

**Decision Paper on the Charges for  
Connecting Groups of Generators  
(Clustering) to the Northern Ireland  
Distribution System**

**21 April 2011**

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## Executive Summary

Having considered the proposals from NIE together with the responses from both NIE's consultation on 16 March 2010 and the Utility Regulator's consultation on 15 November 2010 the Utility Regulator approves the development of a new connection charging methodology in line with the 'Option 3' Hybrid model.

- *Where the capacity of the first transformer in a cluster is not fully utilised then NIE will charge those connected as follows:  
Each developer would pay in full for the sole-use assets and would pay for a share of the joint assets, 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 not be recovered from the developers as it would require the volume of generation connected to equal the connection capacity. The balance would be recovered through use of system charges and could ultimately be borne by Northern Ireland customers.*
- *Where the capacity of the first transformer is fully utilised and a second transformer is installed then the following methodology will be applied:  
That is, the first to connect would pay the full cost of the sole-use assets and the full cost of the assets which may be shared as some point in the future. At the time that subsequent connections are made the first to connect would receive a partial refund in respect of their 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. Partial refunds will be issued if the initial developer connected within the preceding five years.*
- *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, the principle is that no developer should be required to pay additional connection charges should this occur.*

## Background

1. NIE is required by Condition 32 of the Licence to prepare a statement approved by NIAUR (The Statement of Charges for Connection to the Northern Ireland Distribution System) setting out the basis upon which charges will be made for connection to the distribution system.
2. Almost all wind farms in NI are of a size which can be connected to the 33kV system. The practice until recently was to connect wind farms individually by dedicated 33kV circuits. This practice differed from the arrangements in the RoI and GB where wind farms were grouped in a locality and connected as a group to the transmission system. The problem with adopting that approach in NI is that, to be accepted for connection, developers need to demonstrate that they have been awarded planning permission for the wind farm in question. Differences in timing of the award of planning approval for individual wind farms does not suit the formation of groups which could share the costs of a shared connection.
3. The principle of wind farm clustering was only agreed with the Utility Regulator during this RP4 period and therefore the cost of these investigations could not have been included in the RP4 settlement.
4. The benefits of a shared connection compared to individual connections are generally not about lower cost of connection, but rather about the reduction in environmental and visual impact achieved from having only one main circuit to serve a number of wind farms. This circuit terminates in a hub or local substation in the vicinity of the wind farms. The wind farms are then connected by short individual 33kV lines to this local hub substation.
5. The Utility Regulator has approved in principle the concept of clustering and agreed a process specifically for the Magherakeel cluster.
6. NIE currently expects there to be nine wind farm clusters to be designed and constructed.
7. Pre-construction work is already funded and the work is on-going in relation to the following clusters:
  - Magherakeel
  - Fallaghearn
  - Killymallaght
  - Mid Antrim
  - Pomeroy
  - Altahullion
8. The principle of windfarm clustering and that customers would cover these costs in the short term has been approved by the Utility Regulator BOARD Advisory Group on 15 April 2010 in relation to Magherakeel.

9. Approval was given for a capital expenditure of £2.0m to enable NIE to undertake pre-construction activities leading to the submission of planning applications for the construction of four wind farm cluster substations at Killymallaght, Mid Antrim, Pomeroy and Altahullion.

### **NIE's Consultation**

10. 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.
11. 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.
12. The consultation paper also requested views on certain other aspects of NIE's existing distribution connection charging methodology.
13. Seven responses to the consultation were received.
14. Four charging options were set out in NIE's paper:
  - Option 1 - Developers only pay for the sole-use assets in the connection charge and the cost of the shared assets is recovered through use of system charges.
  - Option 2 - The first to connect pays the total cost and then receives a partial refund in respect of the cost of the shared asset from those connecting at a later date.
  - Option 3 - Each developer pays in proportion to their share of the connection capacity.
  - Option 4 - Each developer pays in proportion to their share of the generation capacity expected to be connected.
15. 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.
16. 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 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.

17. In applying these tests NIE concluded that:

There is no systematic differentiator between options by the application of criteria a) above.

Option 1 fails to preserve locational signals and has a high chance of imposing significant additional long run costs on customers. NIE 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.

### **Hybrid model**

18. NIE submitted to the Utility Regulator its Consultation Report to the Utility Regulator on 15 October 2010. The report set out to:

- a) Discuss the points raised in the seven responses to the consultation and set out NIE's views on each.
- b) Identify certain criteria which were used to assess the responses and to develop a charging methodology proposal.
- c) Provide NIE's recommendations for changes required in connection charging policy.

This report has been included in Annexe 1

19. NIE believes that Option 3 best meets the criteria providing the problem identified, under section 17 above, can be addressed. NIE is therefore minded to recommend the introduction of a hybrid model.

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Each developer would pay in full for the sole-use assets and would pay for a share of the joint assets, 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 not be recovered from the developers as it would require the volume of generation connected to equal the connection capacity. The balance would be recovered through use of system charges and could ultimately be borne by Northern Ireland customers.*
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- *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, the principle is that no developer should be required to pay additional connection charges should this occur.*

#### **Utility Regulator Consultation**

20. On 15 November 2010 the Utility Regulator published its consultation on Electricity Connection Policy to the Northern Ireland Distribution System.

