

Single Electricity Market

**Proposed RAs option for all-island
harmonised Transmission Loss Adjustment
Factors (TLAFs)**

Proposed Decision Paper

18th June 2010

SEM-10-039

1. INTRODUCTION

1.1 Objectives

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. This document provides the views and proposed decision of the Regulatory Authorities (RAs) in relation to transmission loss adjustment factors (TLAFs).

It is acknowledged that the RAs² and the TSO³ have previously consulted in unison on the harmonisation of both Generator Transmission Use of System (TUoS) and Transmission Loss Adjustment Factors (TLAFs) arrangements. The RAs are still in the process of reviewing the harmonised TUoS arrangements and a proposed decision on these arrangements will be published by the RAs soon. However the RAs are in a position to publish a proposed decision on harmonised TLAF arrangements at this point. Therefore this paper will deal specifically with the arrangements associated with TLAFs on the island.

The RAs consider that transmission arrangements should provide in some form 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. However, the RAs are also of the view that these arrangements should be predictable, non-volatile (to the greatest possible extent) and be transparent to stakeholders.

While it has been argued that transmission losses provide signals which affect network investment in the longer-term, one objective of losses is to deliver efficient generation dispatch in real-time. The application of appropriate TLAFs to generator volumes allows each generator's contribution to overall transmission losses to be reflected in dispatch decisions. It has also been previously argued that appropriate TLAFs should also allocate losses to individual generators on a cost-reflective basis, thereby providing signals to generators relating to their impact on overall transmission losses. Thus, the objective is that TLAFs should provide signals to generators relating to their impact on overall transmission losses, which should promote efficient real-time dispatch. However, in this paper the RAs are proposing to place a particular weighting on the principal objective of TLAFs delivering efficient generation dispatch (in an optimal fashion) over that of allocating losses to individual generators on a cost-reflective basis. This is outlined further in section two.

1.2 Background - TLAFs

Harmonised transmission losses arrangements were introduced as part of SEM implementation. Under the current arrangements, TLAFs are determined ex-ante (at the year-ahead stage, four months before the start of the relevant year) for each Generator

¹ Please refer to AIP/SEM/42/05.

² Please refer to [SEM-09-001](#).

³ Please refer to [SEM-09-107](#)

Unit. A TLAF value is determined for day and night periods for each month, each calculated as an average of marginal transmission losses linked to that Unit at the relevant time. These TLAF values are used by the Generator Unit when submitting bids – their offer prices (the Ps in their PQ pairs) are divided by their TLAF. This loss adjusted offer price is used both in setting merit order in dispatch and in the calculation of the SMP in market pricing and therefore the setting of the market schedule. The SMP is finally multiplied by the respective loss-adjusted Market Schedule Quantity (MSQ) for each generator to ensure the correct settlement. So a good/high (e.g. >1) loss factor will in general lead to a generator more likely being dispatched with access to the market schedule, while a poor/low loss factor (e.g. <1) will in general make it less likely that the generator will be dispatched and get access to the market schedule.

However, there are a number of concerns relating to the current TLAF arrangements for generator units. First, the derived TLAF values have, in some cases, been volatile with significant year-on-year variations. This creates risk and uncertainty for the affected generators. Second, as they are calculated year-ahead, the ex-ante TLAFs do not reflect the prevailing conditions on the system at the time of dispatch. This creates a concern that the arrangements are not contributing to efficient dispatch. Finally, increased dispatch efficiency cannot be obtained without increased TLAF volatility and this presents a significant issue for new and existing market participants alike. Expectations are that this situation will deteriorate as the generation mix changes and the penetration of intermittent generation increases. These issues have contributed to the ongoing review of the TLAF arrangements.

1.3 Process to date

The process to date is as follows:

- in January 2009, at the request of the RAs, 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 TLAFs⁴;
- 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 TLAFs⁵;
- in November 2009 the TSOs held a workshop in Dundalk where they presented on their preferred options outlined in *SEM-09-107*. The RAs also presented on their perspective at the workshop and participants were invited to comment on the TSOs preferred options⁶; and
- in February 2010, having considered responses to the November 2009 consultation, the TSOs provided a formal response to the RAs in which they set out their updated position and recommendations.

