

Single Electricity Market

All-Island Generator Transmission Use of System Charging

Decision Paper

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SEM-10-081

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1. INTRODUCTION

The development of harmonised all-island transmission charge and losses arrangements was an objective stated in the original Single Electricity Market (SEM) high level design¹. It was also stated as an objective that the harmonised transmission arrangements should provide locational signals to users that reflect the costs that they impose on the transmission system. Progress has been made in the delivery of these objectives and the process is still ongoing. The SEM Committee's review of locational signals refers to all-island Generator Transmission Use of System (G-TUoS) charging and Transmission Loss Adjustment Factors (TLAFs). The SEM Committee has recently (24 September 2010) published its decision on TLAFs (SEM-10-066). This document provides the views and decision of the SEM Committee in relation to the all-island G-TUoS charging.

The SEM Committee consider that transmission arrangements should provide appropriate signals to transmission users of the costs that they impose on the transmission system. On the basis of these signals, users can make informed decisions concerning their use of the transmission system. This should, other things being equal, lead to more efficient development and use of the transmission system. Transmission charging and transmission losses arrangements each have an important role to play in the provision of appropriate signals to users. However, the primary role of each is different.

The Transmission Use of System (TUoS) charging arrangements should set charges that appropriately reflect transmission investment costs linked to system usage. On this basis, each generator's TUoS charge should be reflective of transmission investment costs linked to its own use of the system. In response to signals provided via cost-reflective charges, generators are able to make informed decisions concerning their own system usage. In aggregate, this should promote efficient use of the system by generators, which should, in turn, facilitate efficient investment in the transmission system overall. The TUoS charges should, therefore, provide signals that enhance the efficiency of network investment in the longer-term. SEM-10-066 outlines the primary role of TLAFs, the other key element of transmission system locational signals.

The purpose of this paper is to outline and describe the SEM Committee views in relation to the generator TUoS calculation options that have been developed by a number of parties, including the TSOs, during the locational signals review process. For full details on this process so far please refer to Section 2. At this stage, the SEM Committee is in a position to provide a high level decision on all-island harmonised G-TUoS. Further development is required in relation to some of the detailed aspects of the G-TUoS calculation methodologies. These issues will be addressed by the TSOs who will prepare indicative tariffs following the direction provided in this paper. The specific issues that the SEM Committee consider to require further attention are outlined in this paper.

¹ Please see AIP/SEM/42/05.

2. BACKGROUND

At present, different transmission charging methodologies apply in each jurisdiction. In Northern Ireland, a common, non-locationally varying £/MW capacity charge is levied upon all eligible generators such that 25% of allowed transmission revenue is recovered from generators. In the Republic of Ireland, generator TUoS charges vary by location. Each generator's charge is determined based upon its use of the system as determined by load flow modelling. As in Northern Ireland, 25% of allowed transmission revenue is recovered from generators.

Efforts to harmonise generator TUoS arrangements (by moving towards an approach which delivers locationally varying TUoS charges) have been ongoing for a number of years. However, during the process market participants raised a number of concerns relating to the impact of the proposals, particularly tariff volatility between years and the robustness of the methodology. Given these concerns, the SEM Committee took the decision² to defer the harmonisation of G-TUoS charging arrangements. It was decided to combine this workstream with the treatment of losses and a locational signals project has now been ongoing since January 2009 involving the TSOs and RAs and in consultation with industry. This project undertook to examine options for the introduction of harmonised all-island G-TUoS charging and TLAFs.

The process to date in relation to TUoS is as follows:

- in January 2009, at the request of the SEM Committee, the Transmission System Operators (TSOs) initiated the review of locational signals provided by generator TUoS charges and TLAFs (SEM-09-001);
- in May 2009, the TSOs published a consultation paper (SEM-09-049) which presented a range of potential methodology options in respect of generator TUoS and TLAFs³;
- based on feedback provided to the May 2009 consultation, in November 2009 the TSOs published a further consultation paper (SEM-09-107) in which they set out their preferred options for both generator TUoS and TLAFs⁴;
- in November 2009 the TSOs held a workshop in Dundalk where they presented on their preferred options outlined in SEM-09-107. The SEM Committee also presented on their perspective at the workshop and participants were invited to comment on the TSOs preferred options⁵; and

² AIP/SEM/08/087.

³ Please see following link: http://www.allislandproject.org/en/transmission_current_consultations.aspx?article=135317f0-49cd-4f7c-b0a3-fb4b75c84bc3

⁴ Please see following link: http://www.allislandproject.org/en/transmission_current_consultations.aspx?article=c4fdb48e-4a1a-44d6-848d-af13746ddcb8

⁵ Ibid

- in February 2010, having considered responses to the November 2009 consultation, the TSOs provided a formal response to the SEM Committee in which they set out their updated position and recommendations.

