Generation and Supply Competition in Northern Ireland

Power Procurement, Interconnection and the Competitive Market

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

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Introduction

The EU Directive on the Internal Market in Electricity fully liberalised the electricity market for 35% of the electricity consumed in Northern Ireland. Customers in this market are entitled to purchase from the supplier and generator of their choice and - thanks to interconnectors with Scotland and the Irish Republic - they may buy electricity from anywhere in Great Britain or the Irish Republic as well as Northern Ireland.

Despite this fully competitive environment for eligible customers, generation costs in the fully liberalised part of the market remain stubbornly higher – up to 50% in some cases - than in Great Britain. These high electricity costs impose a serious competitive disadvantage on Northern Ireland industry. The purpose of this paper is to set out proposals for injecting fresh vigour into Northern Ireland's competitive market.

If the position of the fully liberalised market is poor, the position of franchise customers is clearly even worse. They too must be the beneficiaries of change.

Re-designing the generation market

There is no inherent reason why a competitive generation market in Northern Ireland should produce prices higher than GB. But competitive markets will only work for consumers if they are properly designed.

The fundamental flaw in our present arrangements is the lack of efficient indigenous power stations capable of competing with generators in Scotland and the Irish Republic.

With the commissioning of new Combined Cycle Gas Turbines (CCGTs) in both Northern Ireland and the Republic, the opportunity will exist next year to inject a new competitive dynamic into the Northern Ireland market.

To translate these new opportunities into lower prices for customers some changes in market design are essential.

With a new CCGT being built at Ballylumford, the existing Kilroot power station and the Moyle take or pay contract (a 70 month contract with Scottish Power for the import of electricity across the Moyle Interconnector), PPB will have a substantial portfolio of potential electricity production greatly in excess of the needs of franchise customers.

At present, other generators are not free to sell to the franchise market and PPB's generation is not free to compete on equal terms with Independent Power Producers (IPPs) for eligible customers. This situation is fundamentally anti-competitive and results in higher prices for both franchise and eligible customers, rather than allowing both types of generator to compete on equal terms for all customers.

This paper considers the issues involved in more detail. Part I refers to potential changes to the existing wholesale electricity trading in NI, and Part II brings in the importance of interconnector capacity in promoting further competition.

PART I : The Wholesale Generation Market in NI

Background

In order to gain perspective, it is important to examine the competitive dynamics at work in the sector as it now stands. The supply sector has always been theoretically fully open, but it was designed such that suppliers were constrained to buy at Bulk Supply Tariff (BST) from the NIE Power Procurement Business. The BST is a published tariff available to all suppliers, and which is set to recover the cost of the long term generation contracts to which PPB is party. The initial intention of this arrangement was, in an unliberalised generation market, to provide a "level playing field" for any supplier which sought to enter the market. The low level of market entry, prior to the liberalisation brought about by the EU Directive, illustrates that the market structure put in place at privatisation did not deliver competition.

This constraint to purchase BST now only applies to the non-"eligible" 65% of the market, and those non-domestic customers which do not avail of the renewable market liberalisation. Please see the Ofreg website (http://ofreg.nics.gov.uk) for details of previous consultation papers.

