



The Single Electricity Market:

Transmission Use of System Charging

Tariff Methodology

Decision Paper

July 2007

Summary

In March 2007, the Commission for Energy Regulation (“CER”) and the Northern Ireland Authority for Utility Regulation (“NIAUR”), collectively known as the Regulatory Authorities (“RAs”), published a decision document on transmission use of system (“TUoS”) charging. This decision document established that, under the Single Electricity Market, the locational transmission use of system charges paid by generators should be calculated using a methodology based on that presently employed by EirGrid in the Republic of Ireland. However, it was acknowledged that further work was being undertaken by SONI and EirGrid, as the system operators, on details of the methodology. Consequently, the RAs published a further consultation in June 2007 on a number of these details, including:

- (i) the identification of a number of generation scenarios, each being representative of a plausible operating condition that makes heavy usage of the transmission system and may also be a condition that might have led to the identification of transmission system reinforcements;
- (ii) the combining of these scenarios into a single locational tariff by calculating tariffs for each scenario and, for each generator, taking the maximum tariff price (in €/kW/yr) across the set of scenarios;
- (iii) the categories of standardised network component costs to be used in the calculation of the tariffs;

The consultation paper also reported on a number of other issues, including the categorisation of wires and non-wires costs as between the two jurisdictions; the appropriateness of an adjustment to the revenue flow between system operators; and the enshrinement of the all-island generation locational use of system tariff in separate statements of charges in each jurisdiction, as now.

Six non confidential responses were received. Having reviewed these responses, the RAs remain of the view that the approach being suggested by the system operators and presented in the June 2007 paper is a reasonable one, albeit acknowledging that the detailed methodology could still be subject to change.

The decisions made are:

- (a) the scenarios used in the development of the TUoS tariffs, particularly those involving 100% load factors for wind generation, should be subject to careful review;

- (b) the RAs await the system operators' proposals for harmonising the categorisation of costs into wires and non-wires costs as between the two jurisdictions;
- (c) the RAs remain of the view that an adjustment to the cross-border revenue flow, between system operators, is appropriate, and should be developed on the lines outlined in the June 2007 consultation paper;
- (d) system support assets should not be incorporated into network component costings;
- (e) the RAs are minded that interconnector users should not be subject to TUoS charges;
- (f) circumstances that might give rise to modification of the approach are likely to be where resultant tariffs are inconsistent with the usage that the generator makes of the transmission system under conditions that would be expected to be considered in planning the transmission system, although the RAs will consider any other representations made by the system operators;
- (g) the RAs will consult on the draft tariffs.

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I INTRODUCTION

In March 2007, the Commission for Energy Regulation (“CER”) and the Northern Ireland Authority for Utility Regulation (“NIAUR”), collectively known as the Regulatory Authorities (“RAs”), published a decision document¹ on transmission use of system (“TUoS”) charging. This decision document established that, under the Single Electricity Market, the locational transmission use of system charges paid by generators should be calculated using a methodology based on that presently employed by EirGrid in the Republic of Ireland. However, it was acknowledged that further work was being undertaken by SONI and EirGrid on details of the methodology. Consequently, the RAs published a further consultation² in June 2007 on a number of these details.

Six non confidential responses were received, and this paper reviews these responses and presents the RAs’ decisions in respect of the issues raised.

Section II recaps the issues raised in the June 2007 paper, section III states the decisions made and section IV the next steps. Appendix A discusses the RAs’ response to the comments received.

¹ “Transmission Use of System Charging Decision Paper”, AIP-SEM-07-50, 15th March 2007

² “Transmission Use of System Charging Tariff Methodology. A Consultation Paper”, AIP-SEM-07-262, 18th June 2007

II JUNE 2007 CONSULTATION PAPER

The June 2007 consultation paper consulted on a number of detailed aspects of the methodology for the calculation of locational transmission use of system charges for generators. These were:

- (i) the choice of generator tariff;
- (ii) the choice of categories for standard costings for transmission network components;
- (iii) the harmonisation of 'wires' and 'non-wires' costs;
- (iv) adjustment to the cross-border revenue flow, between the two system operators;
- (v) enshrining the all-island generator locational use of system tariff.

