Executive Summary

The treatment of losses is a critical issue for the Single Electricity Market (SEM), and has a major impact on our business and on the investment climate throughout the energy sector. Bord Gáis Energy (BG Energy) as a new entrant generator has serious concerns with the recent proposals for Transmission Loss Adjustment Factors (TLAFs), in terms of process and methodology.

The **process for deriving and consulting on the TLAFs is flawed**. Some of these flaws relate to the level of transparency and accuracy of data in the consultation documents:

- Critical information to allow sense checking of the TLAFs was not published with the consultation paper and we have had to seek it bilaterally from the SO's outside the formal consultation process. The model used for the calculations was never published;
- BG Energy has found errors in the data published by the SO's – in the case of the imbalance between generation and demand, this is sufficiently material to prevent us from carrying out our own validations on the TLAF calculations.

Other flaws relate to the detail of the input data which the SOs informs us has been used. BG Energy has carried out an assessment of the 2010 TLAFs based on the information available and have identified several problems / issues with the input data and thus the outturn figures. The specific issues are outlined in the Appendix to this paper. However in summary:

- the assumptions used (including in relation to fuel prices) are out of date - the 2008 KEMA data formed the generation dataset rather than more up to date information as is used in other SEM work-streams such as CPM; consequently this impacts the accuracy of the generation scenarios; and
- the Moyle interconnector appears to have been scaled from 2009 values and imports have actually increased rather than decreased; and
- the modelling does not reflect the market rules where losses are included in price offer data, meaning the actual generation profile will differ greatly from the forecast profile.

Taken together, these flaws mean that the proposed TLAFs are not cost reflective (and hence do not achieve the stated objectives of operational and investment efficiency) and that "due process" has not been followed in the calculation and the consultation.

The **methodology underpinning the calculation of the TLAFs is widely recognised to be inappropriate** for a number of reasons. It creates volatility, does not secure cost-reflectivity, and can result in inefficient plant running to meet demand – increasing carbon emissions across the sector.

Given the significance of TLAFs in the overall market, and the flaws identified above **BG Energy now calls on the CER to**:

- recognise these flaws in the process and methodology;
- suspend the current consultation on 2010 TLAFs and instruct the System Operators to revert to the 2009 TLAFs or to uniform TLAFs across the system as an interim measure; and
- fast track a new TLAF methodology to replace these interim arrangements before the suggested October 2010 implementation date.

Introduction

The Regulatory Authorities (RAs) have recently published a consultation paper on draft TLAFs to apply from 1 January 2010.[1] This paper is BG Energy's response to that consultation.

In parallel, BG Energy is also conscious that the RAs along with EirGrid and SONI are reviewing the locational signals in the SEM, including the TLAF and Generator Transmission Use of System (GTUoS) methodologies. To date it has been mooted that a new TLAF methodology is expected to be introduced from October 2010, although it is noted that it may be possible to introduce it earlier.

The most recent consultation paper from the RAs, and the TLAF proposals within it, are of serious concern to us. If implemented, they will have a major impact, not just on our business, but on the investment climate throughout the energy sector. While the regulatory regime on the island has, to now, been viewed positively by investors, we believe the current proposals will create the perception of a volatile and non-investment friendly regime.

We have separated our specific comments on the consultation into two broad areas:

- our concerns with the current system; and
- the need to quickly introduce a new system.

1. Our concerns with the current system

We have a number of significant concerns about the existing approach to establishing TLAFs. These concerns relate to both the process for applying the methodology and concerns about the methodology itself.

1.1 Process

The TLAF associated with a plant can have a major impact on the underlying economics and hence the return on significant capital investments. To be clear as to the magnitude of the impact, we estimate that a one percentage point change to the TLAF will have a 2.5-3% effect on annual revenues and a 4-5.5% effect on the gross margin for a new CCGT plant such as our Whitegate station. The 10.7 percentage point fall in TLAF from when the investment decision in Whitegate was made could result in as much as a 40-55% fall in gross margin for a new CCGT plant. While the impact on our business is clearly hugely significant, the SOs have provided limited information to allow market participants and investors to verify whether the TLAF

[1] *Draft Transmission Loss Adjustment Factors – Consultation Paper*, 27 October 2009. SEM-09-102.

methodology has been correctly applied and to verify whether subjective assumptions made in applying the methodology are reasonable. In particular, the SOs have not provided the model used to calculate the TLAFs.