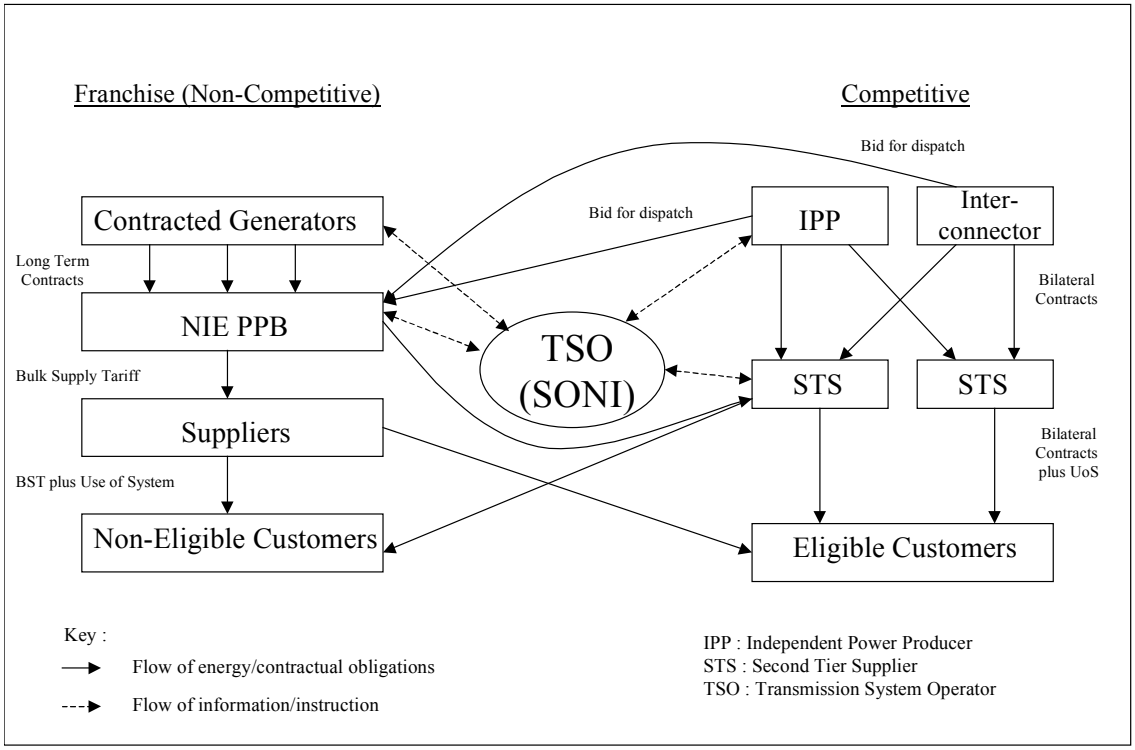
The PPB was established in 1992 as a monopsony/monopoly buyer/seller of energy under NIE's Transmission and Public Electricity Supply Licence, and was required to raise a BST to cover the (since determined to be excessive) costs of the long term generation contracts which it inherited. This was enshrined in the Supply Competition Code (SCC). The SCC is the document which binds all generators and suppliers to the present wholesale arrangements, and also provides the definition of "eligible" customers as required under the European Internal Market in Electricity (IME) Directive.

Power Procurement and Competition in the Generation Market

As Ofreg has argued in earlier consultation papers, the only barrier to full generation competition which remains is the existence of the SCC link between non-eligible

customers (through their suppliers' requirement to purchase BST) and the PPB, which is required to buy and sell on set terms. If the SCC were to be amended to break that link, and end the requirement for suppliers to buy BST for non-eligible customers, then we could achieve co-existent competition in the generation and supply markets.

Figure 1 : Overview of the existing market separation


Franchise (Non-Competitive)
Competitive
Bid for dispatch
Contracted Generators
Bid for dispatch
IPP
Inter-
connector
Long Term
Contracts
Bilateral
Contracts
NIE PPB
TSO
(SONI)
Bulk Supply Tariff
STS
STS
Suppliers
Bilateral
Contracts
plus UoS
BST plus Use of System
Non-Eligible Customers
Eligible Customers
Key :
Flow of energy/contractual obligations
Flow of information/instruction
IPP : Independent Power Producer
STS : Second Tier Supplier
TSO : Transmission System Operator

The diagram above shows the effective separation of the two generation markets. Ofreg proposes that the wholesale market of IPPs and interconnectors be merged with the energy produced by generators under long term contract to PPB.

To take the analysis further, the PPB could become a generation contract portfolio owner, and would be free to sell its potential output to whichever supplier at whatever price the market would bear. Suppliers, including NIE Supply, could buy energy from whichever source, including IPPs, via the interconnectors or by commissioning its own plant.

