



**Charges for Connecting Groups of Generators to  
the Northern Ireland Distribution System**

**Consultation Report**

**15 October 2010**



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## **1 Introduction**

Northern Ireland Electricity plc (“NIE”) issued a consultation paper on 16 March 2010 seeking views by 28 April 2010 on a number of connection charging methodology options which were designed to recover the cost of connecting groups of generators to the NIE distribution system.

A copy of the consultation paper can be obtained at:

[http://www.niegetconnected.co.uk/downloads/Generator\\_Connection\\_Charges\\_Consultation\\_Paper.pdf](http://www.niegetconnected.co.uk/downloads/Generator_Connection_Charges_Consultation_Paper.pdf)

The consultation paper provided in some detail a description of how NIE was continuing to receive numerous requests from wind farm developers seeking connections to the Northern Ireland distribution system and advised that NIE was concerned that not all wind farms could be connected using sole-use overhead power lines. It stated that NIE could therefore see no alternative other than to connect many of the wind farms into shared substations, a process which would require the development of a new connection charging methodology.

The consultation paper also requested views on certain other aspects of NIE’s existing distribution connection charging methodology.

Seven responses to the consultation were received. This report discusses the points raised in the responses and sets out NIE’s views on each.

NIE sets out in this report certain criteria which have been used to assess the responses and to develop a charging methodology proposal.

Finally, the report sets out NIE’s recommendations for changes required in connection charging policy.

NIE realises that respondents will hold views because of their commercial positions. However, NIE as the licensee is charged with acting in a non-discriminatory manner and must make a set of recommendations to the Utility Regulator in keeping with licence and statutory obligations.

## **2 Summary of Consultation Charging Options**

### **2.1 Option 1**

This option entails re-designating the charging boundary between connection assets and system assets, system assets being those assets which are funded through use of system charges.

The connection boundary would be shallower than it currently is. Only the ‘sole-use’ assets would be defined as connection assets. The shared ‘connection’ assets would be funded by use of system charges.

If respondents favoured this option NIE sought views on how the use of system charges might be levied. Distribution use of system charges are currently only paid by Suppliers. If that continued to be the case, it would reduce the connection charge payable by the developer but would increase the costs borne by Suppliers in Northern Ireland. These costs would in all likelihood be passed through to customers in their electricity bills.

Alternatively, the costs of the shared connection assets could be funded by a new generator distribution use of system charge and/or the generator transmission use of system charge, should some of the shared assets have a nominal voltage of 110kV and above. Although this would reduce the connection charges payable by developers it would increase their ongoing costs through use of system charges. Suppliers, and therefore Northern Ireland customers, would not be directly affected by this option.

NIE has not considered a new generator distribution use of system charge in any detail. Respondents were asked to submit views on the design and application of such a charge.

Another variation was described where the shared assets were funded by a new generator distribution use of system charge and through Supplier use of system charges. This would also reduce the connection charges payable by developers but would increase the Suppliers' charges, although to a lesser extent than if the shared assets were funded by Suppliers alone.

## **2.2 Option 2**

In this option the first to connect would pay the full cost of the sole-use assets and the full cost of the assets which might be shared at some point in the future. When any further connections are commissioned the first to connect would receive a partial refund in respect of payments for the shared assets, based on the relative usage of the shared assets. There would be no partial refund for the sole-use assets.

This would place a high cost on the first to connect. There would be no impact on Suppliers and therefore no impact on Northern Ireland customers.

Views were sought on the time period over which partial refunds might apply. Under the transmission connection charging methodology SONI will issue partial refunds if the initial developer connected within the preceding ten years. The Electricity (Connection Charges) Regulations (Northern Ireland) 1992 specify five years.

## **2.3 Option 3**

In this option each developer would pay in full for the sole-use assets and would pay a proportion of the shared asset costs, based on the fraction of the total connection capacity. In other words, if the connection capacity was, say, 70MW, and the first generator to connect had a capacity of 23MW then it would pay 23/70ths of the cost of the shared assets.

In this option it is possible that some of the costs of the shared assets would never be recovered from the developers as it would require the generation capacity connected to equal the connection capacity. The balance would need to be recovered from Suppliers

through use of system charges and would ultimately be borne by Northern Ireland customers should, as is likely to be the case, those costs be passed through by Suppliers. One way of reducing the risk of failure to recover costs, and at the same time improve energy efficiency, is to ensure that the transformer initially installed at the cluster substation matches the capacity of generation connected in the medium term. The transformer size could be used to define the connection capacity.

