

Bord Gáis Energy Response to SEM Committee Consultation on ‘Treatment of Losses in the SEM’

27th January 2011

Executive Summary

In the terms of reference for the analysis on the treatment of losses in the Single Electricity Market (SEM), the SEM Committee reiterated its preference to implement ‘Splitting’ as a long-term solution for the treatment of TLAFs in the SEM *to the extent that customers were not materially worse off by its implementation*. The results of the Regulatory Authorities analysis and Bord Gáis Energy’s (BG Energy) own analysis can only be described as inconclusive. BG Energy does not believe that customers would be materially worse off by the implementation of ‘Splitting’. However, the same interpretation could also be applied to the impact of Uniform TLAFs. Therefore, on the basis of providing investment stability, moving towards a regional market solution and removing barriers to trade, BG Energy is firmly of the view that a uniform TLAF solution would be optimal for the SEM at this time.

The analysis that has been conducted both recently and over the course of the three year consultation provides no grounds to support the application of marginal loss factors¹ that are calculated on an annual ex-ante basis.

The Regulatory Authority’s analysis clearly highlights that in the absence of reliable real-time TLAFs, there is no material difference in the cost to customers between the use of marginal, compressed or uniform TLAFs in the market or dispatch schedules. Whether applied in both or either of the market and dispatch schedules, marginal and/or compressed losses **do not** provide the desired locational signals, do not deliver greater efficiency and do not minimise system and customer costs. They do however generate significant revenue volatility which creates uncertainty for investors as well as market winners and losers in terms of large cross-subsidies between generators. The SEM is an outlier with respect to the treatment of losses across Europe and it therefore also acts as a barrier to cross-border trade, which contravenes the objective of Regulation (EC) No 714/2009 with respect to conditions for access to the network for cross-border exchanges in electricity.

Given that the infrastructure is not currently available to determine reliable ‘close-to-real-time’ loss factors, any analysis aimed at understanding the cost and efficiency impacts of locational loss factors will be inconclusive. Although ‘Splitting’ would be a marked improvement from the current treatment of losses in the SEM, it is not in BG Energy’s view the optimal solution at this time. Moreover, the interim solution of compression is based on the same flawed marginal

¹ References to marginal loss factors throughout the response include marginal and compressed loss factors as they are both based on the same marginal and scaling methodology.

approach and has been recognised as failing to address the underlying sources of sensitivity within the methodology. It must thus be discounted.

Since the SEM Committee published its Decision Paper to implement ‘Splitting’ (subject to further analysis on its impact on customers), the regional integration project has gained significant momentum across Europe and in the SEM. An all-island solution has also been implemented to provide locational signals through the transmission use of system charging methodology. Given the uncertainty with respect to the future structure of the SEM in a regionally integrated market and the initiative to move towards the harmonised treatment of locational signals in the internal European market, it is BG Energy’s view that the optimal solution would be to implement uniform loss factors in the market and dispatch schedules. Any solution other than uniform losses will only perpetuate what is recognised as a flawed and discriminatory allocation of the cost of losses in the SEM.

1. Consultation Background

The intention of the SEM Committee to harmonise TLAFs was outlined in the high-level design of the SEM issued in June 2005. Since then, there have been numerous consultations and workshops to identify how this can be achieved. The most recent review began in January 2009, when the SEM Committee published a paper outlining its intention to review TLAFs and Transmission Use of System charges. In May 2009, the first main consultation outlining all of the options under consideration was published by the System Operators (SOs).

A workshop was subsequently held in June 2009 to facilitate this consultation and in November 2009 a further consultation paper outlining the detailed analysis conducted by the SOs of the different options was published. A workshop was again hosted in January 2010 and a further consultation outlining the SEM Committee's preferred short-term and enduring solutions was published in June 2010. In September 2010, the SEM Committee published a final decision and outlined its intentions to conduct further analysis on the splitting of TLAFs in the market schedule (MS) and dispatch schedule (DS).