II.1 Choice of Generator Tariff

The June 2007 consultation paper stated that the system operators had been discussing with the RAs how a pattern of generation and demand could be developed for use with the reverse MW-mile methodology, inherent in the EirGrid methodology. The system operators emphasised that, until tariffs have been produced, it was difficult to be certain that there will be no unanticipated effects and that thus any given method must be regarded as 'work in progress'.

Nevertheless, the system operators had suggested a method that comprised:

- Step 1: Defining a set of several generation scenarios, that, in aggregate, represent the spectrum of operating conditions used in investment planning analysis;
- Step 2: For each scenario, perform a load flow analysis. Each such load flow:
 - (a) will represent an operating condition that makes heavy usage of the transmission system and may even be a condition that would have led to the identification of reinforcements³; and

³ Note that studies that lead to the identification of system reinforcements will have been performed well in advance of the reinforcements being made, whereas the tariff calculation applies to the system that already exists or to reinforcement that are expected to be completed in the following tariff year.

- (b) is used to calculate a value for the transmission use of system tariff for each generator on the transmission system using the reverse MW-mile methodology;

Step 3: For each generator, take the maximum - i.e. the most positive - value from each of the tariffs calculated in step (2)(b);

Step 4: Take the tariff comprised of the maximum value in (3) for each generator, calculate the revenue recovery and shift the tariff (as expressed in €/kW) uniformly across all generators to obtain the target revenue recovery for the two jurisdictions combined. The resulting shifted tariff is the transmission use of system tariff.

It was explained that the rationale for this method was that the need for any reinforcement of the transmission system or use made of the existing transmission system may be driven by any of the plausible scenarios; the reverse MW-mile methodology then determines how the need for that reinforcement or existing system is shared between generators. Taking the maximum value for each generator across the set of scenarios was considered an appropriate means of combining the individual tariffs calculated for each scenario, as it would reflect the degree to which each generator caused a need for transmission. An initial suggestion for a set of scenarios was given.

II.2 Network Costing

The June 2007 consultation paper described how the system operators had been considering the cost categories that it would be appropriate to use in the calculation of network tariffs. It was recognised that, as this work progressed, some categories might be merged where a combined merged category is still representative of the assets in that category.

Nevertheless, the categories under consideration were described as being

1. For circuits:
 - i. Cost per km by:
 - a. OHL / Cable (including cable end costs);
 - b. 110kV / 220kV / 275 kV / 400kV; and
 - c. NI / ROI.
2. For transmission stations:

- i. Switchgear costs, covering switchgear bay costs including civil works, protection and auxiliaries categorised by;
 - a. bay costs;
 - b. 110kV / 220kV / 275 kV / 400kV; and
 - c. NI / ROI
- ii. Transformer costs, by;
 - a. voltage, i.e. 110/220kV / 110/275kV 220/400 kV;
 - b. capacity, either;
 - Option 1: per MVA cost; or
 - Option 2: specific costs for standard sizes, e.g. 63 MVA / 125 MVA / 250 MVA / 500 MVA.
 - c. NI / ROI.
- iii. General station costs apportioned across the transmission circuits, and including buildings, fencing, earthing and station supplies.

Pending work to determine the costings to be used in each of the categories, these classifications were believed by the system operators to provide a manageable number of categories whilst still reflecting the actual costs that users impose on the system.

The paper stated that it was still under consideration whether the costs of assets such as capacitors, SVCs, interbus reactors and phase-shift transformers, used to provide system support, should be factored into the above categories, or ignored.

II.3 Other Issues

II.3.1 Harmonisation of wires and non-wires costs.

The June 2007 consultation paper described how it had already been decided that the costs recovered through generation TUoS charges should be equivalent as between the two jurisdictions, but how that was achieved - whether it is EirGrid system operator costs that should be omitted from generation TUoS charges or SONI costs that should be included - had not been resolved.