Figure 2 : Possible Market Structure

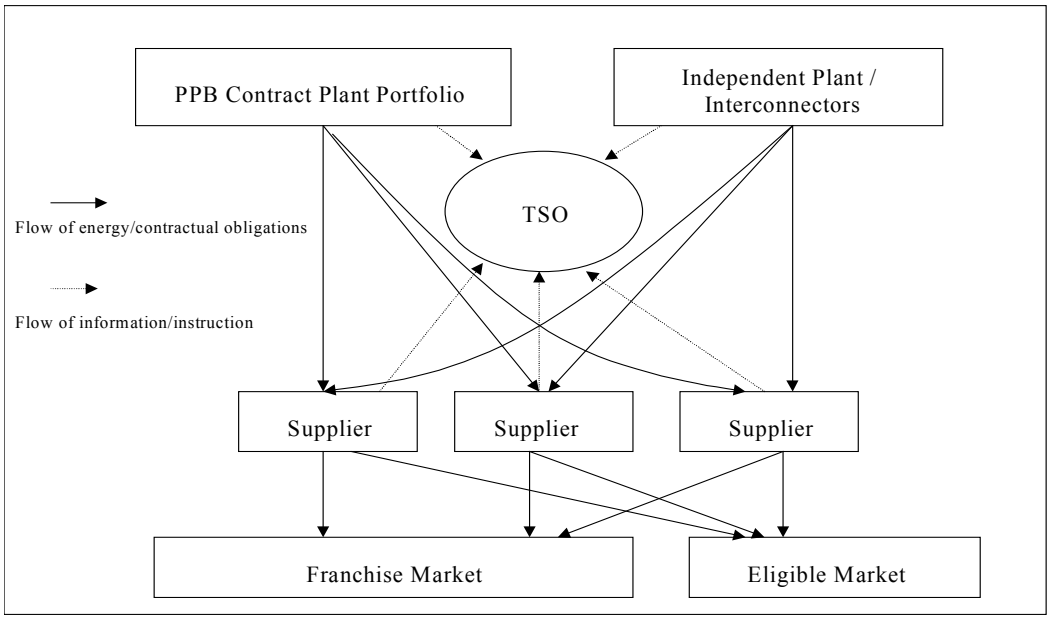


Figure 2 above illustrates a possible market structure following generation market liberalisation. All suppliers (for both franchise and eligible markets) will be able to

purchase power from either PPB or from the independent sector (including via interconnectors).

If we take into account the economic reality facing the NI electricity sector, then we may see a very small change to the status quo over the coming years in terms of risk and ownership, but we have established at little or no cost an important step towards a fully competitive electricity market.

The effect of this proposal would be to introduce generation competition, allow suppliers to choose, and allow the opportunity to PPB to maximise revenue to offset its long-term contract costs.

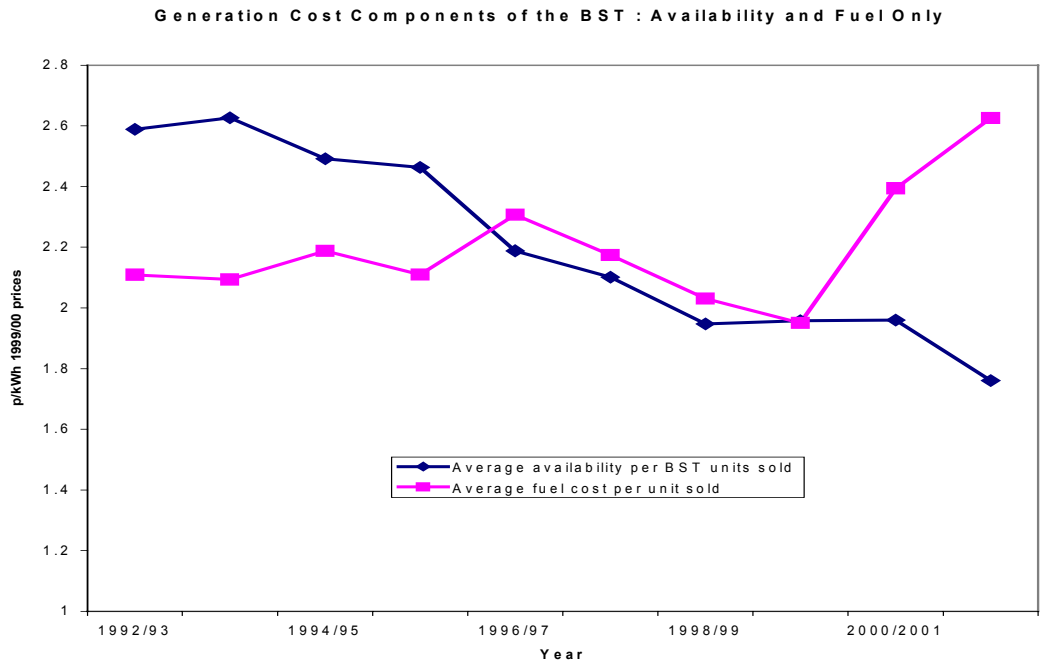
There will be limited new generation capacity on the island system over the next few years. NIE contracted plants (by this stage Ballylumford's CCGT and Kilroot on coal) will, at the margin, be among the most efficient and cheapest of their type on the island. It is likely that both could achieve significant sales, and since the marginal cost will be reasonable, sculpted energy charges to suppliers could significantly cover the Power Procurement costs.

There are a number of issues which need further examination.