Given the information that is available and with further discussions with the SOs, BG Energy has analysed the data used by the SOs to develop the draft TLAFs and has also analysed the draft TLAFs themselves. We conclude that;

- the input data used by the SOs to calculate the draft TLAFs is not robust;
- the draft generation scenarios are not credible or reflective of the market; and
- the draft TLAFs are not cost reflective

Flaws with the data used to calculate draft TLAFs

We have analysed the data used by the SOs to develop the draft TLAFs and have also met with EirGrid to discuss the data used. We have found a number of flaws in the data used to calculate the TLAFs, including the following:

- the generation and demand forecasts (plus network losses) published do not balance – this error is sufficiently material to prevent us from carrying out our own validations on the TLAF calculations;
- the assumptions used are out of date – the 2008 KEMA data formed the generation dataset rather than more up to date information as is used in other SEM work-streams such as CPM;
- the Moyle interconnector has been scaled from the 2009 profile and actually increased; and
- the dispatch of generation does reflect the impact of TLAFs on actual dispatch and thus the real losses on the system.

These errors in the data used to determine the draft TLAFs mean that the TLAF methodology has not been properly applied. We provide more detail on the data errors in the attached Appendix.

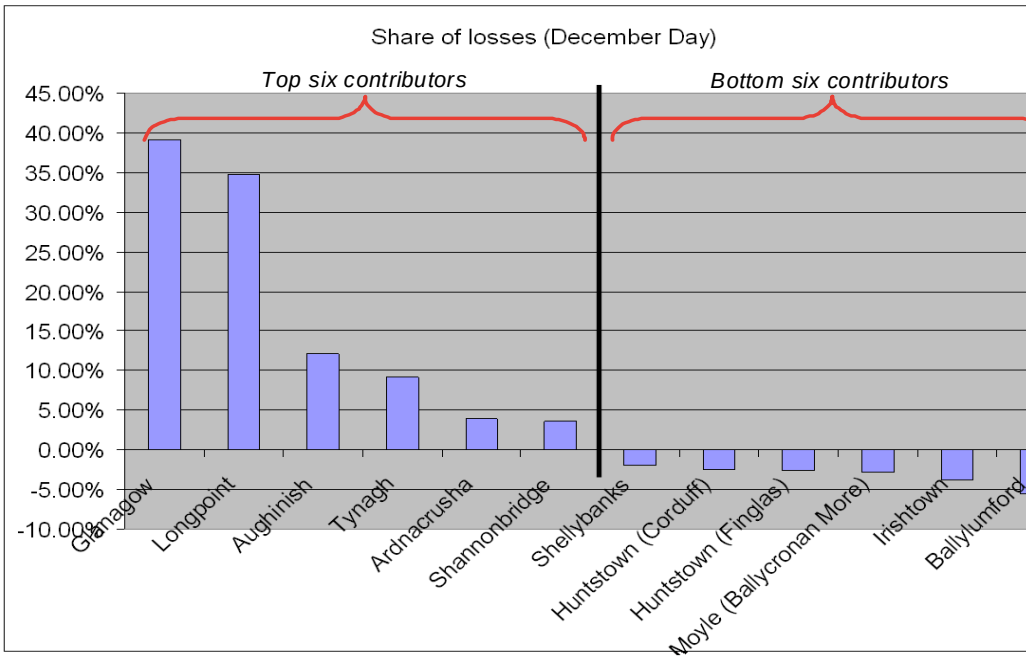
The TLAF methodology is not subject to external audit. We believe the problems identified highlight the need for an external audit. Without such an audit, or the independent ability to replicate the SOs' analysis, neither we (nor the RAs) will have full confidence that the TLAF methodology has been applied correctly.

Non-credible draft TLAFs

Given the flaws that have been identified above, BG Energy does not believe that the draft TLAFs for 2010 are credible. For example, the draft TLAFs for the second half of 2010 implies that the two CCGT plants in Cork (Whitegate and Aghada) would

contribute almost 70% of overall system losses.[2] As illustrated by the graph below for December days, the contributions to system losses by Whitegate and Aghada (about 40% and 35%, respectively) are extreme outliers. The third biggest contribution to system losses is only 12%, and the fifth biggest contribution is under 5%.