II.3.2 Cross-Border Revenue Adjustment

The June 2007 consultation paper described how the March 2007 decision document had stated that in order to offset any increase in costs to NI consumers relative to consumers in ROI, the RAs considered it appropriate to make an adjustment, up until the first of the cancellation dates in the PPB contracts, calculated each year as part of derivation of the annual TUoS tariffs and taking into account the locational generation TUoS tariff. The paper further stated that the RAs considered that the effects that need to be taken into consideration were:

- (i) the impact on demand in NI vis-à-vis demand in ROI of the interaction of locational charges on PPB-contracted generators in NI with the NI PSO levy;
- (ii) the impact on demand in one jurisdiction vis-à-vis the other of harmonising the classification of 'wires' and 'non-wires' costs through the transfer of costs either from demand in one jurisdiction or to demand in the other; and
- (iii) the pooling between the jurisdictions through generator TUoS charges of a proportion of the costs of the former North-South interconnector; and consequential effect on NI generators and, via the PSO levy, on NI demand.

It was stated that the RAs expected that this would have the effect of partially reducing the magnitude of the revenue transfer between system operators, which arises from the fact that, in an all-island use of system tariff, the revenue required by each transmission company would not necessarily be met from the users connected to that company's network.

II.3.3 Enshrining the All-Island Generator Tariff

The June 2007 consultation paper noted that since the publication of the March 2007 decision document, legislation had been enacted and draft licence changes had been published, including for the transmission system operators in each jurisdiction. In the legislation and the proposed changes to licences, the existing obligations on each licensee to prepare, have approved and publish a statement of charges for use of system, remained. Since the June 2007 consultation paper the draft licence changes have now been finalised, and the approach suggested in the March 2007 decision document, of having two sets of charges that, when taken together, form a combined set of charges calculated in accordance with the all-island methodology, has been adopted.

III DECISIONS

III.1 Choice of Generator Tariff

The RAs remain of the view that the approach described in the consultation paper constitutes a sensible approach to deriving TUoS tariffs, albeit acknowledging that the approach remains 'work in progress' and subject to the draft tariffs being satisfactory.

The RAs expect that circumstances that might give rise to modification of the approach would be where the resultant tariffs were inconsistent with the usage that the generator makes of the transmission system under conditions that would be expected to be considered in planning the transmission system. The RAs would, of course, listen to any other representation made by the system operators and intend, in any case, to consult on the resultant draft tariffs.

The RAs will ask the system operators to review and will discuss with them the initially suggested scenarios outlined in the consultation paper and, in particular, the relevance of 100% load factors for wind, particularly when coincident with summer minimum demand. Specifically, the RAs will ask the system operators to review these scenarios in terms of their relevance to transmission system investment decisions and as to whether any effect on the final tariff was justifiable.

III.2 Network Costing

Until such time as further information suggests otherwise, the RAs are content that the categories advised by the system operators are appropriate.

System support assets should not be incorporated into network component costings, used in the calculation of location TUoS tariffs.

III.3 Harmonisation of wires and non-wires costs

The RAs await the system operators' proposals for harmonising the categorisation of costs into wires and non-wires costs as between the two jurisdictions.

III.4 Cross-Border Revenue Adjustment

The RAs remain of the view that an adjustment to the cross-border revenue flow, between system operators, is appropriate, and should be developed on the lines outlined in the June 2007 consultation paper.

The RAs are minded to consider at this stage that interconnector users should not be subject to TUoS charges.

IV NEXT STEPS

The RAs will continue to liaise with system operators in the development of the TUoS tariffs for 2008. The system operators are continuing with the implementation of the suggested approach and the RAs will consider the system operators' findings and any refinements that may be necessary. In particular, the RAs will wish to discuss with the system operators the relevance of each of the scenarios used in the calculation of the tariffs.

The system operators are expected to submit draft statements of charges by mid August 2007, and these draft statements will be subject to the approval of the respective RAs. The RAs will consult on these draft tariffs.

Approved statements of charges are planned for publication in September 2007.

APPENDIX A

Responses to Consultation and Decisions

Six non-confidential responses were received and the respondents are listed in Appendix B. The responses, together with the RAs' response and decisions, are summarised below.

A.1 Choice of Generator Tariff

A.1.1 Comments Received

All six of the respondents commented on the choice of generator scenarios or the suggested method for combining several scenarios into a single tariff.

One respondent commented that the approach seemed to be sensible, whilst a second respondent - one of the system operators - stated that the approach was logical and consistent with investment planning. However this second respondent also emphasised that the methodology was "work in progress", and that it should not be assumed that this would necessarily be the final proposed approach. This respondent expressed concern that the consultation paper appeared to preclude any approach that did not involve taking a maximum value.