⁴ Please see following link:

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

⁵ Please see following link:

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

⁶ Ibid

Building on the progress made by the TSOs and the input provided by industry participants, the process now moves onto the proposed decision phase.

Since November 2009 the RAs have received advice from technical consultants working on the project – Poyry.

1.4 Purpose of paper

The purpose of this paper is two-fold:

- to describe the RAs views in relation to the generator TLAF calculation options that have been developed by a number of parties, including the TSOs, during the locational signals review process; and
- to provide an RA proposed decision on the matter with the opportunity for stakeholders to respond.

Comments should be submitted by 17:00 on Friday 16th July 2010 to jburke@cer.ie and billy.walker@uregni.gov.uk.

As outlined above in section 1.1 the RAs are still in the process of reviewing the harmonised TUoS arrangements and a proposed decision on these arrangements will be published by the RAs in the near future.

2. TRANSMISSION LOSS ADJUSTMENT FACTORS

2.1 Objectives

The RAs are of the view that the principal objective of transmission losses arrangements is to deliver efficient generation dispatch in an optimised close to real-time fashion. The application of appropriate TLAFs enables the impact of each generator on the overall volume of transmission losses to be taken into account in dispatch decisions. It has been previously argued that appropriate TLAFs also provide signals to generators of their impact upon losses on the system, which could be considered when taking siting/entry decisions and exit decisions.

Achieving this objective must be balanced against the cost involved in delivering this optimised dispatch and the associated quantifiable benefit. It is important for the methodology to be transparent and provide predictability.

2.2 Overview of TSO proposed models

The TSOs have indicated to the RAs, and indeed to industry, that an enduring solution could be implemented from 1st October 2011. Given the pressing nature of concerns associated with the current TLAF methodology and outlined in section 2.2, in addition to long-term solutions, options for interim reform were proposed by the TSOs. These options have been proposed to amend the transmission losses arrangements in the short-term, with effect from 1st October 2010. This section focuses initially on the TSOs long-term models, as these represent the options for enduring reform, before considering the TSOs short-term models.

2.2.1 TSOs Long-term options

During the course of the locational signals review process, seven potential TLAF methodologies were proposed by the TSOs and have been considered by the RAs as long-term solutions. The TSO's long-term TLAF options can be broken down into high-level building blocks. The high-level building blocks and the available choices at each level are set out below (there are additionally several sub-layers relating to detailed methodological choices):

- **treatment of TLAFs in market and in dispatch:**
 - common, which means that, as now, transmission losses are treated consistently in the market and in dispatch;
 - splitting, which involves separating the treatment of transmission losses in the market from their treatment in dispatch;
- **principle underlying allocation of transmission losses in market:**
 - uniform, under which the same TLAF is applied to all generators;
 - locational, under which locationally varying TLAFs are applied;

Table 1 describes the seven long-term options developed by the TSOs 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 transmission losses methodology options

	1	2	3	4	5	6	7
Model building block	Rolling average	Banding	Compression	Zonal	Uniform	Splitting	TSO purchase
Treatment of TLAFs in market and in dispatch	Common	Common	Common	Common	Common	Splitting	Splitting
Principle underlying allocation of transmission losses in market	Locational	Locational	Locational	Locational	Uniform	Uniform locational	or Uniform locational or

- **Option 1:** The current methodology for calculating TLAFs is revised slightly such that TLAFs are based on a rolling average of values over the last three years. TLAFs vary locationally. The same TLAF value is used in the market schedule and in dispatch.
- **Option 2:** A modification to the current TLAF methodology such that TLAFs are normalised into one of five bands (0.96, 0.98, 1.0, 1.2, or 1.4). TLAFs vary locationally. The same TLAF value is used in the market schedule and in dispatch.
- **Option 3:** Another revision of the existing methodology involving the compression of TLAFs within the range 0.95 to 1.05. TLAFs vary locationally. The same TLAF value is used in the market schedule and in dispatch.
- **Option 4:** A further modification to the existing methodology involving the calculation of TLAFs zonally rather than nodally, such that all nodes within a zone share a common TLAF specific to that part of the system. The same TLAF value is used in the market schedule and in dispatch.
- **Option 5:** A common, non-locationally varying TLAF applies to all generators. The same TLAF value is used in the market schedule and in dispatch.
- **Option 6:** The treatment of transmission losses in the market schedule and in dispatch is divorced. Within the market schedule, there is the option for either uniform or locational TLAFs to apply.
- **Option 7:** This is an extension of splitting under which the TSO has responsibility for purchasing losses. The TSOs consider that this would take several years to implement.