21. The consultation closed on 10 January 2011 and a total of 24 responses were received.
22. As part of this consultation the Utility Regulator asked for further views on the treatment of charges for connecting groups of generators.
23. Of the 24 responses 9 specifically commented on the treatment of charges for connecting groups of generators.
24. Responses from ABO Wind Ireland, Bord Gais and RES UK and Ireland all stated their full support to the response from NIRIG and were therefore counted as separate responses.

#### **NIE's review**

25. NIE were provided copies of all the responses to the Utility Regulator's consultation on the treatment of charges for connecting groups of generators and were asked review its recommendations in light of this additional information.
26. NIE provided its recommendations on 18 February 2011. NIE's response has been included in Annexe 2.
27. All but one fully supported the Option 3 approach which NIE have proposed.
28. SONI had concerns regarding assets and deemed firm and non firm access. The Utility Regulator deems that NIE has responded to these concerns satisfactorily.
29. SONI interprets the consultation as implying that the 110kV line to a cluster might become a system asset. That is not the Utility Regulator or NIE's understanding. Both the Utility Regulator and NIE believe that it will remain a shared connection asset. SONI requests a greater involvement in the cluster design. Those issues are correctly dealt with through the wind and planning panels established under the control of the TIA. Both the Utility Regulator and NIE will ensure that the matter is dealt with accordingly.
30. One area where most parties have difficulty in accepting NIE's proposal is the size of the first transformer. NIE believe that 60MVA is appropriate whereas the industry generally believes that 90MVA is appropriate.
31. NIE believe that there are potential clusters where a denominator of 60 would be justified but there are other potential clusters where a denominator of 90 would not pose a large risk to recovery of customer funding. Therefore NIE suggest that the following phraseology could be adopted, "Provided that NIE is convinced that a 60/90MVA transformer can be used in windfarm circumstances and still retain a 90MVA rating; then a denominator of 90 will be applied in circumstances where there is clear evidence that 90MW of wind power will be connected. In circumstances where there is not sufficient evidence that 90MW or more of wind will



seek connection, a denominator of 60 will be applied to aid funding recovery”.

32. The total capacity that can be connected to the cluster will ultimately be determined by the limiting capacity of the lowest rated equipment, e.g. the transformer(s) capacity or overload capability of transformer, or the line capacity.
33. The Utility Regulator deems that this should remain an operational issue between NIE and generators.

#### **Risk**

34. Costs will be recovered over time from wind farm developers. It is expected that all the identified windfarms under each cluster will achieve planning and accept their connection offer from NIE and thus all costs will be recovered.
35. There is a risk with the proposed hybrid model that the total costs are not recovered from developers if the installed capacity is not fully utilised. Any shortfall will be recoverable through NIE’s allowed regulated revenue.
36. With the proposed methodology generators connecting would not have to pay for deep reinforcement if required. Any costs associated with deep reinforcement of the transmission would be recoverable through NIE’s allowed regulated revenue.
37. The ongoing expenditure for each cluster will be closely monitored and regularly reported. The amount spent on any specific cluster will not exceed the level agreed with the Utility Regulator, and any requirement for additional funding will be identified and made the subject of a separate submission for additional funding.
38. While the charging methodology will be set within the Statement of Charges each cluster will be subject to individual approval from the Utility Regulator.
39. Any modification to the Statement of Charges for Connection to the Northern Ireland Distribution System requires Utility Regulator sign off. This is a final safety measure that will allow the Utility Regulator review all proposed methodologies.

#### **Decision**

40. Having considered the proposals from NIE together with the responses from both NIE’s consultation on 16 March 2010 and the Utility Regulator’s consultation on 15 November 2010 the Utility Regulator approves the development of a new connection charging methodology in line with the ‘Option 3’ Hybrid model as described under Section 19 and detailed in the Executive summary.

## **Next Steps**

41. The Utility Regulator will instruct NIE to submit for approval its revised Statement of Charges for Connection to the Northern Ireland Distribution System.
42. NIE will be asked to investigate proposals for a similar charging approach to be adopted for lower voltage clusters.

**Annexe 1**

**Charges for Connecting Groups of Generators to the Northern Ireland  
Distribution System - Consultation Report 15 October 2010**

**[http://www.uregni.gov.uk/uploads/publications/P\\_101015\\_Consultation\\_Report\\_-\\_Final\\_-\\_15\\_October\\_2010\\_6.pdf](http://www.uregni.gov.uk/uploads/publications/P_101015_Consultation_Report_-_Final_-_15_October_2010_6.pdf)**

**Annexe 2**

**Responses to Consultation – Cluster Charging Methodology 18 February 2011**

[http://www.uregni.gov.uk/uploads/publications/L\\_110218\\_Cluster\\_Charging\\_Methodology.pdf](http://www.uregni.gov.uk/uploads/publications/L_110218_Cluster_Charging_Methodology.pdf)