Throughout this extensive process, the views of the SEM Committee have changed with the prevailing evidence. In designing the harmonised all-island methodology, the SEM Committee was of the view that the "locational signal provided by marginal TLAFs is required to be material if it is to be effective". However, in recognising the changing of the grid with the emergence of high levels of wind generation and the general change in the direction of flows on the system the SEM Committee recognised the need for some volatility mitigation in 2009². In 2010, it was recognised by the Regulatory Authorities that there was "no evidence that the current approach to TLAFs incentivise locational decisions" and that the ex-ante calculated TLAFs "do not reflect the prevailing conditions at the time of dispatch".

The modelling carried out by the Regulatory Authorities as part of its September 2010 Decision Paper found that uniform TLAFs had minimal impacts on market and customer costs. The SEM Committee also acknowledged that "*with considerable generation investment, particularly in renewable generation..., the RAs are aware that any reductions in risk premium in project finance, as a result of improved stability in TLAFs could result in cost savings for projects which would ultimately lead to savings for customers.*" It is in no doubt with this in mind that the SEM Committee outlined its preference to implement splitting in a

² 2009 SEM Committee Decision on TLAFs, SEM-08-173

bid to achieve a balance in meeting the stated TLAF objectives; predictability, stability, transparency, efficiency and cost-reflectiveness.

The current consultation (SEM-11-098) is the latest phase of what has been a very extensive process. The deliberations that have been had and the progress that has been made since the consultation commenced in 2009 should not be forgotten or lost. It is clear, that the ex-ante marginal approach to the calculation of TLAFs is flawed and does not provide the desired signals or cost-efficiencies in the market. The current interim solution of compression is based on the same flawed approach and therefore cannot be considered a reasonable enduring solution. It is incumbent on the SEM Committee and market stakeholders to find an enduring solution which optimises the operation and development of the market but which also recognises the implications of impending changes such as greater interconnection, increasing intermittent generation and the obligations to progress towards the harmonisation of regional markets within Europe.

2. Overview of Analysis

BG Energy commissioned Redpoint to perform analysis on the impact of different TLAF methodologies in the market to follow the terms of reference as published by the Regulatory Authorities in February 2011.

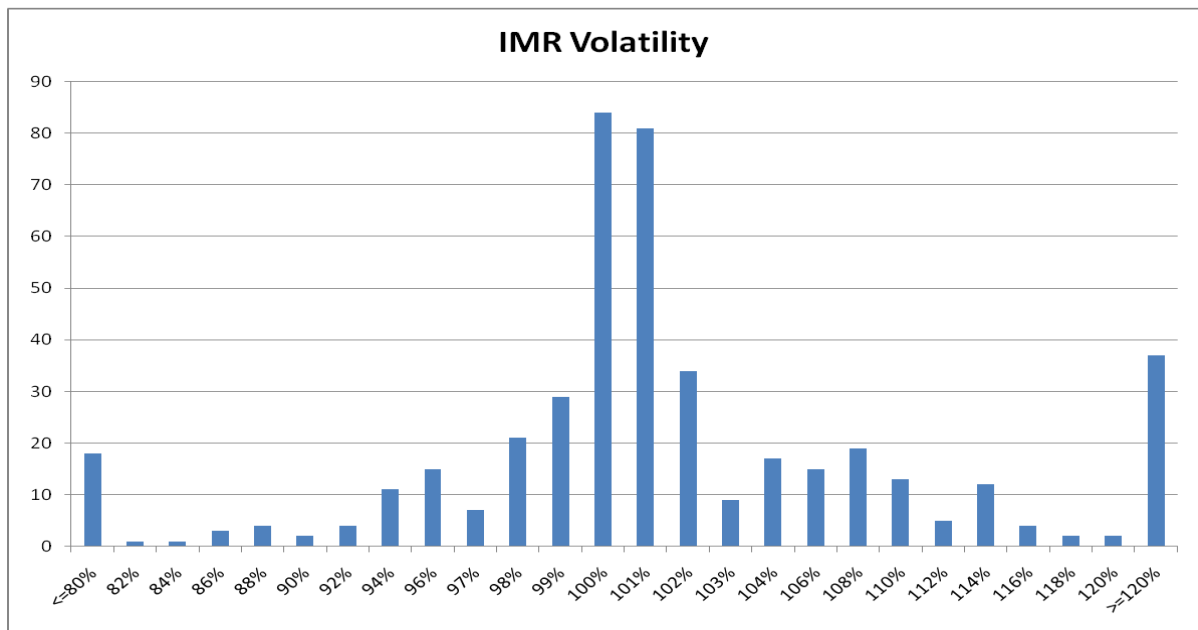
The work investigated four loss methodologies; locational, compressed, uniform and a proxy for 'close to real-time³' TLAFs. As per the terms of reference, the analysis took a historic and forward looking perspective and included the East-West Interconnector in its modelling for 2011/12. Where a market model was required, Redpoint used the 2010 Validated Plexos Model, using their own assumptions on confidential data such as variable and start costs and O&M costs. Where a model was required to simulate plant dispatch, this was achieved by using the Validated Plexos Model as a starting point and layering in the transmission constraint groups and reserve requirements.