2.2.2 TSOs Short-term option

In *SEM-09-107* the TSOs preferred option was to adopt a 'Compression' Factor in the short term, which would be applied to all Generators TLAFs on the island. This option would involve the use of an algorithm to compress the Generator TLAFs. Assuming that the initial TLAF falls within the range of 0.90 and 1.10, then the compression factor would work to retain the relative order, while ensuring that limits are applied to minimum and maximum factors allocated.

2.3 Respondents' views

The responses to the TSOs consultation paper *SEM-09-107* can be broken into three categories, (i) those made in respect to the current TLAF methodology, (ii) those made in respect to the TSO proposed 'Compression' factor methodology and (iii) those made in respect to the 'Splitting' option.

Some industry participants have raised a number of issues in relation to the current treatment of transmission losses. Therefore, with regard to (i), the majority of the respondents highlighted the year-on-year volatility issues associated with the current methodology and the difficulty associated with predicting future year TLAFs. These respondents stated that this volatility and lack of predictability raises the cost of capital for current and prospective market participants. A number of respondents questioned the accuracy of an ex-ante TLAF methodology calculated a year in advance, given the amount of intermittent generation currently on and joining to the system.

Some respondents suggested that an 'iterative' approach should be taken in the development of generator dispatch scenarios in Plexos. This allows the generation dispatch input and PSSE output Marginal Loss Factors (MLFs) to converge to a stable point in each study. A number of respondents argued that a marginal methodology will

typically recover twice the level of actual losses. Therefore, they advocated an average TLAF methodology, which they stated could be more representative of actual system losses. One respondent suggested that Multiplicative scaling should be used instead of Additive scaling, when adjusting allocated losses to meet projected system losses.

Another respondent pointed out that since actual losses consist of fixed and variable elements, the loss factors should also contain a fixed and variable element. Finally, one respondent also suggested applying TLAFs to Demand as opposed to Generators.

With respect to (ii), a number of respondents suggested that the compression factor will result in a less efficient dispatch due to the distortion to the TLAF figures and that generators will not be fully penalised for the losses they incur and vice versa – hence cross subsidisation could occur. Respondents were also worried that temporary interim measures may delay the implementation of a more enduring solution. They noted that the Compression Factor, as part of a three step strategy, would actually increase regulatory risk by prolonging TLAF unrest. One market participant claimed that the *'compression factor proposal would be a substantial change to the operation of the market and would strengthen a view of increased regulatory risk'*. A number of participants highlighted the issue that the uncertainty surrounding the different TLAF methodologies would not decrease the cost of capital.

A majority of respondents saw the compression factor as being of little value as it resulted in even less accurate TLAFs than the current methodology. Finally, some respondents pointed out that the actual Market Merit Order will be distorted as a result of compression factors replacing TLAFs. Overall, there was no support for the Compression Factor Methodology as most respondents claimed that the solution added no real value, led to cross-subsidisation, would increase regulatory risk and would ultimately lead to a less efficient dispatch.

With regard to (iii), a number of respondents identified the possible impacts of the splitting methodology on the Dispatch Balancing Costs (Constraints Costs). A few wanted the focus to be on one long term enduring solution rather the three step strategy proposed by the TSOs. One respondent was concerned that not striving for the long term solution would increase costs and divert resources from the chosen end game. Another also found merit in only focusing on the long term solution and to not be concerned with intermediate steps.

One of the respondents also queried the impact of Splitting on the Error Supplier Unit. However, it must be said that the majority of respondents seemed to favour the splitting methodology subject to further information, such as the effects on SEM energy payments, Capacity Payments Mechanism (CPM), Infra-Marginal rent, losses, cost of capital etc.