The Long Term Contracts – Power Purchase Agreements

The Power Purchase Agreements (PPAs) have long been cited as the main barrier to lower electricity prices. This has been correct in the past, but the elements which make up the PPAs need to be examined more closely in the context of market reform.

Figure 3 : Availability and Fuel Costs since 1992.



Source : Ofreg, based on price control submission data.

The graph above shows that the fixed availability-type charges per unit of electricity sold by PPB have declined since 1992, and this despite the fact that since market opening in 1999 the costs have not been shared across the whole customer base. The upper line however reflects the volatility of fuel prices, particularly the cost of gas fired generation. The graph above illustrates those fixed PPB-only availability costs,

and has been adjusted for the costs which are now included as the System Support Services levy (SSS). In broad terms the graph displays an encouraging picture of long term trends in fixed generation costs.

The PPAs were a product of a centralised and unliberalised electricity industry, hence many elements of what would now be recognised as System Support Services (SSS) or Public Service Obligations (PSO) were bundled into the contract capacity values, on which the Base Availability Charges (BACs) in the PPAs were set.

These bundled charges include ancillary service payments, payments for Gas Turbine (fast start) availability, a Fuel Diversity Levy, Customer Buyout Payments (Ballylumford), renewable energy (NFFO) levies, and proposed Capacity Payments for generators to restore the Generation Security Standard (subject of a separate Ofreg Consultation).

NIE PPB is obliged under the PPAs to make significant fixed payments to generators based on availability of generation plant, whether or not that plant actually produces electricity, and it is also liable for other fixed charges, including a take-or-pay gas contract. The principle follows that the more energy PPB sells, the greater contribution each unit sale makes to the fixed costs – ie the average total cost to customers falls. In a constrained trading mechanism, PPB is not be able to maximise the benefit from sales, since it is required to make the bulk of its sales at the BST to the franchise sector. PPB is already incentivised to make sales to the eligible market, but the scope for doing so is limited by the requirement to satisfy the full franchise demand first.

The proposals in this document would allow PPB to treat the NI electricity sector (and by extension the RoI market) as a single market, and sell its energy accordingly. The potential output of the PPB generation contracts could be made available for sale to any supplier, whether franchise or eligible, and in this way maximum benefit could be obtained to minimise the out-of-market costs of the contracts. Since the contracts are available for sale to the entire market, it is appropriate that certain cost elements currently recovered solely from franchise customers should be spread across the whole customer base.

This market structure would serve also to compel imports from Scotland, the Republic of Ireland or energy from new indigenous IPPs to be more competitive, as there will be a new price in the market which is not constrained by the BST. The PPB plant will compete to sell to STSs and the NIE franchise market. Given the finite level of connected generation and import capacity, generation competition will most likely be at the margin. Most producers will be able to sell their output, but to secure sales they will have to price more keenly. The party which is prepared to make the best offer should therefore have access to the energy. PPB should also operate in an all-island basis – the ability to expand the market will increase its ability to make a return on the PPAs. To this end PPB should act as would any other generator in attempting to secure necessary interconnector capacity.

Stranded Costs

This proposal inevitably will leave the PPB subject to risk on sale of energy, and there will be an explicit need to back up its contract payments with a direct link to some means of recovering revenue. If the PPB business were established, say, as a business with a statutory or legislative right to recover losses against a Competitive Transition Charge (CTC or "stranded cost") levy, then it could be effectively incentivised to act in a manner which maximises the benefits from the PPAs and which would set a market-tested minimum stranded cost levy.

Stranded Costs are those costs or obligations which fall on market participants (PPB in the NI market) which may not be met when market liberalisation takes place. As part of the market opening which took place under the IME Directive, DETI has the power to implement a CTC or stranded cost levy. There has not yet been a need to implement the CTC levy, as market opening to date has been developed without "stranding" significant costs. Should there prove to be stranded costs as a result of these proposals, then the Department has the right to introduce a levy across all customers to make up a shortfall.

The European Commission has stated that any levy should be of a minimum life, and should bridge the gap between out-of-market costs being incurred and the development of competition.

It may be worth examining whether the sales by PPB in the period when there is a physical generation capacity shortfall should be made at a price which reflects this scarcity, and a fund based on the surplus from these sales established to defray the out-of-market costs of the PPAs in later years.

Customers should, however, not be concerned about the possibility of having to pay a CTC levy. The levy would only be collected if PPB could not recover the full cost of its contracts in the market. But this would mean that the prevailing market prices would be lower than they are today and the levy could not bring them up to a higher total cost than the cost to customers under the status quo. In other words the existence of the levy is a signal that market prices are actually lower than they would have been had the liberalisation of the generation market not taken place. Customers would be better off as a result.