The historic analysis focused on a series of days covering summer and winter with different levels of wind, plant outages and to demonstrate the difference between the different TLAF methodologies on production costs. With respect to the cost of generation, losses, and total

³ In calculating 'close to real-time TLAFs' Redpoint produced 6 TLAFs for a given trading day. The TLAFs however are based on average wind outputs and are therefore not representative of actual generation for a given trading period. Similar to the conclusion of the TSOs, this does bring the relevance of the analysis on real-time TLAFs into question.

production costs the modelling indicated that the loss methodology has minimal impact on total production costs. That is to say, the historic analysis found no consistent relationship between any TLAF methodology and the cost of generation and/or losses.

The forward analysis examined a number of scenarios in 2013 using different assumptions for coal/gas price differentials, interconnector flows and levels of wind generation. Different combinations of the various assumptions were then used to derive ex-ante and outturn views. In examining the impact of the different TLAF methodologies on the infra-marginal rent across a sample of generators in the SEM, the analysis found extreme volatility which was due purely to the TLAF methodology.



What is notable from the forward analysis on infra-marginal rent is firstly the swing under different TLAF assumptions but also the differentials with small changes in the input assumptions (e.g. small changes in interconnector flows, wind generation etc).

In examining the impact on customer costs, the analysis examined the impact of the various TLAF methodologies and scenarios on the system marginal price (SMP) and on total consumer costs (represented by total generation and constraint costs). In general, the results were too varied to draw a clear conclusion as to which TLAF methodology is better or worse for customers.

In summary, Redpoint concluded that they were not in a position to offer a conclusive interpretation of their results. In assessing production costs, SMP and total system losses, Redpoint found no consistent relationship or trend in any TLAF methodology examined. The reason proposed was that they did not have the tools to examine and assess the true dynamic nature of the system and therefore provide the necessary granularity needed to fully understand the true efficiency benefits that could potentially be derived from real-time TLAFs. All other TLAF methodologies are only a hypothetical viewpoint at a given point in time. What Redpoint did conclusively find however, is that the choice of TLAF methodology can cause significant swings in the infra-marginal rents of generators.

3. Response to Consultation Questions

a. What is the respondent’s own interpretation of the results of the impact assessment

Similar to BG Energy’s own analysis, the results of the analysis conducted by the Regulatory Authorities is inconclusive. Given that the tools were not available to provide a realistic proxy for real-time TLAFs, the analysis was not able to determine the level of efficiency that is derived from the inclusion of marginal TLAFs in the market or dispatch schedule.

With respect to the TLAF methodologies that were analysed against the specified criteria, again there is no clear evidence that any combination of the TLAF methodologies have a material positive or negative impact on customers. What is evident however is that the choice of TLAF methodology does have a material influence on the infra-marginal rent earned by generator participants in the SEM. That is to say, the choice of TLAF methodology can cause infra-marginal rents to vary by up to 46% in a given year. The rents therefore earned by generators bear no relation to their individual costs or efficiencies and are to a greater extent influenced by what is widely recognised as a flawed signal that “has ran it course”⁴.