NIE considered how charges would be re-set if a developer sought a connection of sufficient capacity to cause the total connected generation capacity to be greater than the capacity of the connection. This would require increasing the connection capacity by the addition of a further transformer at the wind cluster point. It is assumed that the overhead line could cope with this increase. In most scenarios this would lead to refunds to those already connected even although the cost of the shared assets had not been fully recovered. A benefit would be that the additional transformer would lead to increased security. (As explained later in this report NIE has developed its thinking on this aspect of Option 3.)

Use of system charges would be applied in the early years to recover NIE's financing costs but amounts paid would be returned to customers in the years following the final connection provided the connection capacity was fully utilised.

#### **2.4 Option 4**

In this option each developer would pay in full for the sole-use assets and would pay a proportion of the shared asset costs, based on the total capacity expected to connect. In other words, if the total capacity expected to be connected was 59MW and the first wind farm to connect had a capacity of 23MW then it would pay 23/59ths of the cost of the shared assets.

Under this option, if all the generation capacity that was expected to connect did connect there would be no net impact on use of system charges. Use of system charges would be applied in the early years to recover NIE's financing costs but the amounts paid would be returned to customers in the years following the final connection.

### **3 Responses received**

Seven responses to the consultation were received:

- Wind NI;
- Renewable Energy Systems;
- SSE Renewables;
- ESB Wind Development;
- VP&E;
- DW Consultancy; and

- ABO Wind

NIE is grateful to those who took the time to consider the issues and respond.

## **4 General Comments on the Development of Clusters**

### **4.1 Clustering Approach**

NIE is encouraged that almost all respondents explicitly stated their agreement with NIE's view that there will be difficulties in connecting all future wind farms by means of individual overhead power lines and that it will be necessary in some cases to connect them to a shared node and common, higher-voltage line. Respondents also agreed that to do so should:

- reduce the aggregate length of overhead lines;
- increase the amount of generation which can be connected to the distribution system;
- facilitate the achievement of the 40% DETI target; and
- reduce connection timescales.

Some respondents made the point that each wind farm should be considered individually for connection to either a cluster or a dedicated line. NIE is in full agreement with this proposal.

One respondent expressed an endorsement for avoiding a group processing approach, such as the type used in the Republic of Ireland.

### **4.2 Liaison with the Planning Service**

Several of the respondents expressed their support for the initiative for close liaison between NIE and the Planning Service, introduced with the aim of reducing planning difficulties when developing an overall connection plan, thereby maximising the connection of renewable sources of electricity.

### **4.3 Conditional Support for Clusters**

Whilst supporting the overall principle of developing connections through clusters, three respondents stated that their support is subject to certain conditions. Taking each condition in turn:

***Connection charges should not be materially higher than what the charges would have been for individual connections.***

NIE agrees that this would be an ideal outcome but does not believe that this can be achieved for all wind farms in all clusters. Individual connection charges will be a function of the cost of establishing each cluster and NIE therefore believes that some developers may pay more under the cluster approach than they would have paid under an

individual approach, albeit that the latter option is not possible due to planning restrictions.

One respondent further proposed that if the charge to connect to the cluster is greater than the charge which would have been imposed if connected individually, then the LCTA principle should be retained. NIE believes that this proposal highlights perfectly the difficulty with the LCTA principle. If this proposal was to be implemented then the cost of the cluster would not be fully recovered from those connecting to the cluster and the balance would need to be funded by customers in Northern Ireland.

***Connection delays should not occur due to the cluster connection***

NIE agrees with this principle and that is the thinking behind the current dialogue with the Planning Service. Having said that, NIE recognises that the industry is expressing this concern because the existing system (under which pre-construction activity on clusters only commences after planning permission has been granted to wind farms) has resulted in delays.

***The cluster should deliver tangible benefits when compared to individual connections.***

NIE agrees with this principle, the main benefit being that the volume of individual connections would not be possible due to planning restrictions, land owner frustration or possibly network restrictions. NIE does not intend to develop clusters where they are not required.