Figure 1. Share of system losses by plant



Source: BG Energy based on draft TLAFs

This result is difficult to comprehend when one considers that the combined maximum output of the two plants is 850MW compared to an average system load of approximately 4400MW. However, the TLAF consultation process does not allow us any way to understand how the SOs arrived at this result and verify whether the TLAF methodology was applied correctly.

We note from the published data that the overall losses on the system has decreased from 2009. Therefore it is difficult to justify or understand how two new CCGTs are contributing to 70% of the 2010 losses on the system.

[2] The average draft TLAF for the period July to December 2010 at Glanagow and Longpoint nodes is 93.1%. Assuming an average capacity factor of 80% over this period, the average marginal loss attributed to Whitegate and Aghada is 47MW. This represents 68% of the average recovered losses over the second half of 2010, which is 69MW.

Moreover, the figures provided by the SOs are both unreliable in themselves and as a basis for investment. In January 2009, the SOs gave the indicative 2011 TLAF for Whitegate as 0.91. When queried, EirGrid confirmed that it had made an error and in February 2009 advised a TLAF of 0.96 for 2011.

1.2 Methodology

Several aspects of the TLAFs resulting from the current methodology lead us to conclude that the current methodology is flawed and should be replaced as soon as possible.

As set out in our previous response to the consultation on the treatment of losses and locational charges, the objectives for the treatment of losses should be to deliver:

- **economic efficiency**, including cost reflectivity, short and long term efficiency and consistency; and
- **a robust investment environment**, including transparency, predictability and volatility.

Neither the process nor the methodology for determining TLAFs meet these objectives of efficiency or investor friendliness.

Volatility

The design of the current system attempts to be cost reflective. However, this is at the expense of stability and predictability. TLAFs change with each new plant that connects to the system and with transmission investments. This compounds the process problems referred to above in relation to new investors making long-term investment decisions, because it makes it impossible for us or other potential market participants to react to the resultant locational price signals in investment timescales.

The Glanagow node provides an example of extreme TLAF volatility. As we note above, the Whitegate investment decision was made when the indicative TLAF was 103.7. The indicative TLAF for Glanagow for the first half of 2010, with Aghada operational, is about 0.97. The addition of Whitegate reduces this to about 0.93 from July 2010.

It seems clear to us that, under the current methodology, it would be impossible for a potential generation investor to predict, at the time of the investment decision, the likely TLAF which would apply to their station at the date of commissioning, let alone through the critical early years of operation.

This means that, as a result of volatile and unpredictable TLAFs, generators face an unmanageable risk. Unlike market risks (e.g. fuel prices, capital investment costs etc.), there is no way for a new generation investor to manage TLAF volatility, since generators cannot lock in a TLAF before investing. Furthermore, the actions of third party generators can have a major impact (positively or negatively) on the TLAFs faced. The only way to manage the risk is by holding a portfolio of generation in diverse locations, as then the revenue impact of changes in one single TLAF are likely to be offset by the impact of changes elsewhere on the system.

Therefore, the methodology for setting TLAFs is both adding unmanageable risk to the market and creating a barrier to entry to independent players. In doing so, it will provide a major advantage to incumbents. The impact of this over time will be that large portfolio players become even more entrenched and power prices for consumers will increase.

Merit order

The draft TLAFs as published would push Whitegate out of merit. Therefore, even though Whitegate is among the most efficient plants on the system, other plants will run in preference. Perversely the existing methodology assumes in its dispatch that the most efficient plant run the most, delivering them a low TLAF, having the consequent effect of greatly reducing their running. A plant with poor efficiency is rewarded under the current methodology against a more efficient plant.

Running more inefficient plant has two impacts. First, other things being equal, the wholesale power price will be higher than it otherwise would have been, creating an additional cost to customers. Second, more fuel is used to produce the same amount of electricity, and therefore total CO_2 emissions increase. In the worst case, Whitegate's output would be replaced by coal or oil fired generation. If the output from Whitegate were replaced by coal generation, it would add over 1.5 million tonnes of CO_2 to emissions annually.

It is not clear that the TLAF methodology takes account of the impact of the TLAFs on the merit order when setting the output levels of generation. We do not believe that the draft TLAFs are consistent with the running pattern assumed for Whitegate when applying the methodology for 2010.

By impacting the load factor of generators from year to year, TLAF volatility also affects the ability of generators to plan maintenance and to enter into fuel purchase and power offtake agreements.