As recognised by the SEM Committee in its 2010 Decision Paper (SEM-10-066), this extreme volatility increases investor risk. Given the considerable generation investment that is expected over the next number of years, this increase in risk premium will have a direct impact in the cost of project financing in the SEM. This impact is not proportionate to the perceived benefits of the locational signal sought as “the existing methodology is not promoting efficient dispatch

⁴ SEM-10-066

given the variation between the ex-ante determined TLAF values and actual losses in real-time” (SEM-10-039).

In short, the analysis again proves that the market and customers are not obtaining any material benefits from the current marginal TLAF methodology. It also highlights that the perceived efficiencies of minimising losses on the system are outweighed by the cost of scheduling less efficient plant ahead of newer and more cost-effective plant. This cost will ultimately be borne by customers over time in the form of inefficient market entry and exit and higher cost of financing in the SEM.

b. Which of the suggested options would the respondent recommend and why?

BG Energy has and continues to maintain that uniform TLAFs is the best methodology to apply in the market and dispatch schedules. Recognising the last stated position of the SEM Committee that “[A]s long as customers are not materially worse off through the implementation of splitting, the SEMC will decide to implement splitting”, it would appear on an initial reading of the analysis that the results could potentially support the implementation of a splitting approach to TLAFs in the long-term. That is to say, the analysis indicates that customers will not be materially affected by the implementation of splitting and as such the SEM Committee’s preferred position of stability in the market schedule and efficiency in the dispatch schedule will not contradict its primary functions to have due regard to the interests of customers. However, the same conclusion could also be drawn with regard to the impact the application of uniform TLAFs has on the position of customers.

In the absence of real-time or close-to-real-time TLAFs, the efficiency in dispatch that is sought through splitting is lost and the signal provided is meaningless. Without a more accurate and cost-reflective proxy for actual losses the concerns outlined by the SEM Committee in its 2010 Decision Paper remain:

- **Volatility** – an ex-ante approximation is susceptible to year on year variations;
- **Relevance for dispatch** – losses will not reflect the prevailing conditions of the system;
- **Complexity** – participants will not be better able to predict and forecast losses that will determine their running schedule;
- **Lack of transparency** – the annual calculation will remain a black box;
- **Appropriateness** – the signal provided will be meaningless in terms of deriving a more efficient dispatch schedule, and

- **Sensitivity** –the methodology will be sensitive to changes in dispatch and generation mix assumptions and will not reflect the reality of either at a given time.

Recognising that splitting the treatment of TLAFs in the market schedule and dispatch schedule will reduce the influence of TLAFs in setting the merit order, using an erroneous proxy for actual losses in the dispatch schedule will still result in less efficient plant being run more regularly. Intuitively, this will have a negative long-term impact on the market in terms of the entry and exit of generation units and the operation and maintenance costs of the generation fleet as a whole in the SEM. On that basis, BG Energy is of the view that splitting will not deliver the efficiency benefits sought by the SEM Committee and that the TLAF objectives, as well as the high level objectives of the SEM, would be better met by a uniform TLAF.

Firstly, the SEM Committee’s analysis in 2010 and 2011 as well as BG Energy’s own analysis clearly show that uniform TLAFs will not adversely impact customers and will provide greater stability, transparency and predictability to the market for investors. Given the uncertainty facing market participants with respect to regional integration and the future structure of the SEM, the SEM Committee should seek to provide a level of certainty and stability within its controllable sphere. Uniform TLAFs will provide a level of certainty to all participants in equal measures.

Secondly, in the absence of the appropriate infrastructure to provide real-time TLAFs and therefore deliver efficiency in dispatch, any other solution will permeate the negative effects of what is widely recognised as a flawed methodology. The ex-ante marginal methodology has been acknowledged as bestowing unfair advantages on particular generators, increasing risk premium in the SEM and having an undue impact on the market. The implementation of compression has also been recognised by the SEM Committee as being arbitrary, failing to “address the underlying sources of sensitivity within the methodology” (SEM-10-039). Therefore, any permutation of the ex-ante marginal TLAF methodology will fail to deliver any of the desired objectives, most notably efficiency and cost-reflectiveness. Uniform TLAFs on the other hand will at least meet the objectives of transparency, predictability and stability.