***Should any connection assets be re-designated as ‘system assets’ at some point in the future then partial refunds should be made to developers.***

NIE agrees with this in principle but would need to consider each case on its own merit. It is also a decision which would require the endorsement of the Utility Regulator. Such a scheme would require transparent and readily comprehensible rules.

## **5 Views on Each Option**

### **5.1 Option 1 (very shallow connection)**

Three respondents stated that, in principle, this would be their preferred option but added that it should only be implemented in conjunction with a new use of system charge. They felt that this could take a significant time to design and implement as it would be necessary to ensure consistency with transmission use of system charges and be non-discriminatory on an all-island basis.

It was also stated that to introduce a more shallow charging boundary may entitle some generators who had paid less shallow connection charges to a partial refund.

NIE agrees with these views. It is unlikely that such a change could be introduced in time to address the pressing problems of wind farm connections.

A variation was also suggested whereby new assets operating at 33kV and below would be funded through connection charges and new assets operating at 110kV and above should be funded through use of system charges.

NIE believes that charging should not be based on operating voltage as this could unfairly discriminate between developers. If the common connection point could be located relatively near the developers their connection charge would be less. If the common node was nearer the 110kV backbone system then connection charges would be larger. NIE's view therefore is that this is not a sound proposal.

## **5.2 Option 2 (first developer pays for the whole cost)**

The five respondents who commented on this option did not support it on the basis that:

- it places an unreasonable cost and risk on the first to connect;
- it creates a barrier to entry; and
- it is a disincentive to connect.

One respondent proposed that this option could be made available on a contestable basis to developers. NIE addresses contestability later in section 6.5.

## **5.3 Option 3 (costs shared on per MW of capacity installed)**

Six respondents stated this was their preferred option.

A concern was that NIE might build a connection of unnecessarily high capacity, increasing the cost and, as a result, connection charges.

Modifications to this option were proposed by some respondents:

- Where two transformers are installed then the denominator shall be the sum of the capacities of the transformers; and
- The costs of the 110kV lines should be recovered based on the capacity of the line (~145MVA) rather than the capacity of the transformer.

With regard to the capacity of the connection, NIE understands this point and has no intention of constructing clusters of excessive capacity.

Regarding the proposed modifications, both of these modifications increase the probability that the cost of the cluster will not be recovered from the developers and would consequently increase charges on Northern Ireland customers. Whilst NIE accepts that customers may have to bear some costs, at least in the early stages of development of a cluster, the charging methodology should be designed with the aim of maximising the chance of recovering costs from those parties who have requested that the assets be installed and who would directly benefit from those assets.

## **5.4 Option 4 (costs shared per MW of requirement assumed)**

Five respondents provided comments on Option 4, all proposing that this option should be discounted for a variety of reasons:

- Rebates would be complicated and difficult to administer;
- Charges are sensitive to transformer size;
- Does not enable developers to predict connection charge with any degree of accuracy;
- Could result in capacity hoarding; and
- Increases costs to developers.

NIE understands the comments provided. NIE has taken these on board and sets out an alternative hybrid model in section 8.

## **6 Views on Other Connection Charging Policies**

### **6.1 LCTA**

Three respondents supported the retention of the LCTA principle.

One respondent proposed that its retention can be justified as it would allow NIE to construct connections which are larger or more expensive than required for an individual connection in order to create spare capacity.

NIE's view is that the extent to which a network should be expanded to cater for future requirements is determined by the planning standards and demand and generation forecasts. NIE does not believe a particular charging methodology should be introduced because it allows NIE to construct larger connections than otherwise would be the case in order to create spare capacity.

Creating connections to accommodate future needs is advantageous where there is a reasonable certainty that the capacity will be required and where to do so would be an efficient way of developing the system. However, there are a number of ways of funding these developments and that is the subject of this consultation. NIE would re-confirm its view that the capacity of clusters will be set to strike the right balance between efficient investment to cater for credible future requirements whilst at the same not over-sizing the cluster thereby imposing higher connection charges on the developers.

One respondent stated its disagreement with NIE's interpretation of the LCTA principle in two areas:

- 1. The spare capacity created in constructing a higher capacity connection should be ignored when defining subsequent LCTA connections and that this should increase the probability of recovering the cost of the cluster.*

NIE interprets this as meaning that LCTA connections for the 2<sup>nd</sup> and subsequent developers should be priced as though the cluster does not exist.