Estimating fixed and variable losses

Losses on the transmission network comprise fixed losses and losses that vary with current. For example, National Grid estimates that in GB, fixed losses comprise 20-30% of total transmission losses.[3] This suggests that some component of transmission losses in the SEM should not be allocated on a locational basis. However, the SEM allocates all losses on a locational basis. This means that the TLAF methodology is not cost reflective and does not result in efficient dispatch decisions.

Role of the SOs

Currently, the SOs face no risks for providing users with an inadequate grid. To improve their performance they should be held accountable for the non-delivery of reinforcements and expansions. The SOs are in a better position than generators to manage the risk of future TLAFs since they have some control over future transmission investments, which in turn affect TLAFs.

For this reason it would make sense for the SOs to face some of the risk of changes to TLAFs. In doing so, the SOs should be given incentives to use innovative solutions to providing new transmission capacity where it is most needed. There are numerous precedents for network operators being given incentives to reduce losses.

1.3 Business Implications

Without the ability to understand or to verify its application, the TLAF methodology will continue to be a black box for investors that produces apparently arbitrary numbers. The inability to understand the application of the TLAF methodology means that generation investors are unable to predict their future TLAFs and future revenue streams and hence future margins. The increased risk will make investors more reluctant to enter the Irish market. This will manifest itself in a higher required rate of return and, in the long run, higher wholesale market prices or, at worst, in security of supply issues.

This is not a solely theoretical issue. Faced with a 50% reduction in gross margin from the point of investment to commissioning, entirely as a result of changes in regulated charges, investors will take very seriously the extent of regulatory risk in the market.

[3] Ofgem, *Zonal transmission losses – the Authority's 'minded-to' decisions*, 2007.

As a new investor ourselves, we find ourselves facing a situation where:

- at the time the investment decision for Whitegate was made, the 2007 TLAF for Aghada as published by EirGrid was 103.7;
- for 2011, this was revised down to 0.96 (after errors had been corrected); and
- for 2010, we now face a proposed TLAF of 0.93, but are unable to understand the reasons for significant fall.

In total, this implies a significant and material change in expected annual revenue (and gross margin) for Whitgate from the point of the investment decision to commissioning in 2010.[4] And, little or no explanation has been provided of the basis for this loss, and to allow us to validate the assumptions and calculations lying behind it.

In summary, critical information was not published with the consultation paper, and we have had to seek it bilaterally from EirGrid outside the formal consultation process. Equally, the model or models used by the SOs to develop the draft TLAFs have not been made public.

Without early sight of relevant information and publication of the models, the consultation being conducted by the RAs does not equate to "due process". It is impossible to form any view on the extent to which the proposed TLAFs are appropriate or result from reasonable assumptions and calculations.

2. The need to introduce a new TLAF methodology quickly

We believe it is clear from the points made above that the current approach to losses is not working; the data is not robust and the outturn TLAFs are therefore not cost reflective.

The flaws of the methodology have been generally known in the industry for the past two years and is intimated by the RAs through their review of locational signals and the consultation on the draft TLAFs for 2010. Therefore, we believe that a new TLAF methodology must be implemented as soon as possible.
However, the present proposals will add further to volatility by implementing new TLAFs which would be in force for just 9 months. During this period, these TLAFs will create large windfall gains and losses for participants.

[4] The impact on gross margin has been calculated using the same assumptions as set out in the previous footnote, excluding the change in SMP. If we included the impact on SMP, the TLAF change would reduce the expected annual revenue (and gross margin) further.

This approach will only serve to reinforce the perception of regulatory risk associated with the market. The RAs should therefore act to remove regulatory risk. In our view, the best way to do this would be to intervene to implement a new TLAF methodology as fast as possible. In addition, the RAs should put in place interim TLAF arrangements that mitigate the effect of the flaws identified above with the current methodology until the new enduring TLAF methodology is put in place. Our suggestions for the interim arrangements are:

- uniform TLAF;
- an extension of 2009 TLAFs;
- re-run current model with full review of assumptions and carry out a second iteration to capture TLAFs impact on merit order.

If the new TLAF arrangements are designed within the clear framework of furthering the primary objectives of loss factors, regulatory intervention to bring forward their implementation ideally to May 2010 will actually increase investor confidence in the governance structure as it will be seen as remedying a clear problem in the market. Investors will gain confidence that the RAs will in future intervene in a positive way to change any aspect of the market arrangements that does not meet the primary objectives. This in turn will reduce the perception of regulatory risk, which will reduce the return required for future plant investments.