Thirdly, losses are accounted for on a uniform basis in the UK and are not included in a great number of other energy markets across Europe. This disparity in the treatment of losses in the SEM and the UK Market increases the deadband between the two markets and places a number of SEM based participants at a competitive disadvantage to their cross border counterparties. Overall, this acts as a further barrier to trade. Furthermore, it is a direct

contravention of Regulation (EC) No 714/2009 conditions for access to the network for cross-border exchanges in electricity (the Regulation), which seeks to create a level playing field for all electricity undertakings in the Community and to remove the “obstacles to the sale of electricity on equal terms, without discrimination or disadvantage...”. Notwithstanding the provisions in Article 8 of the Regulation, that these network codes should not prejudice a Member States’ right to establish a national network code, this is only to the extent that they do not affect cross-border trade.

In a bid to avoid such distortions to trade, the Regulation seeks to deliver a certain degree of harmonisation across network codes and Article 8(6)(k) of the Regulation specifically seeks the development of a network code regarding the harmonisation of transmission tariff structures including the provision of locational signals and the cost of losses. Article 18(2) of the Regulation further refers to the development of “appropriate and efficient harmonised locational signals at Community level” which should be developed in accordance with the principles of transparency, cost-reflectiveness and non-discrimination.

Until such time as the specific network code relating to the harmonisation of transmission tariffing (including the harmonisation of locational signals and the accounting of losses) across Europe is finalised, a uniform TLAF in the SEM will act to promote and support cross-border trade in the absence of regional integration. It is for this reason, and to support the build-out of renewable generation, that Ofgem recently decided to retain uniform TLAFs in the UK electricity market⁵.

In summary, and on the basis that: (a) it has been recognised at a European Commission level that the treatment of locational signals and the provisions for losses should be harmonised across Europe; (b) the current disparity in the treatment of losses in the SEM and the UK electricity market acts as a barrier to trade and is therefore in contravention of Regulation EC 714/2009, (c) the TLAF objectives of efficiency, transparency, predictability and cost-reflectiveness cannot be achieved in the absence of real-time TLAFS and (d) there is considerable uncertainty pertaining to the future of the SEM in light of obligations for regional integration, **BG Energy is strongly of the view that uniform TLAFs should be adopted in both the market and dispatch schedules.**

⁵ [Balancing and Settlement code \(BSC\) P229 Introduction of a seasonal Zonal Transmission Losses scheme - More Document Information](#)

Overall and in recognition of the changing market environment since the SEM Committee made its decision in September 2010, BG Energy considers that a uniform treatment of TLAFs in the market and dispatch schedules would better facilitate the direction of the market and its key objectives.

4. Evidence from Other Markets and Next Steps

Across Europe there are largely 2 approaches to the treatment of losses; they are either accounted for in the energy market as in the UK, Italy, Greece, Spain and Portugal or an allowance is made for the recovery of the overall costs of losses through the regulated transmission tariffs. For those markets where the cost is included in the transmission tariffs, only Norway and Sweden actually provide a differentiation in tariffs based on the location of generation and demand⁶.

The table below is a summary extract from the ENTSO-E Report in May 2011 providing an overview of transmission tariffs across Europe.

⁶ ENTSO-E Report, 'Overview of Transmission Tariffs in Europe: Synthesis 2011', May 2011.

| Country | Price Signal | | Are losses included in TUoS Charges? |
|----------------------|-----------------------------|-----------------|--------------------------------------|
| | Seasonal/Time of Day | Locational | |
| Austria | - | - | Yes |
| Belgium | Multiple time differentials | - | Not for >150kV |
| Bosnia & Herzegovina | - | - | No |
| Bulgaria | - | - | Yes |
| Croatia | Day/Night differential | - | Yes |
| Czech Republic | - | - | Yes |
| Denmark | - | - | Yes |
| Estonia | Day/Night differential | - | Yes |
| Finland | Day/Night differential | - | Yes |
| France | - | - | Yes |
| Germany | - | - | Yes |
| Great Britain | Multiple time differentials | Zonal | No, recovered in energy market |
| Greece | Day/Night differential | - | Yes |
| Hungary | - | - | Yes |
| Ireland | - | Generation Only | No, recovered in energy market |
| Italy | - | - | No, recovered in energy market |
| Latvia | - | - | Yes |
| Lithuania | - | - | Yes |
| Luxembourg | - | - | Yes |
| FYROM | - | - | Yes |
| Netherlands | - | - | Yes |
| Northern Ireland | Multiple time differentials | Generation Only | Yes |
| Norway | Multiple time differentials | Zonal | Yes |
| Poland | - | - | Yes |
| Portugal | Multiple time differentials | - | No, recovered in energy market |
| Romania | - | Zonal | Yes |
| Serbia | - | - | Yes |
| Slovak Republic | - | - | Specific fee |
| Slovenia | Multiple time differentials | - | Yes |
| Spain | Multiple time differentials | - | No, recovered in energy market |
| Sweden | - | Zonal | Yes |
| Switzerland | - | - | Separate tariff for losses |