Building on the progress made by the TSOs and the input provided by industry participants, the process now moves on to a decision.

3. TSO CONSULTATION, RESPONSES AND SEM COMMITTEE VIEWS

3.1 Objectives

In their consultation paper of May 2009 (SEM-09-049), the TSOs proposed the following objectives for the locational signals workstream. These were based on the TSOs assessment of the objectives as articulated by the various stakeholders in the project (Regulatory Authorities, System Operators, Industry Participants and Industry Groups):

1. Efficiency: To encourage efficient use of the network and efficient investment in infrastructure. This is of interest to all stakeholders as it addresses the long term sustainability of the system;
2. Transparency: The provision of information and models to ensure full transparency of all methodologies. The publication of indicative tariffs & losses for a number of years;
3. Predictability: The methodologies should enable the prediction of tariffs & losses to within a reasonable level. This predictability should be for a number of years however, it would not extend to the full investment horizon;
4. Volatility: Where possible the methodologies should avoid dramatic year on year fluctuations, so as to give contradictory signals;
5. Short term efficient dispatch (through losses methodologies): Any losses method should ensure that the dispatch is as efficient as possible. In order to achieve this objective, it will be necessary to study the effectiveness of any proposal in line with suggestions from the wider industry;
6. Cost-reflectiveness: Any tariff methodology & losses methodology should be cost-reflective in order to promote economic efficiency and to facilitate competition; and
7. Consistency between generation and demand methodologies: The arrangement should be consistent in their application and in how transmission locational signals are applied to generation and demand parties in a particular region.

In SEM-09-107 'TSOs' Preferred Options Paper' these objectives were given the following weighting:

Objectives	Weighting
Efficient Dispatch	.25
Efficiency	.20

Cost Reflectivity	.20
Volatility	.15
Predictability	.15
Transparency	.05

The SEM Committee agrees with the TSOs that one of the principal objectives of transmission charging is to send appropriate signals to transmission users, which reflect the investment costs necessitated by their use of the system. In response to these signals, parties will be able to make informed decisions concerning their use of the transmission system. This applies to siting/entry decisions and exit decisions alike.

On this basis, the charging arrangements should produce cost-reflective generator TUoS charges, which provide signals that promote efficient use of the transmission system. It is also important for the methodology to be transparent and provide an appropriate level of stability and predictability. It is accepted that often these objectives will conflict with each other and further stabilising methods such as the fixing of tariffs for periods of, say, 5 years, may be used if required.

3.2 Overview of TSOs' proposed models

In the November 2009 Preferred Options paper (SEM-09-107) the TSOs outlined a number of alternative TUoS tariff methodologies that could be applied to derive G-TUoS tariffs. These included four different locational models and a simple postage stamp methodology. Transmission charging methodologies were broken down into distinct high-level building blocks, with different choices available at each building block level. The high-level building blocks and the available choices are set out below (there are additionally several sub-layers relating to detailed methodological choices):

- **principle underlying recovery of transmission costs:**
 - postage stamp, under which uniform, non-locational charges are applied;
 - locational, under which locationally varying charges are applied;
 - combination, under which a blend of location specific and postage stamp charges are applied.
- **extent of locational charging allowed** (which is linked to the principles of recovery mentioned above):
 - 0%, meaning that charges are fully postalised, with no locational component;
 - 100%, meaning that charges are fully locational; and
 - 0% to 100%, meaning that charges are partially postalised and partially locational, with the locational component either a fixed proportion, variable up to a capped limit or a floating proportion.
- **basis for the network study:**
 - static network, based on the prevailing transmission network;
 - dynamic network, based on the anticipated future network taking into account planned network reinforcement.

- **method for adjusting charges to recover allowed revenue:**
 - fixed adjuster, to increase/decrease charges by the same absolute value;
or
 - multiplicative adjuster, to increase/decrease charges by the same proportion.

Table 1 describes the six options developed during the review process in terms of their high-level building block components. This is followed by a brief description of each model at a high-level.