2.4 RAs' comments

2.4.1 RAs comments on points of principle

To begin with the RAs would like to address the point made with regard to applying TLAFs to Demand as opposed to Generators. The RAs wish to confirm that Demand TLAFs are outside of the scope of this particular workstream and therefore this issue will not be addressed as such.

The RAs are in agreement with the respondents concerning the possible impact of employing the splitting methodology on SEM energy payments, CPM etc. and this issue is discussed in section 2.5.1 below.

The initial focus is on the TSOs long-term options, i.e. from 1st October 2011 as proposed by the TSOs. This is on the basis that it is the enduring arrangements which should determine the direction of any changes to the TLAF methodology in the short-term. This section then discusses the TSOs short-term option (i.e. from 1st October 2010) outlined in *SEM-09-107* and further developments in this area.

It should be noted that while the TSO's had proposed a long term and a short term solution, the RAs are of the opinion that where possible the solution which is adopted in the short term (i.e. from 1st October 2010) should be as close as possible to the enduring solution. The RA's proposal to meet this requirement is outlined in more detail in Section 2.5.

2.4.2 RAs views on TSOs long-term options

The RAs acknowledge the concerns that have been raised regarding the accuracy of the existing TLAF methodology. Based on these concerns, it is apparent that the existing methodology is not promoting efficient dispatch, given the variation between the ex-ante determined TLAF values and actual losses in real-time and is having an undue impact on the market schedule. For this reason, the RAs are generally supportive of exploring an approach which divorces the treatment of losses in the market and in dispatch (i.e. some form of splitting) subject to determination that splitting delivers quantifiable benefits in terms of improved dispatch which outweigh the costs, including constraint costs, associated with achieving this level of improvement. It would not be considered worthwhile by the RAs to pursue splitting if the costs of divorcing the treatment of losses in the market schedule to that in the dispatch schedule outweighed the benefits. This matter is discussed further in section 2.5.1 below.

In *SEM-09-107* the TSOs proposed a 'purchase of losses' mechanism to overcome the misalignment in the market between what has been produced by generators and what is being consumed by demand. This mechanism would involve the TSO buying, at the system marginal price, the unit (MW) gap between what has been produced and consumed. The RAs are of the opinion that any such scheme would need to be carefully designed and that the lead-time (5 years +) for implementation of this approach proposed by the TSOs is significant. For these reasons, the RAs do not propose to proceed with Option 7 at this point in time.

Therefore, based on points of principle, the RAs consider that the type of approach proposed in Option 6 offers the most appropriate solution albeit that the case for implementing splitting needs to be examined by the RAs. There are also a number of important points of detail which require further consideration and which are outlined in section 2.5.1 below.

2.4.3 RAs views on TSOs short-term options

Due to concerns relating to the existing TLAF arrangements, several options for short-term reform were considered by the RAs, as well as the Compression option outlined in *SEM-09-107*, as potential solutions. The short-term options considered by the RAs included the following (in isolation and in combination):

- **Maintaining the current TLAF methodology:**
 - Employing the current methodology which has been in place since the introduction of the SEM, to calculate the TLAFs for market participants for 1st October 2010. It has suggested by some respondents that no change should take place to current methodology of calculating TLAFs, until a long-term solution is put in place by the RAs.
- **Differentiating between fixed and variable losses:**

- It is suggested that individual loss factors should only seek to reflect variable losses. This is on the basis that fixed losses are not location specific and so cannot be influenced by a generator’s location.
- **Uniform TLAF:**
 - Consistent with enduring solution Options 5 a uniform TLAF approach is also suggested as a short-term measure.
- **Multiplicative scaling:**
 - Marginal loss factors derived from the dispatch modelling process are scaled such that the sum of all calculated nodal losses equals system-wide losses. At present an additive scaling factor is used. It has been argued by some respondents that this additive scaling process exaggerates the locational relationship between different nodes. A multiplicative scaler is suggested as an alternative method that maintains the relative (rather than absolute) contribution of each generator to system losses.
- **Iteration:**
 - Currently, the generation dispatch modelling used to determine TLAFs does not reflect loss factors. It is argued that this does not provide a realistic view of actual dispatch patterns in practice and, consequently, provides an inappropriate basis for TLAF determination. Iterative dispatch modelling, incorporating the derived loss factors from each model run into the next iteration, is a possible option for overcoming this perceived shortcoming.
- **Compression:**
 - The possibility of compression of TLAFs is raised as a short-term option. The solution is consistent with enduring solution Option 3, although a compression factor of two or more has been suggested in the short-term.