A third respondent sought clarification as to what constituted "unanticipated effects" and as to whether these would lead to a reappraisal of charges. This respondent also envisaged a generator having a much higher TUoS tariff than other generators in the same scenario and such an "outlying" values unduly weighting the resulting tariff. The respondent also commented that all scenarios should be based on merit order dispatches and that to force non-commercial flows would remove the economic basis for locational charging.

A fourth respondent strongly disagreed with the proposed methodology, stating that it was flawed in many respects and should be completely revised. This fourth respondent argued that no progress had been made away from crude deterministic snapshots to more reflective stochastic approaches. It stated that the proposed methodology was a step backwards from existing methodologies previously used.

The fourth respondent further stated that it was incorrect to base relative TUoS weightings off the worst case scenario. It also questioned the plausibility of the proposed scenarios, in particular: a load factor of 100% for

all wind generation; and a load factor of 100% for wind in conjunction with summer minimum demand.

This fourth respondent further asked how non-firm access was to be treated, arguing that generators were afforded only non-firm access presumably because of inadequate network investment and hence it was inappropriate to charge these generators on the basis of network expansion that had not been provided. Also this respondent argued that not allowing negative charges for wind generators lacked any fundamental basis, as it assumed that wind energy could be relied upon if it produces flows that cause positive tariffs but not if it produced flows that cause negative tariffs.

Two further respondents commented that it was difficult to comment on the methodology without sight of the resultant tariffs. One of these respondents commented that the RAs appeared to have difficulty getting an explanation of the reverse MW-mile methodology and that the situation was worse for market participants. It also commented that the proposed scenarios did not seem to represent normal operating conditions and that, whilst it recognised that the transmission system must be designed to withstand extreme and unusual conditions, it did not agree that such scenarios should be used to develop charges that apply under normal operating conditions. It also noted that the scenarios of 100% wind and summer minimum and of no wind an winter maximum were very unlikely.

Lastly one respondent - again one of the system operators - queried what the RAs had meant by “normalising” the tariffs prior to calculating the maximum value for each generator across the set of scenarios.

A.1.2 Position of the Regulatory Authorities

The RAs acknowledge the comments that the approach was sensible and logical. The RAs acknowledge that the suggested approach is work in progress. The RAs also acknowledge the comments that it is difficult to form a definite opinion without sight of the resultant tariffs.

It is the intention that the draft tariffs, when available, will be subject to consultation. Nevertheless, the purpose of the consultation was to seek views on the principles underpinning the methodology such that these views could influence the development of the draft tariffs. Accordingly the RAs recognise that the methodology is subject to change should the draft tariffs bring to light any undue unanticipated effects. Until tariffs are approved, the RAs thus do not rule out any specific development to the methodology although would, of course, consult on any adjustments to the methodology and the accompanying rationale, along with the corresponding draft tariffs.

As to what constitutes an undue unanticipated effect, the draft tariffs will be reviewed for anything that is apparently anomalous or counter-intuitive. In particular, the tariff for any given generator should be consistent with the usage that that generator makes of the transmission system under a condition or conditions that would be expected to be considered in planning the transmission system. It might be reasonable that a tariff for a particular generator in a particular scenario were a 'worst case' value if that scenario could be expected to be one that would determine the need for network reinforcement. That such reinforcement were required only under that scenario would not disqualify that scenario from determining either the need for the reinforcement or the resulting TUoS tariff.

Whether scenarios are designed using strictly a merit order dispatch, is an issue for transmission investment planning. If a particular scenario were to represent a condition that could drive investment then it would be appropriate to use it as the basis for TUoS tariffs. As such, the RAs acknowledge the concerns regarding some of the proposed scenarios. Whilst no wind at winter maximum is a distinctly plausible condition, the RAs recognise that a 100% load factor for wind generation, coincident with summer minimum demand, may not be a significant determinant of network investment. Accordingly the RAs will review these scenarios with the system operators.

The RAs acknowledge also the strongly expressed criticisms of the methodology. However, many of these criticisms, including correlation effects for wind generation and the flooring of charges for wind at zero, were discussed in the previous consultation. The RAs do not accept the criticism that the method for combining scenarios that are representative of those used in planning, represents a step backwards when compared to previous methodologies.