Table 1 – Generator TUoS charge methodology options

		1	2	3	4	5	6
Model block	building	Full locational, static model	Full locational, dynamic model	Part locational-part postage stamp, static model	Part locational-part postage stamp, dynamic model	Full postage stamp	Full postage stamp with incentive discount
Principle for recovering transmission costs		Locational	Locational	Combination	Combination	Postage stamp	Postage stamp, with possible locational discounts
Locational charging proportion		Always 100%	Always 100%	0% to 100% (with no minimum or maximum) as determined by the study	0% to a predetermined % cap as determined by network study ⁶	Always 0%	Always 0% (initially at least before locational discounts)
Basis for network study		Static	Dynamic	Static	Dynamic	Not required	Not required

⁶ It was originally proposed that a minimum of 40% of charges should be recovered via a postalised charge, implying that a maximum of 60% of charges could be recovered locationally. Subsequently, it was proposed that a maximum of 20% of charges should be recovered locationally, with the remainder recovered via a postalised charge. The latest proposal recommends that a maximum of 25% to 35% of charges should be recovered locationally.

		1	2	3	4	5	6
Model block	building	Full locational, static model	Full locational, dynamic model	Part locational-part postage stamp, static model	Part locational-part postage stamp, dynamic model	Full postage stamp	Full postage stamp with incentive discount
Basis adjustment recover revenue	for to allowed	Multiplicative adjuster	Multiplicative adjuster	Fixed adjuster	Fixed adjuster	Not required	Not required

- **Option 1:** Each generator's use of the network is determined using load flow analysis, taking the existing network as the basis for the study. This process delivers location specific generator TUoS charges. Each generator's locational charge is adjusted by a common multiplier to ensure that 25% of overall allowed transmission revenue is recovered from generation.
- **Option 2:** Load flow analysis is again used to determine each generator's use of the network. However, the anticipated future network configuration is taken as the basis for the study. As with Option 1, the locational generator TUoS charges that result from the modelling are modified using a multiplicative adjuster to recover the appropriate revenue.
- **Option 3:** Use of the network is, as under Option 1, determined through load flow modelling on the basis of the existing network. This produces a locational use of system charge. In addition, generators face a common postage stamp charge, which is set such that the appropriate revenue is recovered from generation.
- **Option 4:** As under Option 2, load flow analysis based on the future transmission network is conducted to determine each generator's use of the system. The resultant locational charges are capped such that a predetermined maximum percentage of the 25% of overall allowed transmission revenue that is to be recovered from generation can be recovered through locational charges. Any allowed generator TUoS revenue not recovered via locational charges is instead recovered via a common postage stamp charge.
- **Option 5:** This model requires no load flow modelling. Instead, the 25% of overall allowed transmission revenue that is to be recovered from generation is divided by the eligible connected capacity base. This produces a uniform per MW, postalised charge.
- **Option 6:** This is a variant of Option 5, which allows flexibility for a discount to the postage stamp charge to be offered to generators located in areas of the network that have a positive impact on transmission system performance.

In SEM-09-107 'TSO Preferred Options' the TSOs outlined their preference for the development and implementation of Option 4 – Dynamic Location Signals Model with Postage Stamp. The TSOs' reasoning was as follows:

"The aim of a location signal in the TUoS tariff is to differentiate between the impact that participants have on the transmission network. Participants who drive transmission investment or make more use of the system than others will pay higher TUoS tariffs, hence costs are attributed, to some degree, to those responsible for causing them.

After careful consideration of all the TUoS option outlined it was determined that Option 4 which is the Dynamic Model with Postage Stamp was best placed to meet the project's objectives to the best extent possible. This is seen in the scoring achieved by this option – this model sends a signal to participants regarding their contribution in driving the need for future network developments. The locational charges reflect the Net Present Value (NPV) of the recovery rate cost of these future developments.

It was recognised that rather than allowing the locational element of the tariff to recover the whole annual revenue requirement, should that situation ever occur in future, that Option 4 would consist of a maximum of 60% of the locational element of the tariff while the remainder would be collected on a postage stamp basis. In some years when the locational element of the tariff collects less than the 60% of the annual revenue requirement the postage stamp component of the charge shall be more than 40%. Restricting the level of locational charges was done in order to maximise predictability and to attempt to lower volatility of resulting tariffs. Nevertheless, it is envisaged that the tariff would still send an important location signal to participants.

An important economic concept is that only future costs can be minimised and not sunk costs. Therefore, a tariff model should be framed around driving the minimisation of future costs. This is in order to provide efficient solutions that will benefit society. In other words, to minimise the tariff revenue requirement and ensure costs are incurred effectively. However, one must acknowledge that while the assets are sunk, these assets still have future payments attributed to them. These charges are unavoidable (although the rates may change) and therefore it is reasonable to socialise a proportion of these costs.

In order to respect the economic concept of being only able to minimise future costs, the TSOs believe it is reasonable that the greater allocation of 60% (maximum level) in the TUoS tariff is attributed to the Dynamic locational signal. Furthermore, the 40% (minimum level) for the postage stamp element represents an appropriate allocation of costs that cannot be avoided.