The RAs have considered the short-term solutions as well as maintaining the status quo with regards to the TLAF calculation methodology. At this point, it is important to remember the objectives of the workstream, as outlined in sections 2.1 and 2.2 of AIP/09/001⁷, being increased predictability and transparency and reduced volatility for market participants (as well as cost reflectivity and efficient location). Whilst many of the short-term options suggest changes to the details of the TLAF methodology, the RAs are able to offer views on a number of the options outlined above.

The RAs are aware that the current TLAF methodology is extremely sensitive to changes in dispatch scenarios and changes in the generation mix / location. It has been argued that the marginal cost approach could lead to overly punitive losses being attributed to particular generators on the island. It must be said that a number of respondents advocated no change to the current methodology, even though they were not comfortable with its calculation. They maintained that the status quo in TLAF methodology should continue until a better long-term solution is put in place. However, in the interests of promoting fairness, stability and predictability⁸, the RAs were focused on addressing the sensitivity issues of the current methodology during the review process. Therefore, the RAs felt that the option of maintaining the current approach would not be in keeping with a number of the RAs objectives outlined in *SEM-09-001*.

The RAs, in conjunction with the TSOs, also examined applying an Iterative approach to the current methodology. Initial modelling runs using plexus indicated that this would not

⁷http://www.allislandproject.org/en/transmission_decision_documents.aspx?page=2&article=9cd0178e-712b-4021-a11e-e7bdd2e6f05c

⁸ Please see sections 2.1 and 2.2 of *SEM-09-001*.

deliver a significant change in the final TLAFs and therefore suggested that the lack of iterations was not the source of the problem, i.e. a large range of TLAFs. Furthermore, a full iterative approach (feeding the results of the PSSE study back into Plexos to alter a dispatch which was then fed back into PSSE) was considered by the TSOs to be impractical as it would double or triple the amount of time taken to calculate TLAFs. The TSOs stated that this would add a number of months per iteration. For these reason the RAs are not proposing to adopt this option.

The TSOs stated that the accuracy or change brought about by iteration was not significant enough to warrant such a dramatic change in the amount of time needed. While the TSOs did not carry out the measure on an entire set of TLAFs (according to the TSOs this would have taken two months), the work that the TSOs did do, indicated that TLAFs would remain within their normal range and that there would be minimal change to derived TLAFs from the current methodology. Therefore, the proposal made by a number of respondents that the lack of iteration was the cause of the problem with the current methodology is not a well-founded argument. Finally, many of the fundamental issues associated with the once yearly ex-ante TLAF approach apply regardless of whether an iterative approach is used or not. For these reasons, the RAs are not proposing to adopt this option.

In the short-term, the critical principle that the RAs are adhering to is that reform will only be progressed if it offers progress towards a preferred long-term solution or is an improvement on the existing TLAFs, from the point of view of the objectives set at the start of this workstream. Under the Compression Factor option, floor and ceiling limits are applied to TLAFs – i.e. with an algorithm normalised around 0.98, then the limits will be approx 0.94 and 1.04. Generators TLAF would not go above or below these limits. It was argued by the TSOs in *SEM-09-107* that this algorithm would reduce volatility but that in certain cases the short term efficient dispatch may be reduced⁹. Cost reflectivity would also be diluted as generators are not being paid or benefiting for the full extent of their effects on the system.

In this context, the RAs, while accepting that compression would reduce the range in TLAF values, are of the view that this approach is arbitrary and does not address the underlying sources of sensitivity within the methodology and are therefore not minded to adopt this approach.