In short, markets across Europe do not tend to provide locational signals for demand or generation. However, this will change over the coming years under the provisions of Regulation EC 714/2009. Although the detail of how the locational signals will be provided are not stipulated, it is clear from the provisions of the Regulation that they will be included as part of the harmonised structures for transmission tariffs.

With this in mind and given the ongoing consultation on how the SEM will integrate with the regional markets out to 2016⁷, it would seem more appropriate at this time to put in place a medium term solution for the SEM that is moving in the direction of the longer-term European wide solution. Given that the market coupling algorithm being developed for regional integration will not include provisions for losses in the market, any decision to include losses in the energy market would further enhance the disparities between the SEM and the European Target Model.

Recognising the SEM Committee's preference for the provision of locational signals in the market, both for investments and for the efficient use of the system, BG Energy is of the view that this signal is best provided for through the all-island harmonised transmission charging methodology. Firstly, the methodology has been designed to provide a 30:70 split between locational and postage stamp charges respectively and focusing the signal into one charging area of the market would reduce the complexity of and sometimes conflicting signals given to investors. Secondly, it would be the first step towards the Target Model approach to locational signals, as provided for in Regulation EC 714/2009. Finally, and as provided for at length in section 3, it would reduce the disparities between the SEM and other European markets, thereby acting to diminish the barriers to cross-border trade.

⁷ SEM-12-004

5. Summary and Conclusion

The current methodology for calculating TLAFs has many fundamental flaws, such that the losses calculated do not represent the actual losses of each generator to any degree of accuracy. The impact of this flawed methodology has been accentuated in recent years following the SEM Committee's decision to direct the inclusion of TLAFs in commercial offer data bids. Furthermore, the continuing addition of significant intermittent generation and interconnection increases the volatility and unpredictability of TLAFs within and across trading periods in the market. In short, the current methodology is not appropriate for an increasingly dynamic system.

The implications of the current methodology are significant for generators in the market, namely;

- Creating considerable volatility in revenues year on year, adding to investment risk,
- Providing inaccurate and changeable locational signals, and
- Acting as a barrier to cross-border trade.

It also contradicts the objectives of Regulation (EC) No 714/2009 with respect to removing barriers to trade, creating a level playing field for all electricity undertakings and harmonising transmission structures, including locational signals, in the Community.

From a policy perspective, the SEM Committee cannot condone the application of a 'locational signal' which has no bearing on the reality of the system or the losses actually attributable to the various generators. The interim compressed solution, which is based on the same ex-ante methodology, does not offer a reasonable compromise in the long-term as it does not seek to address the fundamental inaccuracy of and discrimination caused by the ex-ante marginal methodology.

Recognising the stated TLAF objectives of; predictability, stability, transparency, efficiency and cost-reflectiveness, the 'splitting' of TLAFs would at a high level provide a fair balance between some of the conflicting objectives. However, in the absence of the infrastructure to calculate reliable 'real-time' TLAFs for the dispatch schedule, BG Energy is of the view that the uniform treatment of TLAFs in both the market and dispatch schedules is the optimal solution at this time. BG Energy's own analysis and the analysis conducted by the Regulatory Authorities, both recently and in 2010, clearly show that the implementation of uniform TLAFs will not have a material impact on customers or production costs in the SEM and will provide the most equitable solution in terms of promoting competition and cross-border trade.