The limit of 60% would mean that the lumpy nature of investments will not distort the overall tariff and introduce unnecessary volatility for participants. The locational element of the indicative tariffs calculated for this tariff option collected approximately 35% of the revenue requirement. However, with the planned increase in network developments the Dynamic model (locational element) will be collecting more of the revenue requirement. Therefore, the potential volatility could become an ever increasing issue. The introduction of a limit will constrain this impact.

The indicative tariffs that were calculated for the Option 4 do not reflect an important component of this option. While the model is primarily focused on future investments it stills charges for these future assets after they have been built for a period of seven years. This avoids a free-rider problem whereby participants could connect after the asset has been built in order to avoid contributing towards the cost of the asset. However, as the indicative tariff would be the first year of such a tariff option there are no previous future assets which need to be charged for. Over the forthcoming years assets will remain in the tariff until the seven year period is completed and therefore this increases the amount of the tariff that the dynamic element recovers. The tariff's consistency with future network plans will also add to the predictability as knowledge of the plans will be communicated. Furthermore, this will contribute to the transparency of the option as the TSOs would be in a position to publish indicative tariffs for a number of years ahead.

Given that, this option will at least collect 40% of the tariff revenue requirement through a postage stamp element it can be better described as a Dynamic Location Signals plus postage stamp tariff. Henceforth, the preferred TUoS model will be referred to by this name.

Overall, this option successfully accommodates and meets a number of the objective criteria set out in the May Consultation Options paper. The composition of the methodology means that it creates a forward investment looking location signal. This will support efficient network investment. Such a signal reflects a key principle of economic theory i.e. marginal cost pricing. Only future costs can be minimised not sunk costs, effective tariffs should be shaped around this important principle. Participants that create a need and utilise future network developments will specifically contribute towards the cost of the development. This cost reflectivity assists in supporting efficient grid development.”

3.3 Responses

The following organisations responded to the consultation (SEM-09-107):

1. Saorgus
2. ESB Power Gen
3. ESB WD
4. ESB Ind Gen
5. AES
6. NIE PPB
7. NIE Energy Supply
8. SSE Renewables
9. Viridian Power & Energy
10. IWEA
11. BGE
12. Synergen
13. Bord na Mona
14. Coillte
15. Enercomm
16. Art Generation
17. RES
18. Endesa
19. SWS
20. IBEC

The following sections outline a summary of responses to the options put forward by the TSO's in SEM-09-107 with regard to all-island G-TUoS. These responses were published in full on the all-island project website on 18 June 2010⁷. The TSOs comments and recommendations are then given followed by SEM Committee views.

⁷ Please see link:

http://www.allislandproject.org/en/project_office_sem_publications.aspx?year=2010§ion=2

3.3.1 General Overview of Responses

In general, the responses reflected how participants would be affected by each proposed methodology rather than to provide commentary on the principles or theory used in the Preferred Options paper. A number of respondents (Wind Generators in particular) argued that the main locational signals are provided through Shallow Connection Charges and Firm Access Quantities and that, in the past, little notice has been taken of whatever signals are in place due to loss factors or G-TUoS. There were some interesting comments regarding how to improve the methodologies and which areas to investigate on each. A number of respondents recommended that a Cost Benefit Analysis (CBA) be carried out on each methodology.

A few respondents complained that the TSOs should not have conducted the review and that there was a vested interest in preserving the status quo. The suggested reduction in the threshold (above which distribution connected participants pay G-TUoS) was raised in a number of responses.

A number of respondents to the SEM-09-107 expressed concerns with certain aspects of the proposed TUoS methodology. They were not in favour of locational charging and felt this was an increased risk for generators; this was a view particularly common among renewable generators. The TSOs are of the view that a number of the comments were fair and justifiable and hence they suggested modifications to the proposed methodology which they believed will address these concerns. Other respondents expressed views in relation to the proposed methodology, but without any explanation for their views and in a number of cases it appears that the indicative tariffs may have swayed judgement on the acceptableness of various methodologies.

3.3.2 Respondents' Views

A number of the respondents expressed concerns about volatility and suggested that the 40% limit on the postage stamp tariff component was not sufficient to limit volatility.

Two respondents stated that the forward looking model (dynamic) did not place enough value on the existing network. They suggested combining the dynamic model with a static model. One of these suggested a limit of 30% on the locational element, consistent with the weighting attributed to the objective of "cost-reflectiveness". A different respondent also suggested that the proposed 60% cap would not address the predictability issue.