The proposed 'multiplicative' approach to TLAFs would be derived under the current TLAF methodology. The TSOs state that in itself the approach is legitimate as is the alternative (additive), but the additive approach maintains a uniform differential in the data maintaining the locational relationship between TLAF data. However, the RAs are of the view that the adoption of the multiplicative approach would not significantly address the shortcomings of the current methodology and are not proposing to adopt this option.

A number of respondents maintained that losses on the system can be split into both fixed and variable and that fixed losses should be charged on a uniform basis. One respondent suggested that fixed losses accounted for 30% to 50% of overall losses, while another maintained that fixed losses can be 20% to 35%. It is clear that the ranges of the breakdown between variable and fixed losses, as proposed by respondents vary considerably (between the lowest and highest point). The TSOs have not been able to provide the RAs with an exact breakdown of losses between fixed and variable on the

⁹Given that the compression of TLAFs could lead to distortion in the market schedule merit order.

All-Island system. Therefore, the RAs are of the view that differentiating between fixed and variable losses is not appropriate as a short-term option.

2.4.4 RA considerations regarding Uniform TLA

There are a number of issues which require discussion on the option of applying a uniform TLA to all generators in the market and dispatch schedules.

Q1. *Why have locational loss factors?*

- a) *To ensure economic dispatch.*
- b) *To send a market signal to generators (via effect on their scheduled quantities) to locate in such a way as to:*
 - *minimise operational losses.*
 - *ensure that the transmission system overall is developed in an efficient manner with minimisation of losses.*

Q1 (a) Locational Loss factors and economic dispatch

At present the loss factors used in dispatch are those calculated annually by the TSOs and mandated by the RAs. Section 1.2 above discusses how these TLAs are calculated.

In dispatch the Reserve Constrained Unit Commitment (RCUC) produces a schedule based on the loss-adjusted bid prices submitted by Generators, i.e. the allocated loss factors affect the merit order and therefore the actual dispatch. However, the loss factors currently used are the ex-ante average factors for day and night, summer and winter, as described above. It is possible that these are not much more representative of real time losses than a uniform loss factor would be especially in future scenarios with large quantities of wind generation.

An alternative approach is the use of real-time losses, calculated by the TSOs, using the best software and metering tools available. However, even given 100% accurate and detailed 'real-time' information on losses on all parts of the system and dispatch tools which were able to iterate rapidly and converge on stable dispatches, the scope for optimising the dispatch to minimise losses may be low. This is because other factors on the island such as the reserve needs and priority dispatch to renewables will be the main factors determining dispatch by the TSOs, with little scope remaining to minimise losses.

Therefore, as regards the possible use of 'real-time' loss factors it may be the case that the perceived difficulty and possible high associated cost (getting higher the closer to 'real time' one aims), the likely risk around the ability to calculate these accurately and the probable low impact on actual losses on the all-island system, that real-time loss factors in dispatch may not be a feasible option. However, the use of real-time loss factors in dispatch the understanding the effects of such loss factors on the SEM and transmission system on the island is of keen interest to the RAs. This matter is discussed further in section 2.5.1 below.

A further question arises, if selected, should the uniform loss factor be 1.0 or 0.98¹⁰. If one has a uniform loss factor its level depends on whether generation or demand pays for losses. In general, if generators pay for losses, as would be the case if a uniform loss

¹⁰ Initial analysis carried out by the TSOs indicate that average system losses sum to approximately 2%. This analysis will be published separately by the TSOs during the consultation phase of this paper.

factor of 0.98 were chosen, the SMP will be higher and demand buys less electricity (i.e. not transmission losses) at a higher price. If Demand pays, as would be the case if a uniform loss factor of 1.0 were chosen, then it buys a higher volume but at a lower SMP, because transmission losses are not a cost to generators. One can fix the split anywhere in between these total values. However, it is factually correct that Generators flows contribute to losses on the transmission system and therefore the RAs are currently of the view that it is more equitable to attribute an average system loss to all Generators as opposed to Demand.

Another possible approach is that Generators receive individual loss factors which may or may not vary with time. However, it is believed that the allocation of individual fixed (in time) loss factors might be accurate in the short term, but would be likely to become less and less accurate as time progresses and more intermittent generation comes on to the system. This is discussed further in section 2.5.1 below, but the RAs would welcome comments on this matter from stakeholders.