NIE believes that this proposal almost represents the status quo and it has proven unworkable for the following reasons:

- NIE planners would be required to design and cost connections which are more complex than the connection to the cluster knowing that these connections would never be built;
- It would require the development of clear and unambiguous rules to derive LCTA connection charges, involving theoretical connections to the network as it existed at some time in the past; and
- It has the potential to generate numerous connection disputes with the subsequent developers.

NIE continues to hold the view that all the costs of the clusters would not be recovered from developers which is precisely why the LCTA methodology would not work.

*2. NIE should not make assumptions on the possibility of gaining planning consents for the LCTA option.*

NIE cannot agree with this view as it believes that the LCTA design should not be divorced from the reality of the connection. Overhead lines in an LCTA are not a straight line from the wind farm to the nearest point of connection. The route must take account of, for example, SSSIs and adjacent lines, in the same way that it would take account of geographical features such as lakes and mountains. The LCTA is an estimate of what the developer would have paid if NIE had built it. If there is reasonable evidence that the connection could not be built then that is not the LCTA.

One respondent opposed the retention of the LCTA principle. Various arguments were put forward:

- Route lengths are estimates and this can be highly contentious;
- There exists no facility for rebates;
- Based on virtual connection points which may be difficult to predict;
- Causes confusion in connection offers; and
- As connections are determined based on an analysis which is carried out on a snap shot of the distribution system (excluding any clusters) it will be difficult to predict how connections will be charged in 5 years from now.

NIE agrees with these views which illustrate the difficulties of the LCTA principle.

## **6.2 Use and Development of the Northern Ireland Electricity Network**

Two respondents emphasised the need to develop connections in conjunction with an overall strategic development plan for the transmission system.

NIE agrees completely with this point. Development of the transmission system is being taken forward in conjunction with EirGrid and SONI on an all-island basis with the objective of ensuring that new generation has access to an efficient and economical transmission system of sufficient capacity to facilitate meeting renewable targets and that it also meets the needs of the all-island electricity market.

The transmission infrastructure developments are major and securing consents for the new transmission corridors will be challenging. Whilst the licensees intend to continue to develop an overall plan, at various stages of development there could be unequal opportunities across the geography of the network.

### **6.3 Annual Connection charges**

Three respondents expressed the view that payment of connection charges on an annual basis should be made available with one respondent adding that the decision between annual and up-front payments should be made by the connectee.

Two respondents advised that they would have no issue with the provision of credit cover for outstanding amounts.

One respondent suggested that annual connection charges should be paid over the lifetime of the connection agreement, currently 20 years.

Having taken into account the responses NIE, at this time, does not support the option of paying connection charges over a period of time but feels that connection charges should be paid in full prior to energising the connection. In coming to this conclusion and despite the three responses to the contrary, NIE has had difficulties in securing adequate credit cover from some applicants in the past.

### **6.4 Efficient Level of Connection Costs**

Two respondents expressed the view that NIE's indicative connection costs appear higher than charges across UK and Ireland, adding that the costs are higher than costs which can be obtained through competitive tendering.

Whilst NIE understands the need for developers to secure connections at costs which are competitive, NIE believes that its indicative costs compare favourably with indicative costs contained in the charging statements of other transmission and distribution companies. One cost which has been challenged especially is the cost of 110kV wood pole lines. NIE's indicative cost is £310k per km, compared to £375k and £373k for the 132kV designs of the Scottish transmission licensees.

NIE engaged PB Power to carry out a benchmarking exercise on substation and overhead line costs. The analysis of such benchmarking is not straightforward as companies allocate component costs in different ways but, when normalised, NIE's unit costs compare favourably with those of other utilities.

NIE expects further benchmarking of costs will be part of the RP5 price control review process.

## 6.5 Contestability

Five respondents proposed that ‘contestability’ should be introduced. It was argued that to do so would result in significant cost savings for the developers and that connection timescales could be reduced.

NIE is not opposed to contestability in principle providing the arrangements for this are clearly documented and approved by the Utility Regulator. Such arrangements should ensure that:

- a) the contestable assets are operating at distribution voltages; and
- b) the connection assets are not, and could not, be used by more than one developer.

NIE believes that a code of practice which clearly sets out each party’s rights and obligations should be developed and approved by the Utility Regulator before contestability is implemented.