PART II : Generation Capacity and Interconnectors

History

The Generation capacity in Northern Ireland has undergone modest but important reform since 1992. The contracts at Belfast West have expired and the station has closed, Coolkeeragh will close by 2004 (to be re-powered by a market-risk or "merchant" CCGT plant), and the Ballylumford station contract has been refinanced with the plant being converted to an efficient Combined Cycle Gas Turbine. The excess cost in the initial Ballylumford contract has been bought out and the Ballylumford Customer Buy-Out (CBO) has been established to recover these costs. When the market opens fully, the CBO cost recovery can expand to include all customers (presently only franchise customers are covered as Ballylumford is contracted to the PPB). Only the Kilroot contract remains unchanged, but there are proposals to refinance and re-power that station also.

The Northern Ireland market is no longer isolated in electricity terms. We now have a 500 MW interconnector with Scotland and an interconnector with the Republic of Ireland which has a potential capacity of up to 600 MW (currently limited to 170 MW export and 70 MW import, primarily for system constraint reasons which will ease over time).

In this context we must consider longer term generation competition to include energy imports and exports. The importance of the availability and allocation of interconnector capacities becomes apparent.

Efficient markets need information and certainty. Low cost markets need there to be a choice of sources of supply, and preferably a surplus of supply over demand. The structures of a generation market, and by extension of interconnector capacity allocation, need to be transparent, predictable, efficient and provide close to real time flexibility.

To meet these objectives we must ensure that generation capacity, competition and interconnection are considered in concert.

The first stage of the development of a new interconnector trading model was established in 2001 in light of the commissioning of the Moyle Interconnector, with the Ofreg consultation on 'Interconnector Trading Arrangements'. Prior to the commissioning of the Moyle Interconnector, the trading arrangements for the North-South link were in place since February 2000. The model put in place in 2001 integrated Moyle with the N/S arrangements. In response to feedback from the consultation, Ofreg issued a decision paper regarding the Interconnector Trading Arrangements for 2002/03. (Relevant previous papers are available from the Ofreg website.)

Interconnector Trading Arrangements 2002/03

System Operator Northern Ireland (SONI), which carries out the Transmission System Operator role in NI, manages the interconnector trading system. Further development of systems and methods will be in co-operation with SONI.

The Interconnector Trading Arrangements 2002/03, have enabled the eligible market to gain access to all of Moyle's effective available transfer capacity (ATC). By providing competition, the availability of this capacity has brought benefits to the eligible customer market, as has the sale of the Moyle Equivalent Energy (MEE) by PPB. The sale of the MEE capacity also allowed PPB to offset the cost of the take-or-pay contract with Scottish Power, and reduce the cost exposure to the franchise market, which did not require the energy to meet its energy demand.

In response to the demands of the market, the Trading Arrangements facilitated the auctioning of various interconnector "products", which included, 3 year Moyle import capacity; reserved "green corridor" (renewable energy only) capacity on each interconnector, and transit flows across both interconnectors.

Interconnector Trading Arrangements 2003/04

The first full year of integrated Moyle and N/S trading will end on 31 March 2003. To facilitate continuous development, it is now appropriate to consider how the trading regime on both Moyle and the North-South interconnectors should be reviewed with the aim of improving the efficiency and transparency of the allocation procedures, and where feasible improving the short term allocation of capacity.

Moyle capacity is being used effectively and will reduce prices paid by eligible customers in NI. However, there is a need for ongoing development of processes and systems to ensure that the maximum benefit is delivered. A number of operational refinements may be possible.

For example, short term capacity transfers between capacity holders should be facilitated to take advantage of differing usage needs, to allow for the resale of capacity rights when a user declares to SONI that it will not be making use of all or part of its holdings, and to allow short term trades which make use of capacity booked but not used after gate closure for nominations. This could increase the flexibility of trades and allow users to take advantage of short term market positions.

Other types of interconnector trades may be possible, for example the sale of a "Green Interruptible" product, which would facilitate the trade of renewable electricity but which could be interrupted over system peaks to allow the System Operator to have access to the capacity. (If renewable imports are not settled in each half hour, then this allows the capacity to be used and the energy can be "replaced" at a later stage when the interconnector is less heavily loaded.) A matrix of bids and offers could be developed which would enable this to work.