Q1 (b) Locational Loss Factors and Signals to Generators

(b) It is described above how the application of locational loss factors affects the MSQs of generators and therefore their inframarginal rent. One would assume that this should give a strong signal to generators to locate at sites which minimise system losses and which drive efficient system development, i.e. does not result in a widely spread system and one which is more vulnerable to losses. However it has been argued by a number of parties that:

- The current methodology for calculating losses is extremely sensitive to changes in dispatch scenarios and changes in the generation mix and location. It is therefore possible for a generator to respond to a 'good locational signal' only to find that their presence impacts the calculation of losses to such an extent that they get a very poor loss factor. The signals provided are not stable and therefore not effective in delivering the desired outcome. Hence the desire for a relatively stable long-term locational signal.
- On the island of Ireland generators have little or no choice where to locate. However they can choose whether or not to go ahead with their projects or to exit the market. Ultimately, should the RAs be concerned (on behalf of the consumers) with which actual projects go ahead? The RAs are of the view that concern should only be raised in the case where overall losses, the network costs or the wholesale market costs are higher, with one portfolio of projects as opposed to another.
- The distribution of demand is unlikely to change significantly over the next few decades. Generators will tend to locate on 'brown field' sites and in the case of wind, at the sites with the best wind resource. It is generally agreed that use of system costs need have a locational element to reflect the cost of system development but this is a separate issue to TLAFs.
- The long term system development plan has already largely been set and to a large extent generators will locate where the grid is being built, rather than vice versa. This results from geographical compactness and from the largely pre-determined locations of wind farm developments.
- The risk associated with loss factors which vary from year to year and which impact significantly on generators income, raises the cost of capital for generation projects. It has been argued that this ultimately leads to increased costs for consumers and that these costs may outweigh any limited effect of loss minimisation and grid development optimisation. Indeed in the responses to *SEM-09-107* and feedback in industry forums held as part of the consultation, Generators almost unanimously

supported the move to a uniform loss factor for these reasons. It appeared that even where generators have favourable loss factors under the current methodology the benefit of future certainty outweighed this.

2.5 RAs' proposed decision

The RAs are proposing to implement a uniform TLAF of 0.98 for all generators from 1st October 2010. This uniform loss factor will apply both in the market schedule and dispatch. Application of the 0.98 uniform TLAF is on the basis of initial analysis carried out by the TSOs, which indicate that average system losses are approximately 2%. This analysis will be published separately by the TSOs during the consultation phase of this paper. Moving to a uniform TLAF of 0.98 is being proposed on the basis that it meets the RAs objectives for predictability, stability and transparency.

It is also proposed that the RAs will review the current dispatch methodology as part of a splitting option Impact Analysis (please see section 2.5.1). This is with a view to analysing system developments which would result in the minimisation of the actual costs of dispatch. As detailed in section 2.5.1 any splitting options proposed by the RAs as a result of this analysis will be subject to review and comment by stakeholders. The RAs intend that the findings of this Impact Analysis will be published for consultation with stakeholders in early Q2 2011.

In the context of a movement to any splitting-based approach approved, the RAs consider that the TLAFs used for dispatch could be calculated in an optimum (close to real-time losses) or real-time (actual losses) fashion. The RAs believe that this will improve the appropriateness of the TLAFs as the values calculated would be expected to be a more accurate reflection of the conditions on the system at the time of dispatch. The methodology for deriving these TLAFs will be developed by the TSOs.

The RA-led Impact Analysis will also analysis any investments that would need to be made in dispatch IT systems so as to implement a splitting-based methodology, either with dispatch being run in an optimal (close to real-time) or real-time fashion (actual losses). This will be with a view to understanding the effects of having differing TLAFs between the unconstrained market schedule and the constrained dispatch schedule. Any system (IT) developments identified by the RAs to as a result of this analysis will also be subject to review and comment by stakeholders.

The RAs explored the possibility of implementing a splitting based methodology for 1st October 2010. While this may be desirable, the TSOs have confirmed that it is not possible to use different loss factors in dispatch and in the market schedule as at present these both feed in to RCUC and to the market pricing engine through the Generator bids. If different factors were to be used this would involve a number of changes to the central market systems, which could not be implemented by 1st October 2010. In addition the RAs full Impact assessment will take some time as outlined below.