The various respondents have not fully described their use of the term ‘contestability’. There are several interpretations of this term. In GB it is interpreted as meaning the independent construction and commissioning of assets following which the network owner takes ownership of the assets. This would only be undertaken where the assets are constructed to agreed standards.

The other model is where the developer retains ownership and is authorised to operate the assets by means of a licence issued by DETI. This model has more implications for NIE and other users of the NIE system and therefore needs to be carefully considered by the industry prior to its introduction.

NIE has advised that it is in discussion with the Planning Service to develop an overall plan for the connection of wind farms. NIE is concerned that introducing contestability, if not managed properly, could jeopardise the implementation of such a plan.

## 6.6 Transparency and Predictability

Four respondents proposed that the charging statement should contain standard costs for a number of plant items, so that developers can predict with some accuracy the likely connection cost prior to asking for an offer.

Given the high variability of connection costs across a number of projects NIE believes that it is not possible to publish detailed costs to enable developers to make precise estimates of connection costs. This is recognised in Condition 32 of the licence which requires NIE to publish in the charging statement “...*such detail as shall be necessary to enable any person to make a reasonable estimate of the charges to which it would become liable...*”.

NIE is prepared to host a forum to discuss with developers their need for information to secure and manage their projects but would ask developers to bear in mind that only as detailed investigations are completed is there a reduction in costing uncertainty e.g. substation costs are highly dependent upon civil engineering which in turn is entirely

dependent upon local ground conditions. The cost of a 110kV overhead line is highly dependent upon the number of road and utility crossings and often require undergrounding of other overhead services.

NIE's proposal would be to hold a forum early in 2011 and to report within about 8 weeks of the forum.

### **6.7 Special Protection Schemes and Telecommunications**

Four respondents expressed the view that the level of costs for special protection schemes is higher than necessary.

They also held the view that it was wrong to charge O&M on special protection schemes.

They proposed that including the cost of special protection schemes in the charging statement would resolve this matter.

NIE includes a maximum SPS charge into connection offers to ensure that developers are able to budget for a worst case scenario. Developers have a payment profile, including the SPS element, based on milestones in the project and the final payment reflects the sum of any fixed and variable cost items for the SPS. The charge for SPS is therefore cost reflective. Having said that, NIE understands that developers could perceive high estimated cost as a barrier and has therefore reviewed some outturn costs. This has resulted in a substantial reduction in the cost used in the estimate.

NIE is prepared to undertake a further review of charging for special protection schemes and welcomes industry comments on the scope of that review. NIE continues to believe that although many SPSs are applied to the backbone systems, their application is additional to the reinforcement which NIE plans to install, and is solely an aid to developers to allow them to connect earlier or operate with lower levels of constraint than otherwise would be the case. For that reason, NIE holds the view that wind farms should bear the cost of such measures, either individually or shared.

### **6.8 Connection Agreement**

Two respondents requested that connection agreements should be signed at an earlier stage in the connection process.

NIE supports this proposal and is willing to engage earlier with the connectee with a view to completing the connection agreement. However, applicants should be aware that to avail of an early connection agreement will require the submission to NIE of detailed planning data under the Distribution Code, fully describing the developer's equipment and control arrangements at an early stage in the connection process.

It is understood that developers wish to have signed connection agreements at an early stage in order to better facilitate project financial closure, develop equipment performance specification and enter into market arrangements. Whilst not part of the consultation NIE also strongly recommends that developers seek to understand any

limitations imposed by the Transmission System Operator in relation to firm transmission access before entering into procurement commitments.

## **6.9 Construction Priorities and Timetable**

NIE intends to publish an up to date list of proposed clusters in map form. We can also publish the progress made for each cluster. We welcome comments from the industry on the level of detail which should be disclosed so as to avoid creating any commercially sensitive positions.

## **6.10 Operation and Maintenance Charges**

NIE has considered the responses, many of which expressed support for the introduction of annual O&M charges rather than the current capitalised charge. Capitalised O&M charges represent approximately one quarter of the connection charge levied on developers. NIE therefore understands why some developers would prefer to pay this cost element from revenue as it is earned by the plant. Since the costs are incurred over the years, NIE supports in principle the view that an annual payment option should be offered. The choice of which option to accept should properly rest with the applicant. For applicants exercising the annual payment option NIE would however need robust financial assurances in the form of bonds so that if the connection agreement holder could no longer pay the O&M charges (in respect of the shared assets) there would be a sufficient fund to operate and maintain the shared assets.