The current process for developing a new TLAF methodology should be accelerated. An initial consultation and an industry workshop have already taken place on the new system. The incremental benefits of slowly working through the design of the new system are vastly outweighed by the additional costs of the risk that future generation investments will be affected by the persistence with the existing system.

We would be happy to talk to the RAs further about the design of such a system.

Appendix I: Review of Draft 2010 Modelling and Resultant TLAFS

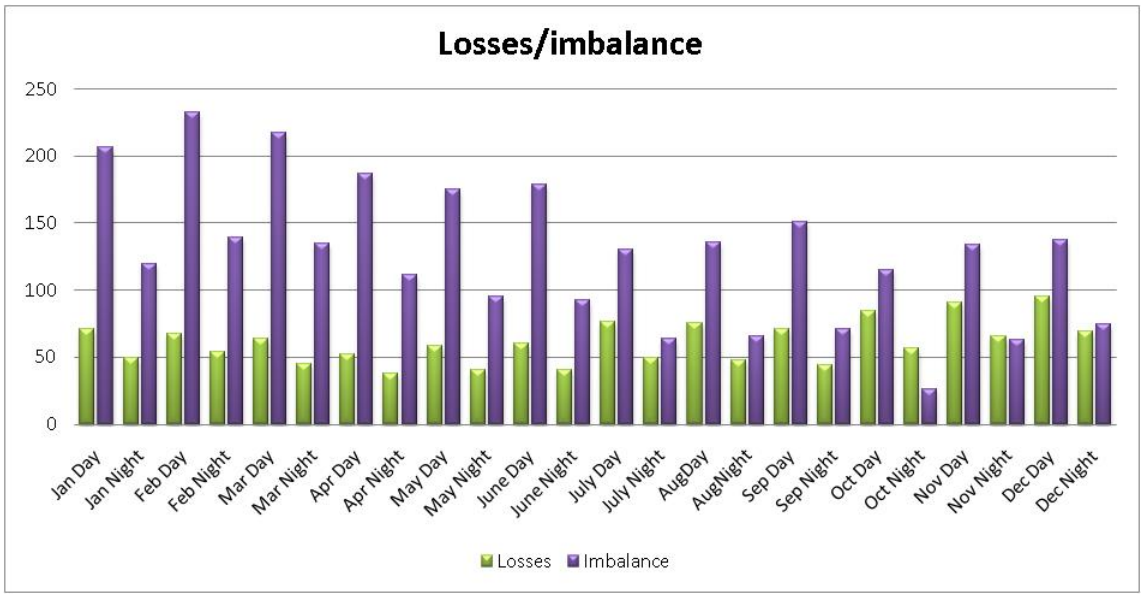
BG Energy has identified several issues/errors in the draft 2010 TLAF calculations. We note several of these were raised through the consultation for 2009 TLAFs and remain open. We feel this is not acceptable considering the materiality of the proposed TLAFs.

We disagree that the losses represent actual losses on the system. No evidence has been published to support this. Eirgrid have stated in their indicative 2011 paper that generation dispatch is the key driver of TLAFs. The generation dispatch modelled does not mirror actual generation patterns. Therefore one can conclude that; the TLAFs published do not represent the actual dispatch; are in no way cost reflective; and do not result in efficient dispatch.

Analysis of the data published has raised the following:

1. **Error in Published Data**: Balance between demand and generation is not achieved. The total generation should be matching the sum of total demand and the network losses. The transmission losses and 'unexplained' imbalance (the difference of the total generation and the sum of demand and transmission losses) are shown below.