2.5.1 Detailed issues requiring further consideration

The RAs detailed Impact analysis will be carried out over the coming months on the separation of the market schedule from dispatch, with input provided by the TSOs and SEMO (with regard to impact on market systems). It is proposed that the implementation of any 'Splitting' proposal is to be contingent on a satisfactory outcome from this Impact analysis.

It is proposed that the first section of the analysis will consider the impact of divorcing the treatment of losses in the market from that in dispatch, i.e. splitting. This analysis will separately examine the effects on the SEM/transmission system with dispatch being run

in an optimal (close to real-time losses used) and the effects on the SEM/transmission system with dispatch being run in a real-time fashion (exact losses used). The study will address the following non-exhaustive list of issues for both scenarios:

- Impact on SMP
- Changes in the marginal plant
- Changes to in-merit plant in market schedule
- Changes in volume of losses incurred
- Changes in constraint payments
- Changes in the Imperfections charge faced by Suppliers

Secondly, the RA-led Impact Analysis will also examine the costs associated with the necessary installation of IT/metering systems to enable dispatch to be run in an optimal (close to real-time) or real-time fashion (exact losses in dispatch).

The analysis will determine the best treatment of losses in the market schedule. This approach could include continuation of uniform TLAFs as proposed for implementation from 1st October 2010, TLAFs as per the dispatch schedule or another option such as nodal, zonal or long-term fixed TLAFs. Finally, it is proposed that the RAs will task the TSOs, as metering systems develop, to conduct regular monitoring of and to provide reporting on actual losses volumes on the system in order to increase transparency.

The RAs propose that the findings of this Impact Analysis will be published for comment by stakeholders in early Q2 2011. Proposed timelines associated with the impact Analysis are as follows:

Table 2: Proposed RA Impact Analysis timeline

Date	Step
End August 2010	Publication of Decision paper by RAs.
End September 2010	Publication of Terms of Reference for 'Splitting' Impact Analysis report by RAs.
End October 2010	RAs finalise Terms of Reference, with input provided by TSOs.
End Q1 2011	RAs complete Impact Analysis report.
Early Q2 2011	RAs publish findings of Impact Analysis for comment by stakeholders.
Q2 2011	RAs issue decision on treatment of losses in market schedule and dispatch schedule.

2.6 TLAF Conclusion

The RAs are proposing from 1st October 2010 that the treatment of losses in dispatch and the market schedule are to be treated on a uniform basis. Based on initial advice received from the TSOs, the RAs are proposing that a loss factor of 0.98 to be applied to all Generators.

The RAs are also proposing, in principle, of adopting in the long-term the concept of 'Splitting' i.e. the separate treatment of transmission losses in the market schedule from those in dispatch. With Splitting, in dispatch decisions TLAFs should be derived as close to real-time as possible. In the market schedule of Splitting, the RAs are proposing that the uniform approach to losses should be adopted. The implementation of the 'Splitting' proposal is to be contingent on a satisfactory outcome from an Impact Analysis, as outlined above, to be carried out by the RAs on the separation of the market schedule from dispatch.

2.7 Next steps

Building upon the proposed TLAF decision provided in this paper, the RAs have developed a work programme to enable the publication of a decision paper by end August 2010. This will include the following steps:

- Further Consultation: Industry workshop in July 2010. It is intended that this workshop will outline the RAs proposed decisions on both TUoS and TLAFs and will allow the RAs the opportunity to listen to the views of the industry.
- Proposed Impact Analysis timeline as per Table 2 above.

The TSOs are assisting the RAs in this process and the RAs acknowledge the significant volume of work carried out by the TSO's project team.

2.8 Response to Proposed Decision

The RAs invite views on the proposed all-island TLAF decision outlined in this paper.

Comments should be submitted by 17:00 on Friday 16th July 2010 to jburke@cer.ie and billy.walker@uregni.gov.uk.

Following a review of comments received to this proposed decision the SEM Committee plans to publish a final decision on all-island harmonised TLAF arrangements by the end of August 2010.