Some respondents asked for greater clarity on the level of O&M charges. By way of explanation, the Utility Regulator defines in the licence NIE's revenue allowance for the operation and maintenance of the general asset base. This revenue is collected through use of system charges. The revenue allowance is an overall allowance and is not based on operating and maintenance costs for specific types of assets – switchgear,, overhead lines, transformers, cables etc. There will be years when the actual costs associated with one category of asset will be lower or higher than average but taken over the whole asset base and over a number of years the level of funding needed should be in line with the allowance.

NIE's approach in setting O&M has been not to try to look specifically at the volumes of switchgear or transformers, lines or cables contained in the connection assets but the overall asset value. If NIE is to achieve the level of reliability expected of assets on the system then it should be provided with equivalent funding for the operation and maintenance of connection assets as is granted by the Utility Regulator for O&M of the general system assets. Our view has been that any other approach would be very complex and no more accurate. We offer an example that cable faults are rare but very expensive when they occur compared to overhead line events.

Some respondents have questioned whether it is appropriate for O&M to be charged on Special protection Schemes (SPS). There are two issues in an assessment of that:

- The first is whether secondary equipment requires the same O&M rate as primary equipment. The above paragraph indicates that this would be the first occasion on which we would have attempted to apply different rates to different types of asset.

Furthermore, SPS schemes are composed of a combination of primary and secondary assets. It therefore seems unproductive to follow a path of different rates.

- The second issue is whether it is correct to levy the O&M charge on the connection assets. The SPS has been included in the connection assets for the reasons identified in section 6.7 above and the costs of those assets will ultimately not be included in the RAV. It would be correct therefore to recover the O&M from the relevant parties connecting to the system if the assets are to be maintained in serviceable condition. Having said that, the issue could be added to the scope of any further investigation into SPS charging.

## **6.11 Refund Period**

Some of the charging options set out in the consultation paper make use of a refund mechanism where those connecting earlier may receive partial refunds in respect of connection charges for assets used subsequently by wind farms connecting later. NIE asked for views on an appropriate period over which refunds should continue to be paid. Under SONI's connection charging policy partial refunds will be paid up to ten years from the date of the first connection. The Electricity (Connection Charges) Regulations (Northern Ireland) 1992 specifies five years.

Three respondents commented on refund periods. Two proposed a period of 45 years to harmonise with RoI policy and which is believed to reflect the anticipated engineering life of the distribution assets. The other suggested a period consistent with the economic life time of the asset but did not suggest a specific number of years.

NIE's role will be limited to the administration and record keeping associated with such a scheme. NIE believes that the five years specified in the Regulations mentioned above was introduced to be consistent with legal requirements on financial record keeping. However, NIE agrees that five years is too short a period given the potentially large sums of money involved. NIE would therefore suggest that ten years would be a more appropriate period which strikes a balance between the financial considerations and administration burden of the scheme.

One respondent suggested that SONI's involvement in the refund process may be required given that some of the cluster connection assets might operate at transmission voltages. However, the connection agreements are distribution connection agreements and NIE must administer the refunds.

The situation could arise where a wind farm has a transmission connection agreement with SONI, connecting at 110kV to the shared spur, and others have a distribution connection agreement with NIE, connecting at 33kV from the shared node, and all are making use of at least some of the connection assets. A further complication could be related to the order in which each wind farm connects. This consultation relates to the distribution connection charging arrangements. NIE proposes that should any of these circumstances arise then it reviews in conjunction with SONI and the Utility Regulator the particular circumstances and suitable arrangements are developed for those occasions, drawing on the conclusions of this consultation.

## **6.12 Payment Terms**

One respondent requested some additional flexibility in payment terms to cater for phased construction.

The existing connection charging methodology makes provision for connections commissioned or constructed in phases. In those cases, payments will be reflective of the phases with payment details set out in the connection offer.

NIE believes that payment profiles for cluster connection charges should reflect the build profiles of the shared cluster assets and the unique connection assets. Throughout this build phase NIE believes that payments should reflect NIE's financial commitments. It should be noted that the shared assets may already be constructed and commissioned. NIE believes that in this event payment for the shared assets should be received in full prior to energisation.