Another respondent believed the proposed 60:40 locational/postage stamp split would be punitive and would act as a barrier to new entry, which would lead to favouring the incumbent units who would benefit from use of the existing system. This respondent suggested a 20:80 locational/postage stamp split saying that this increased postage stamp component would ensure all users that benefit from the existing network contribute significantly for doing so.

Several respondents suggested that the proposed TUoS options advanced by the TSOs could be seen as a deep charging regime which is not consistent with SEM design.

One respondent stated that *“the immediate difficulty with this option is that it appears contrary to the shallow connections charging policy. Unless a move away from the shallow connections policy is proposed we do not see how it can be reconciled with this option”*. Furthermore *“a key principal in the electricity industry is the shallow connection policy. Changing this policy to charge directly for deep reinforcements would be a major barrier to new entrants. Indeed [this respondent] has long advocated a change in the other direction, to one where the system pays for Grid it will own (namely shared assets), and it is becoming apparent that this would be of economic benefit, due to improved financing costs”*.

Finally, a number of responses were strongly against the TSOs proposal to change the TUoS threshold for distribution customers. This had been put forward on the basis that embedded generators, even small ones, due to the large number of these connecting to the system, are impacting the transmission system and driving the need for transmission investment. One respondent stated that *“...small windfarms with MEC less than 10MW do not use the transmission system”* and another that *“Reducing the threshold is a move away from the de-minimus level in the Trading and Settlement Code (T&SC) and unfair to small renewables that won’t have taken these charges into account in their business development planning”*. However it should be noted that some respondents argued the TSOs’ proposals were fair.

3.3.3 TSOs’ Comments and Recommendations

The TSOs have considered the responses to SEM-09-107 and have provided comment to the RAs on the key issues raised in the consultation. Based on their consideration of each potential model the TSOs have proposed a dynamic locational model with a postage stamp element (option 4). The TSOs believe this model will most fully deliver the objectives of this workstream.

The advantage of a locational signal in the TUoS tariff is that it allows the model to differentiate between the impact that various participants have on the transmission network. Participants who drive transmission investment or make more use of the system than others will pay higher TUoS tariffs, hence higher charges are attributed to those responsible for causing higher costs.

It was recognised that rather than allowing the locational element of the tariff to recover the whole annual revenue requirement, should that situation ever occur, that restricting the level of locational charges would maximise predictability and attempt to lower volatility of resulting tariffs. Nevertheless, it is envisaged that the tariff would still send an important locational signal to participants.

Having considered the comments received the TSOs remain of the view that a dynamic locational model with postage stamp remains the most appropriate model and that this model will deliver a locational signal regarding future development of the transmission system. However they have recommended a limit of 25% to 35% on the locational element of the tariff on the basis that this

gives a sufficiently strong locational signal without introducing too much volatility. A postage stamp element of around 70% will ensure that the range of tariffs is lower and the stability year on year is increased, while still maintaining a locational signal to encourage and reward efficient siting decisions.

In relation to charging for distribution connected units, analysis supports the TSOs' views that embedded generation does contribute to the need for transmission investment and hence it is appropriate to implement this change in threshold. The TSOs noted that the indicative tariffs outlined for the preferred methodology in the November paper were based on a locational element of 35% of total all-island required revenue and therefore illustrate approximately the impact of this change.

As regards the suggestion by respondents that the consultation proposals could be seen as a deep charging regime which is not consistent with SEM design, the TSOs pointed out that the locational charging model does not necessarily recover the costs of future assets in full from those using the assets. The model calculates the net present value (NPV) of any future assets, then using load flow analysis under four different network scenarios apportions the annuitized NPV cost of the new assets to all users responsible for flows on that circuit in proportion to usage. The annuitized cost is approximately 8% of the cost of the asset, it allows for 2-2.5% depreciation as well as the allowed rate of return. Costs are proportioned based on usage of the new asset. For example, a unit with a flow of 20MW on a new line with capacity of 200MW will pay only one tenth of the annual cost of the line.

Therefore the TSOs maintain that this cannot be construed to resemble deep charging which would require a unit driving the need for a new circuit to pay for the total cost of the new circuit. Furthermore deep charging would involve charging only the new unit for the new asset. In this tariff methodology all units using the new asset shall be charged.

Nonetheless, the TSOs believe that the current proposal for a 25% to 35% limit on the locational element should address any residual concerns in this respect.

Finally, with respect to proposed changes to TUoS threshold for distribution connected generators, the TSOs have recently conducted analysis of the impact of embedded generation on the NI system. This will be extended to studies of the all-island system in due course. Given the preliminary results the TSOs remain of the view that it would be discriminatory not to lower the threshold as other users are paying for the costs imposed by embedded generators less than 10MW.