Superposition

In light of trading experience of actual flows and trades on the Moyle and N/S Interconnectors, "superposition" may now be considered as a means of solving congestion problems on the N/S interconnector, by allowing trading transactions in

excess of physical limits on flows of electricity. Superposition uses the principle that two electricity trades in opposite directions on an interconnector effectively "net to zero", allowing additional transactions. In considering any arrangements to allow for superposition, the EU Regulation Proposals on conditions for access to the network for cross-border exchanges in electricity will be taken into account.

Allocation Methodology

Respondents are invited to consider whether the existing auction process for allocating interconnector capacity should continue, and in particular whether there are improvements which may be introduced. Based on responses, Ofreg will produce a further technical consultation paper in September 2002 which will consider the effectiveness of the auction process used last year. It will also suggest options for the auction process for the 2003/04 trading year.

Secondary Markets

A developing market often suffers from asymmetry of information. Traders may not be aware of economic and mutually beneficial trades. A market facilitator could emerge which could carry out trades in capacity allocations between interconnector users in an efficient way – such trading would maximise benefit to capacity holders, and could potentially be operated by SONI if no external party were to come forward. In broader terms there may be scope for an independent power exchange to operate in the pre nomination market to allow suppliers and generators to make best use of their available generation contracts, as well as interconnector capacity holdings. Such secondary markets are an important element of energy trading.

Conclusion

The liberalisation of the wholesale energy market and the further development of interconnector trades will increase the contestability of the NI generation market. Such change must benefit all customers, not just those customers who have the choice of supplier. The franchise market customer, largely still supplied by the NIE Supply business, must also see a reduction in the wholesale generation cost implicit in tariffs. The efficient trading of the PPB energy portfolio in the wider market, which should decrease average unit costs, combined with a re-balancing of fixed charges across the customer base should lead to a net gain for the franchise sector.

Increased choice for suppliers to the eligible sector, including more freedom for PPB to offer competitive products, and further experience in interconnector trades should offer further benefit to larger customers.

Consultation

Respondents are invited to comment in detail on the contents of this paper, and particularly on:

- Which is the most economic means to achieve generation competition?

- How should the PPB operate in any liberalised wholesale market structure?

- How should interconnector trading be integrated into a liberalised wholesale market?

- What further revision to interconnector trading arrangements would facilitate most efficient use of the available capacity?

Responses should be sent to

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The closing date for responses is Thursday 12 September 2002.

Copies of this paper can be made available (if required) in large print, Braille, audio cassette and a variety of relevant minority languages.

Please enclose a one page summary with your response.

Glossary of Terms

BST (Bulk Supply Tariff)	the tariff of that name published by NIE under Condition 3 of Part III of the Transmission Licence for sales of electricity by NIE acting through the Power Procurement Business (as defined in the Transmission Licence)
CBO	Ballylumford customer buyout : the excess costs of the Ballylumford power station contract, re-profiled and recovered across the BST
CCGT	Combined Cycle Gas Turbine : electricity generation technology
CTC	Competitive Transition Charge or "stranded cost levy"
Franchise Market	the non-eligible market, ie the 65% of the market not covered by the IME Directive liberalisation.
IPP	Independent Power Producer : independently owned or "merchant" generator
KW (kilowatt)	this is equal to 1000 watts
KWh	one "unit" of electricity
Moyle	the Scotland-Northern Ireland electricity interconnector
MW (megawatt)	this is equal to 1000 kilowatts or one million watts
PPB	NIE's separate regulated business under the licence, which acts as buyer and seller of wholesale electricity, and produces the Bulk Supply Tariff
GWh (gigawatt hour)	this is equal to the electrical energy produced, flowing or supplied by an electrical circuit during one hour (where 1 GWh is equal to 1000 MWh, 1 MWh is equal to 1000 kWh and 1 kWh is equal to 1000 watt-hours)
IME	Internal Market in Electricity : the EU Directive which came into force in NI in 1999, requiring partial liberalisation of the NI electricity sector

Load	the amount of electric power delivered or required at any specific point or points on a system
Load factor	is equal to the ratio between average usage and maximum demand
NFFO	Non-Fossil Fuel Obligation : legal requirement for NIE to purchase energy from renewable sources, and to collect excess costs from customers
Peak demand	the maximum load during a specified period of time
PPA	Power Purchase Agreement: the contracts between PPB and NI generators, signed at privatisation for the provision of electricity generation.
SCC	The Supply Competition Code : the document which outlines the means by which the electricity market trades take place.
SONI	System Operator Northern Ireland : the wholly owned subsidiary of NIE which carries out the Transmission System Operator role in NI.