## **6.13 All-Island Connection Charging Consistency**

One respondent proposed that cluster charging policy must be consistent with existing all-island transmission charging policy.

To do so would require a radical review of all-island charges at distribution and transmission voltages. To do so is beyond the scope of NIE's role within the industry.

It should be noted that consultation was undertaken and subsequent regulatory agreement delivered, that the rules for connection of wind farm clusters differed between NI and RoI, to reflect different issues. In principle NIE rules required that an offer could only be made to applicants with planning consents whereas RoI gate processing is different. Differences in charging for clusters follow from that decision. In coming to their conclusions we understand that the RA's review determined that the differences were not of a level to create market distortion.

## **7 Alternative Charging Options**

A number of alternative charging options were proposed by several respondents and NIE has addressed each of these in the relevant sections of this report.

## **8 NIE's Alternative Proposal**

In considering the merits of each of the charging options outlined by NIE and the alternative options submitted by respondents and in fully considering the responses, to the consultation, NIE has developed and applied a number of criteria. These are as follows:

- (a) Any charging solution should be equitable and not introduce material distortions between applicants;
- (b) Any charging system should preserve locational signals;

- (c) The charging principle for connection to the system should as far as possible avoid creating barriers to entry for developers; an example would be where a developer had to meet all the cost of an asset which it intends will be shared with others. This criteria arises from NIE's statutory obligation that the charging methodology shall be designed to facilitate competition in the supply and generation of electricity.
- (d) Subject to regulatory agreement, it is possible for part of the cost of shared assets to be temporarily funded by electricity customers, but taken overall, this temporary reallocation of shared asset development cost should not result in a significant long run additional cost for NI customers.

In applying these tests we have concluded that:

There is no systematic differentiator between options by the application of criteria 1.

Option 1 fails to preserve locational signals and has a high chance of imposing significant additional long run costs on customers. We therefore conclude that it is weak against the objective criteria.

Option 2 has a high risk of imposing a significant barrier to entry to at least the initial connectees.

Option 3 has a much reduced chance of imposing a barrier to entry to developers and a much reduced chance of imposing costs on customers provided that the initial design capacity of the connection is not excessive. NIE notes a problem with the option when the initial design capacity is exceeded. The best engineering solution is to introduce another transformer matched in capacity with the original unit. It would be entirely inappropriate that the capacity denominator should be redefined as 2 times the original value and that existing developers be refunded 50% by customers, who have then little chance of recovering the fund.

Option 4 is similar in characteristics to Option 3 but is likely to result in disputes as to the estimated connecting capacity value to be used. It is to be expected that if such a scheme was to be applied it would need to be accompanied with some arrangement for penalty where applicants projected capacity levels which were not achieved in practice. NIE believes that developers would resent paying such penalty payments.

NIE believes that Option 3 best meets the criteria providing the problem identified above can be addressed. NIE is therefore minded to recommend the introduction of a hybrid model as follows:

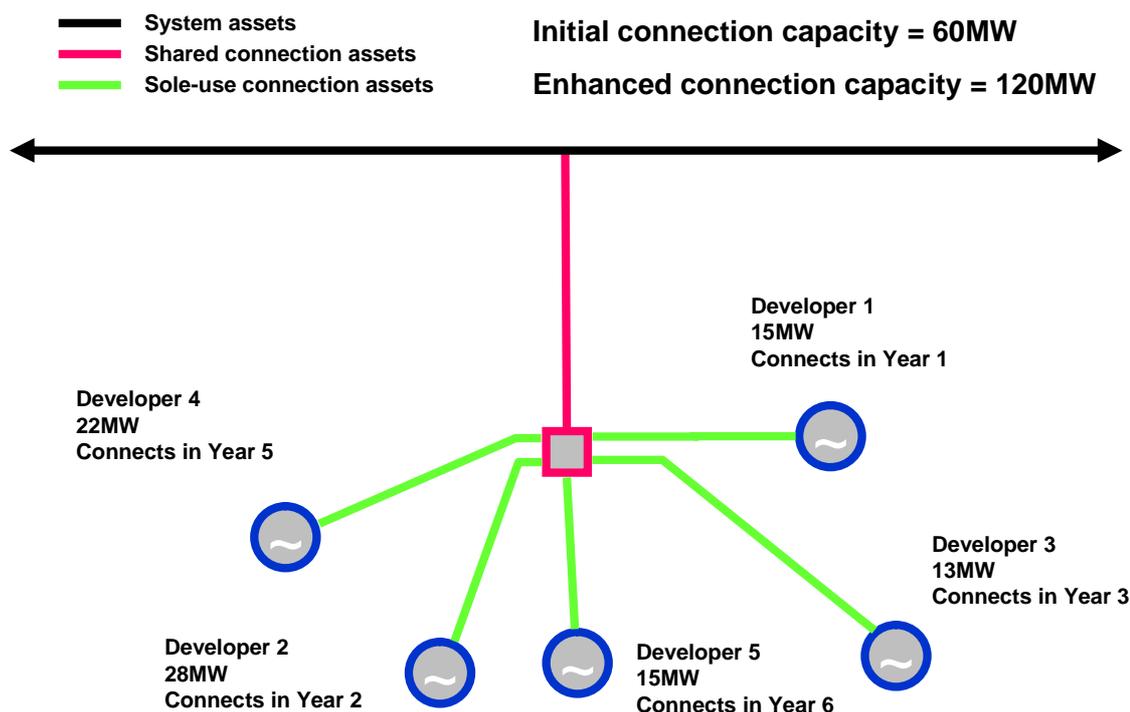
Where the capacity of the first transformer in a cluster is not fully utilised then NIE will charge those connected in accordance with option 3. That is, each pays in accordance with their share of the connection capacity.

Where the capacity of the first transformer is fully utilised and a second transformer is installed then the methodology of Option 2 will be applied – Appendix 1 provides an example of cash flows for this model.

Where the additional generation capacity which requires NIE to install an additional transformer is relatively small and the cost of enhancing the capacity is relatively large there is a possibility that the methodology would indicate that those connected to the first transformer should be required to pay additional connection charges. However, NIE is proposing the principle that no developer should be required to pay additional connection charges should this occur.

NIE intends to take forward the hybrid model in discussions with the Utility Regulator with a view to incorporating it into the next distribution connection charging statement.

**Appendix 1 – Illustration of cash flows for NIE’s hybrid model**



Capacity of the initial connection (MW)	60
Cost of the initial shared assets (£m)	20
Capacity of the enhanced connection (MW)	120
Cost of the enhanced shared assets (£m)	22

Year	1	2	3	4	5	6
Capacity connected (MW)	15	28	13		22	15
Cumulative capacity connected (MW)	15	43	56	56	78	93
Remaining capacity available (MW)	45	17	4	4	42	27

Charge to Developer 1 (£m)	5.00	<sup>1</sup>				
Charge to Developer 2 (£m)		9.33				
Charge to Developer 3 (£m)			4.33			
Charge to Developer 4 (£m)					6.21	<sup>2 3</sup>
Charge to Developer 5 (£m)						3.55

Refund to Developer 1 (£m)					0.77	0.68
Refund to Developer 2 (£m)					1.44	1.27
Refund to Developer 3 (£m)					0.67	0.59
Refund to Developer 4 (£m)						1.00

Net position of Developer 1 (£m)	5.00	5.00	5.00	5.00	4.23	3.55
Net position of Developer 2 (£m)		9.33	9.33	9.33	7.90	6.62
Net position of Developer 3 (£m)			4.33	4.33	3.67	3.08
Net position of Developer 4 (£m)					6.21	5.20
Net position of Developer 5 (£m)						3.55

Footnotes -

1.  $(15 \times 20)/60 = 5.00$

2.  $(22 \times 22)/78 = 6.21$

3. Developer 4 takes the connected generation capacity to 78MW requiring NIE to install an additional transformer, in this case assumed to be an additional 60MW transformer.

Notes:

- (a) All costs are expressed in real terms and nominal connection charges will take account of the time value of money. That is, charges for shared assets will be inflated by RPI for later connectees.
- (b) Cash flows are in respect of shared assets only – sole use assets are paid in full by the respective developer.
- (c) Note that by Year 6 Developer 1, who connects in Year 1, and Developer 5, who connects in Year 6, each with 15MW of generation capacity, will be in the same net financial position in real terms with regard to the shared connection assets.