Finally, by "normalising" the tariffs prior to calculating the maximum value for each generator, the RAs meant merely that the tariff calculated for each individual scenario should be adjusted to recover the same revenue as the tariff calculated for each other individual scenario. Otherwise the tariffs for any given generator in the set of scenarios are not being compared on a like for like basis.

A.1.3 Decisions

The RAs remain of the view that the approach described in the consultation paper constitutes a sensible approach to deriving TUoS tariffs, albeit acknowledging that the approach remains 'work in progress' and subject to the draft tariffs being satisfactory.

The RAs expect that circumstances that might give rise to modification of the approach would be where the resultant tariffs were inconsistent with the usage that the generator makes of the transmission system under conditions that would be expected to be considered in planning the transmission system. The RAs would, of course, listen to any other representation made by the system operators and intend, in any case, to consult on the resultant draft tariffs.

The RAs will ask the system operators to review and will discuss with them the initially suggested scenarios outlined in the consultation paper and, in particular, the relevance of 100% load factors for wind, particularly when coincident with summer minimum demand. Specifically, the RAs will ask the system operators to review these scenarios in terms of their relevance to transmission system investment decisions and as to whether any effect on the final tariff was justifiable.

A.2 Network Costing

A.2.1 Comments Received

Four respondents commented on the costing of network components.

One respondent stated that it was broadly content with the proposed categories. A second commented that the categories were quite high-level and stated that it was important that the categories should allow accurate cost assessment of each circuit. This second respondent also said that system support costs should not be locational, whilst a third respondent said that, where system support assets provide system wide benefits, charges should be postalised.

The fourth respondent questioned as to whether costings were jurisdictionally specific.

A.2.2 Position of the Regulatory Authorities

The RAs remain of the view, as discussed in the March 2007 decision document, that a number of categories of standard costs represents a pragmatic compromise between the theoretical efficiency of using individual replacement costs and the high cost of implementing such an approach. Until such time as further information suggests otherwise, the RAs are content that the categories advised by the system operators are appropriate.

As regards system support costs, the RAs remain to be convinced as to how it could be determined whether a system support asset was of system-wide or of local benefit such that it could be decided whether or not to postalise the

costs. Further, if it were decided *not* to postalise the costs, it is unclear what methodology would be adopted. In the absence of such information, the RAs are content that system support assets should not be incorporated into network component costings, used in the calculation of location TUoS tariffs.

A.2.3 Decisions

Until such time as further information may suggest otherwise, the RAs are content that the categories advised by the system operators are appropriate.

System support assets should not be incorporated into network component costings, used in the calculation of location TUoS tariffs.

A.3 *Harmonisation of wires and non-wires costs*

A.3.1 Comments Received

Two respondents commented on the harmonisation of wires and non-wires costs in the two jurisdictions.

One of the system operators stated that the system operators agree with the principle that these cost categories should be harmonised, although this might need to be reflected in the treatment of revenue recovery on an all-island basis. The second respondent stated that system operator costs should be omitted from generation TUoS costs.

A.3.2 Position of the Regulatory Authorities

The RAs remain of the view that it is appropriate to harmonise the categorisation of costs into non-wires costs, recovered 100% from demand, and wires costs, recovered 25% from generation, between the two jurisdiction. The RAs await the system operators' proposals in this regard.

A.3.3 Decision

The RAs await the system operators' proposals for harmonising the categorisation of costs into wires and non-wires costs as between the two jurisdictions.

A.4 *Cross-Border Revenue Adjustment*

A.4.1 Comments Received

Two respondents commented on the subject of cross-border revenue flows.

One respondent said that it remained concerned by the transfer of costs from ROI to NI customers as a result of the legacy power purchase contracts. It

stated that it had argued, in its response to the previous consultation, for a simple solution whereby generation TUoS charges were retained by the company levying the charges and used to offset the TUoS charges to suppliers levied by that company.