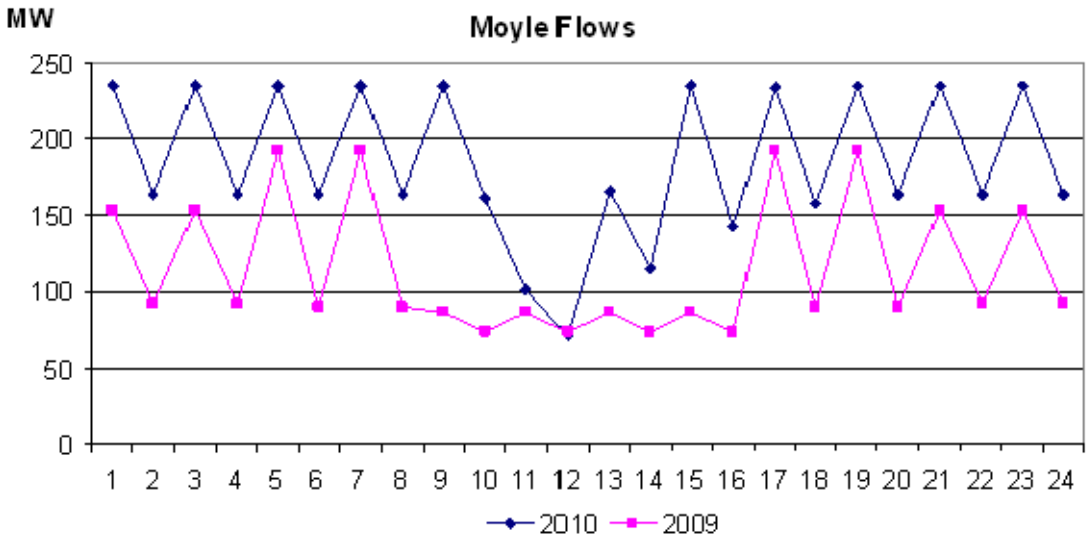
    - It can be demonstrated based on the January's data that there is a substantial imbalance for the Northern Ireland transmission system. For instance, the Northern Ireland generation is 1478 MW, the Northern Ireland total demand is 1140 MW, the given 'North to South Flows' is 187 MW, which gives an imbalance of 159 MW. A portion of this imbalance can be assigned to the Northern Ireland network losses but there is a still significant 'unexplained' imbalance.



Because of this error market participants have not been able to model the TLAFs and verify the published figures.

2. **Quality of Market Data Used**: The data used is the 2008 KEMA data despite the 2009 data being published since June 2009. The data used is over a year and a half old and does not reflect changed bidding patterns of market participants, changing technical bid characteristics, etc. We understand the fuel prices come from a separate source and are also quite dated not reflecting movements in fuel prices through the year. BG Energy sees absolutely no reason for out of date data being used. Considering the materiality of this work BG Energy considers it a basic requirement that the assumptions used are of the best possible quality. Given that the 2009/10 capacity auctions and CPM calculation used the most up-to-date data available at the time, it is clear that the RAs feel the market assumptions require updating annually.

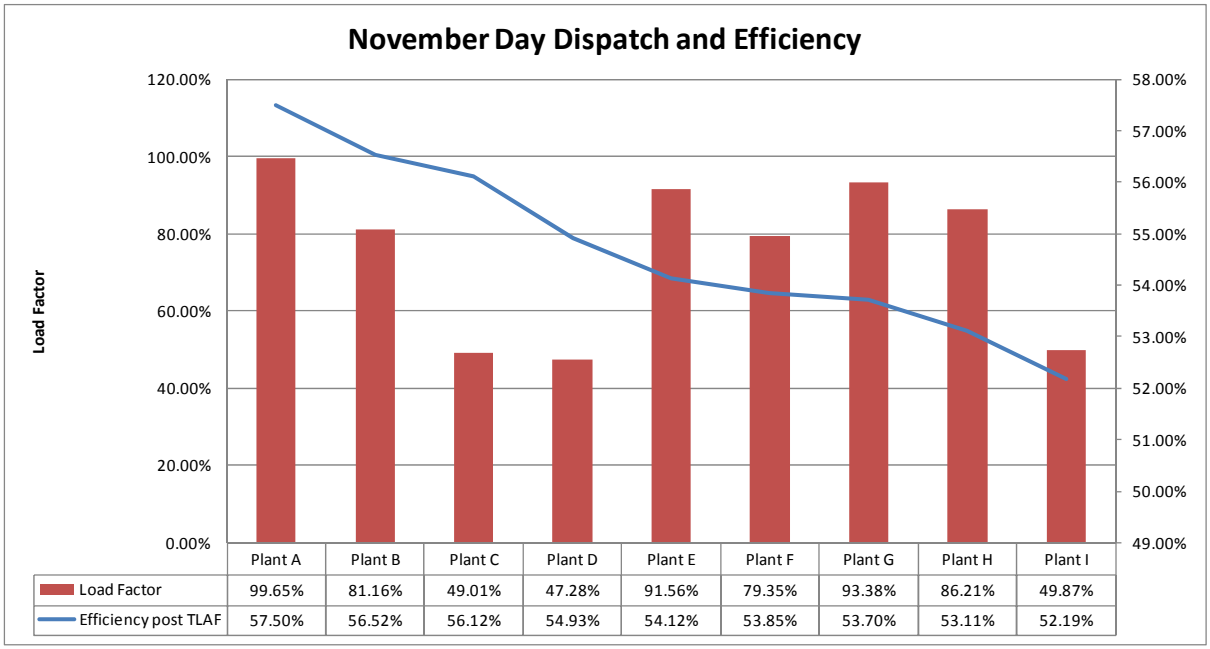
3. **Treatment of Moyle Interconnector:** The consultation paper states that the Cork CCGTs create a reduction in Moyle imports. Yet analysis of the 2010 generation data shows that imports have actually significantly increased from 2009. Of even more concern is that the Moyle flows seem to have been simply scaled from 2009 figures in the winter months by a fixed percentage day and night. Therefore the Cork power has not influenced the Moyle flows, instead a manual adjustment has been carried out which does not reasonably reflect flows on the system.