The TSOs do however, see merit in the argument regarding the timing for introducing the change and believe that in order to allow relevant groups to incorporate any changes into the financial decision-making it would be appropriate to defer introduction to allow sufficient notice time. They have proposed changing the implementation date of the TUoS charging threshold to October 2011.

The TSOs have recommended a number of additional work areas for the full development of TUoS tariffs. In particular the TSOs are committed to providing indicative future tariffs under the proposed methodology and this will be done and resulting tariffs published. This is a significant piece of work and would require a time of at least 2 months.

A number of finer details need to be determined in relation to the final models including decisions on which assets will be included in the locational model, for example how Interconnectors shall be treated and when do assets become “built” and hence when the 7 year charging period starts. This will also include a rule for determining which assets are initially of zero cost, e.g. those on the Regulatory Asset Base (RAB) as of October 2011.

3.3.4 SEM Committee Views

3.3.4.1 Reasons for locational/postalised blend – option 4

As a matter of principle the SEM Committee considers that G-TUoS charges should contain some form of locational component, in order to provide a signal of the costs associated with a generators use of the network. Such signals provide a commercial incentive for generators to make informed decisions (both siting/entry and exit decisions) concerning their use of the transmission system. This is expected to improve efficiency in respect of both the use of and investment in the transmission system. On this basis, the SEM Committee considers that Option 5, which proposes no locational element to G-TUoS charges, can be discounted. The strength of the locational element in Option 6 is unclear. This, in addition, to the potential complexity of the solution means that the RAs do not consider that Option 6 offers an appropriate solution.

While supportive of a locational component the SEM Committee considers that G-TUoS charges should not be fully locational. This is on the basis that, as all users benefit from the existing network, it is fair that each user contributes to the cost of the existing network. Also, fully locational charges have the potential to be overly volatile from year to year in response to evolving network investment patterns and assumptions in the methodology regarding dispatch scenarios etc. Opting for fully locational charges could also place a disproportionately high revenue recovery burden on a relatively limited number of generators. In order to balance these effects, the SEM Committee considers that generator TUoS charges should consist of a combination of locational and postalised components. The SEM Committee considers therefore that Options 1 and 2 should not be considered further.

In principle the SEM Committee supports the use of a dynamic network study as the basis for calculating the charges. The SEM Committee consider that it is necessary to take anticipated future generation and demand patterns and planned network reinforcements into account when deriving G-TUoS charges to create appropriate signals of future costs of transmission system usage. This is expected to provide a more robust basis upon which generators can make informed decisions in relation to their investments. This suggests that, in principle, Option 4 provides a preferable solution to Option 3.

In conclusion, based on points of principle, the SEM Committee considers that the type of approach proposed in Option 4 offers the most appropriate solution. However, there are a number of important points of detail which will require further development.

3.3.4.2 Basis of calculating locational element

The TSOs have proposed the following approach to calculating the locational element of the G-TUoS tariffs and the SEM Committee is in broad agreement with this:

The TSOs are of the view that the dynamic model creates a forward looking investment locational signal which will support efficient network investment. The rationale for using a dynamic model rather than the existing static network is that in reality only future costs can be minimised, not sunk costs. Therefore the model seeks to influence decisions concerning future investments. Participants who create a need and utilise future network developments will specifically contribute towards the cost of the development.

Locational charges in each year y will be calculated with reference to expected flows over the anticipated transmission system configuration five years ahead (in year $y+5$). This will include transmission reinforcement projects that are projected to be in place by year $y+5$. In this context, locational charges will be set with reference to usage of new circuits only. For the purpose of classifying circuits on the anticipated future transmission system configuration, it is proposed that a circuit (actual or proposed) will be considered as 'new' if it has been added in the seven years following $y+5$. Assets older than this will cease to be classed as new and will not contribute to the locational charge calculation.

For each 'new' circuit, a locational charge is calculated for each generator, in proportion to its use of the new circuit. This process will be undertaken on a rolling basis for each year. Each generator's exposure to locational TUoS charges will be determined by its expected utilisation (on a marginal basis) of locational circuits. The TSOs are proposing that this utilisation is based upon modelled generation dispatch in four network development scenarios: Winter Peak with zero wind generation assumed, Summer Peak with zero wind generation assumed, Summer Peak with wind generators dispatched at 80% of their installed capacity and Summer Minimum with wind generators also dispatched at 80% of installed capacity. A locational charge is calculated for each unit under each scenario, with the maximum derived tariff for each unit taken as the basis for its locational charge.