The second respondent said that it did not believe that reflecting historical contractual relationships, which are unrelated to transmission charging, is the most appropriate approach. If such an approach were adopted it believed that all relevant elements - interconnector receipts, constraint costs, excess network capacity, differing planning standards, etc. - would have to be considered

The second respondent also commented that the current locational tariff for generators was made up of two components: a “pure” locational element calculated using the reverse MW-mile approach; and a postalised element that shifts (on a uniform per kW basis) the tariff, as calculated under the first element, in order to achieve the required revenue recovery. Furthermore:

- (i) it questioned whether, given that the systems in the two jurisdictions are planned and built to different standards, it may not necessarily be appropriate to recover the postalised element of the tariff on an all-island basis;
- (ii) it commented that the focus of any cross-border revenue transfer should be premised on the network usage by the generators, which is best proxied by the pure locational element of the tariff; and
- (iii) that (ii) should take into account the charging of users of the Moyle interconnector.

The second respondent sought clarification as to whether users of interconnectors, such as Moyle, should be charged, and argued that charging such users would be consistent with the decision that flows caused by Moyle users should be included in the dispatches used in the calculation of TUoS tariffs. It further argued that Moyle users should be charged on the basis that assets are constructed to facilitate exports and imports over the interconnector and that interconnector users are granted rights broadly comparable with other users. The respondent acknowledged arguments that charging interconnectors was inappropriate because of the possibility of “pancaking” of TUoS charges which could inhibit cross-border trade. It also acknowledged the current initiative to develop a European-wide “Inter-TSO Compensation” mechanism, which would result in interconnectors not being charged TUoS. However, it believed that until this mechanism was in place, it was appropriate that interconnectors should be charged.

A.4.2 Position of the Regulatory Authorities

The RAs consider that the suggestion that generation TUoS charges should be retained by the company levying the charges and used to offset the TUoS charges to suppliers levied by that company is inappropriate. If for no other reason than the fact that not all generation in Northern Ireland is covered by the legacy power purchase agreements with NIE, this approach would be a gross simplification, which would overstate any detriment relative to ROI customers of NI customers, and for which there was no underlying rationale.

The RAs agree with the second respondent that a wider range of issues should be considered. However, it is not clear that this need include either differences in transmission planning standards or constraint costs. The RAs have been given to understand that the differences in transmission planning standards are not highly significant and nor it is clear how any differences would be reflected in the TUoS tariffs. In the case of constraint costs, under the AIP these are remunerated through the energy market and it is not the objective of a proposed adjustment to cross-border TUoS revenue flows to compensate for differential impact in the two jurisdictions of the energy market.

The RAs also agree to an extent with the second respondent that the “baseline” for cross-border revenue adjustments is the network usage and hence locational charges levied on generators, as determined by the locational TUoS tariff methodology. The RAs remain of the view, however, that an adjustment, to reflect any detriment relative to customers in one jurisdiction to customers in the other jurisdiction, is appropriate.

As to whether Moyle interconnector users should be charged, the RAs do not agree that this is linked to whether Moyle flows are reflected in the load flows used to develop the TUoS tariffs. As stated in the March 2007 decision document, TUoS tariffs should be calculated using the best estimate of system conditions, irrespective of whether or not certain users are exempted from transmission use of the system charges. The RAs note that interconnector users are not charged today and further note that such users will not be charged under the European-wide Inter TSO Compensation (“ITC”) mechanism, currently under development. It would thus seem inappropriate, and counter-productive, to levy such charges for a short interim period. Furthermore, whilst the arguments for parity with other users seem appealing, these arguments do not hold sway in the design of the ITC mechanism, and it is unclear why they should apply in the interim. Accordingly the RAs are minded to consider that interconnector users should not be charged TUoS charges.

A.4.3 Decision

The RAs remain of the view that an adjustment to the cross-border revenue flow, between system operators, is appropriate, and should be developed on the lines outlined in the June 2007 consultation paper.

The RAs are minded at this stage to consider that interconnector users should not be subject to TUoS charges.

A.5 Enshrining the All-Island Generator Tariff

A.5.1 Comments Received

No comments were received.

A.5.2 Position of the Regulatory Authorities

The legislation and licence changes, now enacted place the existing obligations to produce a statement of charges on each of the transmission system operators. In aggregate these should implement the all-island generator locational TUoS tariff.

APPENDIX B

List of Respondents

Airtricity

Bord Gais

EirGrid

ESB International

NIE

Synergen