4. **Modelling is Unreflective of Market Rules:** In SEM-08-179, the SEM Committee directed that TLAFs should be included in the PQ pairs of commercial offer data. This fact was reflected by the inclusion of Loss Factors in the 2009 All-Island Modelling Project Plexos model which was "discussed with industry, consulted on and published".

   The SOs model of dispatch does not include loss factors and hence does not follow the methodology.

   The graph below illustrates the materiality of this point. It is for the November Day values, but the same pattern can be seen in all months from Jul10-Dec10. It shows the full-load efficiency for each CCGT on the island, after the PQ-pairs have been adjusted for TLAFs. It is evident that the trend in load factors is not consistent with the trend in efficiencies. For example, although Plant C is 2.42% more efficient that Plant G, their load factors are 49.01% and 93.38% respectively. This will have a material impact on the resulting TLAFs.



	Plant A	Plant B	Plant C	Plant D	Plant E	Plant F	Plant G	Plant H	Plant I
Load Factor	99.65%	81.16%	49.01%	47.28%	91.56%	79.35%	93.38%	86.21%	49.87%
Efficiency post TLAF	57.50%	56.52%	56.12%	54.93%	54.12%	53.85%	53.70%	53.11%	52.19%

For plant technical characteristics, we have used the values from the 2008 published Plexos model, apart from the two new CCGTs, for which we have used the 2009 published data. We have used the draft 2010 TLAFs. The load factor is the ratio of the Generation Exported values in SEM-09-102a to the plant maximum capacity from the Plexos validated data.

There is a circular element to this question, in that at the point of producing the economic dispatch, the TLAFs are not known. Perversely this means the more efficient a plant the worse its TLAF will be, consequently meaning it then doesn't run in the real market schedule. This issue was raised in the decision to last years tlafs, but the RA's stated that they awaited outcome of market monitoring unit. This has since been resolved. Therefore, as a minimum, to implement the methodology, BG Energy is of the view that the economic dispatch model should either;

- start from 2009 TLAFs, or
- perform a number of iterations of the process

5. Assumptions for new CCGTs: The SOs has used assumed technical parameters for BG Energy's Whitegate and ESB's Aghada power stations. These efficiencies have not been published nor the basis behind the assumptions so BGE cannot audit their accuracy.

6. Generation Running Profiles: BG Energy has identified several running patterns which seems contrary to market experience, for example:

- Dublin Bay is third in the merit order despite being number one due to its gas supply contract;
- BGE Whitegate runs at a higher load factor than ESB Aghada;
- The profile of the CCGTs does not seem to correspond with the resultant profiles from published data sets;
- The load factor of some CCGTs is very high with others being quite low – experience to date in the SEM has seen a greater spread of load factors;
- The running profile of pumped storage is significantly less than that seen in the SEM to date.

7. Published TLAFs: BG Energy notes that the 2009 TLAF decision paper stated "having considered carefully the above comments, none of which were concerning the draft TLAF values in the consultation paper" that the published TLAF values were correct and cost reflective. For the avoidance of doubt BG Energy does not believe that the 2010 TLAFs are cost reflective or a true representation of actual losses on the system. For this reason BG Energy is of the view that they are not credible.

BG Energy would be happy to meet with the RAs and the SOs to talk through the anomalies identified and highlighted above.