It is important to note that the revenue recovery in each year will still be based upon the allowed transmission revenue set via the price controls. Costs associated with projected future transmission investment will not be recovered. Allowed revenue will continue to relate to assets within the respective RABs of the two jurisdictions. Only when future transmission assets are added to the respective jurisdictional RABs will they be included in the allowed revenue. It is

proposed that locational charges will be levied on new circuits for the first seven years after they have been built.

After this point assets will cease to be classed as new and it will not be treated locationally. They will instead be treated as sunk assets and allowed revenue linked to them will be recovered on a postalised basis. In any event, allowed revenue recovery in any given year will be based upon an aggregation of annuitised costs for assets included within the jurisdictional RABs.

3.3.4.3 Basis of calculating postalised element

The Modern Equivalent Asset Value (MEAV) is considered to be an appropriate basis for the valuation of existing assets to be included in the postalised element of the G-TUoS tariffs as this gives a reasonable basis for comparison of past sunk and planned future investments.

3.3.4.4 Basis of Split

In SEM-09-107, it was proposed by the TSOs that a minimum of 40% of charges should be recovered on a postalised basis, implying that a maximum of 60% of charges could be recovered locationally. Following the outcome of the consultation, discussed above, revised splits were considered and the TSOs provided analysis which considered the relativity between the values of existing and forecast transmission assets using the MEAV approach to the valuation of existing assets. It is proposed that future projects will include capitally approved projects plus projects that are forecast to be built but have not yet received capital approval. Based on this approach, the TSOs have proposed a cap on locational charges in the range 25% to 35%.

The SEM Committee considers that the relativity between the values of the existing and new assets offers an appropriate basis for the split between the postalised and locational elements of the use of system charging. The SEM Committee believes a split of 25% - 35% is appropriate and strikes the correct balance between locational and postalised.

3.3.4.5 Deep charging

The SEM Committee is of the view, for a number of reasons, that the preferred option advanced by the TSOs in SEM-09-107 would not create a deep charging regime

Firstly, it is envisaged that users would pay for new assets based on the annuitised cost of the circuit (based on a 50 year life) for seven years post-network investment. The SEM Committee will require further examination from the TSOs on these timescales.

Secondly, costs are apportioned based on usage of the new asset. For example a unit with a flow of 20MW on a new line with capacity of 200MW will pay only one tenth of the annuitised cost of the line. Again, the detailed aspects of will require further examination from the TSOs on issues such as definition of a 'new' line.

Finally, deep charging would involve charging only the new unit to pay for the new asset. In the proposed TSO tariff methodology all units using the new asset shall be charged.

3.3.4.6 Charging threshold for distribution connected generators

Originally, the TSOs suggested that the threshold at which distributed generators become liable for generator TUoS charges should be lowered from 10MW to 5MW. The SEM Committee's view is that this issue should be the subject of a separate consultation process and no changes will be made until a separate consultation and decision is outlined.

4. SEM COMMITTEE DECISION

Overview of Decision

Having fully considered the November 2009 consultation paper (SEM-09-107) and responses to it, including via the industry forum in November 2009, the SEM Committee approves a G-TUoS methodology which:

- Uses a combination of postalised and locational elements;
- Limits the magnitude of the locational element (the region 25% to 35% as proposed by the TSOs is considered appropriate at this stage);
- Uses static network charging based on the MEAV as the basis for the postalised element;
- Uses the dynamic network based on the value of the planned future network as the basis for the locational element; and
- Uses multiplicative scaling separately on the total postalised and locational charges resulting from the above approaches to scale to 30% and 70% respectively of the required revenue for a given year.

That is, the SEM Committee accepts the TSO's recommendation that option 4 from the November 2009 consultation paper be broadly adopted.

In addition, the SEM Committee has decided that G-TUoS tariffs should be fixed for a period of five years at a time, (with new generators also being fixed for five years). The SEM Committee is aware that this may impact on the Generator/Demand TUoS split (25:75) but the objective would be, where possible to minimise any variations.

As regards the more detailed aspects of the proposed methodology, as proposed by the TSOs, the SEM Committee is of the following views:

- The four dispatch scenarios described seem reasonable but represent the 'extreme' dispatches from among the range of likely dispatches.
- The proposed 'reverse MW mile' methodology for load flow analysis is the approach currently used by EirGrid for the Rol G-TUoS tariffs and has some advantages. However it will, like any marginal approach, result in the marginal change in the use of system for a particular generator under a particular system dispatch scenario being applied to the full output of the generator.
- It is noted that the TSOs description of how the maximum tariff (that is the most positive value for each unit across the four scenarios) is used to derive the final tariff. This approach, while accurately reflecting the generators use of the system under the extreme scenarios chosen, inevitably (and by design) maximises the differences between high and low tariffs.

