) would be relatively indifferent between buying from a generator in NI (RoI) or Scotland so long as the actual trade itself is economic.

Views of respondents are sought on:

7.1.1 Is the present N/S model acceptable for a basis for Moyle and N/S trading?

7.1.2 What is an appropriate means of integrating Scotland into the N/S model for charging for transmission costs in cross border trades?

7.1.3 Will this require harmonising method or harmonising charge?

7.1.4 How will the method reflect the costs of the system?

7.2 Transit Flows/ Wheeling

At present on the N/S interconnector there is no separate use of interconnector charge levied for transit of electricity, nor for the transit of energy through the NI system to the RoI. With no separate interconnector charge the interconnector is treated as part of the transmission system.

The losses to be considered on the Moyle Interconnector will be 2.23% at full load, with a further 2% loss adjustment factor for transit flows on the NIE system and 2% losses on transfers to the RoI.

With the completion of the Moyle interconnector, there will be an increase in network costs in the NI system as a result of 'wheeling' power between Scotland and RoI and vice versa. The cost of such flows to the NI system will not be recouped under the existing transmission charging arrangements. These transit flows through the NI system from Scotland to RoI must be properly charged to those parties which cause the costs to be incurred in the host system.

Views of respondents are sought on:

7.2.1 Should NIE levy a transit or "wheeling" charge on those interconnector flows which are intended to transit the NIE system from Scotland to RoI, and on an appropriate means of determining any charge to be levied?

7.2.2 If a 'wheeling' charge is levied how will transmission losses be incorporated?

7.2.3 If a 'wheeling' charge is not levied how will the resultant increases in transmission costs be covered?