- The preparation of network files for both existing assets, to be used as the basis of the postalised charges, and the network development planned for the next five years is described. It is noted that the PSSE outputs are converted into DC format.

As regards the treatment of future costs there are two areas of uncertainty.

- The preparation of the files for the existing network seems straightforward, however the uncertainty associated with network developments for the next five years is problematic. Various approaches to handling unexpected new build or delays of various durations to planned build have been proposed by the TSOs. However these detailed issues would require significant further development before the SEM Committee could approve.
- The other is the approach to costing. For the postalised tariffs it is proposed that the MEAV of existing assets be used as the basis for the postalised charging and the approach described by the TSOs seems reasonable. However, it is unclear what cost base the TSOs propose to use in constructing the annualised cost to be applied based on the NPV of future assets as the basis of locational tariffs.

Other details still to be finalised include:

- the treatment of negative tariffs;
- the treatment of Interconnectors;
- under and over recovery;
- exchange rate risk; and
- the establishment of an all-island tariff and arrangements for inter jurisdictional revenue transfers;
- the mechanism for fixing G-TUoS tariffs for five years. The TSOs should make sure that the detailed methodology caters for this requirement. Where this requirement causes material variations in the 75:25 split between Demand TUoS and Generator TUoS, the TSOs should prepare a recommendation for the SEM Committee on how this can best be dealt with or alternative options to achieve the appropriate level of stability.

The TSOs should now commence the development of the detailed methodology for the above items and prepare the resultant tariffs for submission to the RAs. Separately to this and following completion of indicative tariffs, the TSOs will also develop, assess and report upon the use of an average load flow as opposed to a marginal load flow technique for calculating line usage.

With respect to the TSOs' recommendation that the TUoS charging limit for small distribution connected generators be reduced below 10 MW (the TSOs are currently recommending a 5MW limit), the SEM Committee is of the view that this warrants further consideration, but that a decision on this matter is not key to arriving at a decision on the overall approach to TUoS charging on the island of Ireland and that it should therefore be subject to a further separate consultation.

Finally, arrangements also need to be developed and put in place for the practicalities associated with what will be the first all-island tariff.

Conclusion

It is the view of the SEM Committee that the TSOs consultation process has resulted in a significant step forward in determining a sound and equitable approach to the determination of all-island G-TUoS charging. The SEM Committee broadly accepts the recommendation that option 4 with a part postalised (based on the MEAV of existing assets) and part locational (based on anticipated future build) represents the best solution space for the island. The SEM Committee has also decided that the resultant G-TUoS tariffs should be fixed for a five year period in order to provide stability for generators. However the SEM Committee is conscious that fixing the G-TUoS tariffs may affect the split between Demand and Generator TUoS. This will be monitored and if necessary the TSOs will provide recommendations to the SEM Committee on how to deal with material variations.

Further work by the TSOs is needed to refine the details of the approach and produce indicative tariffs. In particular, the SEM Committee requests that TSOs prepare the detailed methodology to implement the SEM Committee decision as outlined above. THE SEM Committee also separately requires the TSOs to fully explore, assess and report on the use of average load flow approaches as an alternative to the reverse MW mile based approach. This report should be prepared after completion of work on indicative tariffs for 2011/12 (and for following five year period).

5. NEXT STEPS

Following the publication of this decision paper the next steps are as follow:

- The TSOs to develop full detailed methodology paper and indicative tariffs based on the guidelines and requirements outlined above by the SEM Committee. A full consultation on the indicative tariffs will be carried out. If appropriate the TSOs should hold an Industry Forum on the indicative tariffs and to outline the detail of the methodology.
- The TSOs should develop indicative tariffs and submit to the RAs in Quarter 1 2011.
- The TSOs detailed methodology and consultation should in particular address:
 - The basis for identifying the assets to be charged for locationally;
 - The method for valuing the assets;
 - The time period over which the selected assets are to be considered as being locational, both pre- and post- investment;
 - The utilisation of locational circuits;
 - Consistency of treatment between existing and new generators; and
 - The methodology for fixing G-TUoS tariffs for a five year period.
- Depending on the stability of the methodology developed the TSOs may make recommendations regarding:
 - The need for and appropriate level of any cap to be applied to the fraction of required revenue to be recovered locationally; and
 - The effectiveness of the five year fixed tariffs at achieving the objective of stability and the TSO's position if there are material variations to the split between demand and generator TUoS.
- RAs review responses along with TSOs' final recommendations and the SEMC to make a decision on G-TUoS tariffs to apply from 1 October 2011 which will be published in Quarter 2 2011.