Incentivisation of All-Island Dispatch Balancing Costs

EirGrid and SONI's Response to SEM-11-048

29 July 2011

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Executive Summary

Dispatch Balancing Costs (DBC) are an inherent feature of the SEM design and arise due to the difference between the ex-post market schedule and the real-time dispatch. EirGrid and SONI, as TSOs, are responsible for forecasting the DBC in advance of the tariff year to allow a tariff to be set for the Imperfections Charge which is levied on suppliers. On a regular basis the TSOs analyse the DBC outturn against the forecast set at the start of the tariff year and determine the key drivers of outturn above or below the forecast.

The potential for the incentivisation of constraints has been discussed for a number of years, and EirGrid and SONI welcome the Regulatory Authorities' (RAs) consultation. To the extent that appropriate incentives can be implemented in support of the efficient management of DBC, then EirGrid and SONI welcome their application.

In response to the specific incentives proposed in the RAs' paper, the TSOs agree that an incentive on the total forecast would be appropriate, incorporating an *ex-post* adjustment similar to the National Grid UK approach. In particular, a number of the drivers which affect DBC are outside of the TSOs' control, such as fuel cost changes, delays to transmission build, and market design changes, and an *ex-post* adjustment mechanism will help to protect both consumers and the TSOs from changes in these drivers. The incentive design also needs to take account of the TSOs' ability to bear risk, which is limited by the asset-light nature of EirGrid and SONI, such as through the incorporation of asymmetry.

A crucial factor in Ireland and Northern Ireland is the split-responsibility industry arrangements. A combined operator/owner would have the ability to make trade-offs between, for example, returning an outage more quickly versus constraints caused by the outage. In the absence of being able to make such trade-offs, the TSOs have less ability to influence DBC in the short-term (e.g. within a year or two). These factors mean that the extent and effect of an incentive on constraint costs may be limited at this time, while the split-responsibility model remains in place. In the event that an incentive is introduced, the limited degree of influence would need to be factored in to the incentive design.

Regarding the proposals relating to reporting on DBC, the TSOs would welcome initiatives which would provide greater transparency in relation to the key drivers of constraint costs and the degree of control of the TSOs. EirGrid and SONI therefore agree with the proposal to publish a regular summary report on the outturn against the forecast and analysis of the drivers.

1 Introduction

As TSOs, EirGrid and SONI are responsible for the forecasting of DBC in advance of each tariff year and the review of outturn DBC following the completion of SEM settlement. Payments are then administered by SEMO as per the Trading and Settlement Code.

The most significant component of DBC are constraint costs, which arise to the extent that there are differences between the market schedule and actual dispatch and are an inherent part of SEM market design. In particular, the SEM market schedule does not take reserve and transmission constraints into account, makes a number of market modelling assumptions and is settled ex-post with perfect foresight.

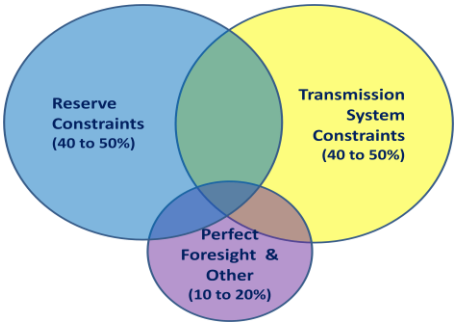

Figure 1: Drivers of Constraint Costs

Figure 1 shows the main drivers that can lead to a difference between market schedule and dispatch, and hence bring about constraint costs. The total level of constraint costs, regardless of why they arise, will be impacted by fuel prices and system demand. As the diagram shows, reserve and transmission system constraints comprise the greatest proportion of constraint costs that arise annually, each generally contributing between 40%-50% of total constraint costs if considered alone.

- Transmission constraints arise due to physical limitations of the network. Generators are constrained up or down as a result of such system constraints. Transmission constraint costs are "efficient" where the costs of network build to alleviate a constraint would be greater than the cost of constraints incurred.
- Reserve constraints arise when generators are dispatched down or constrained on so that there is the necessary fast-responding generation capacity available to the power system should an imbalance occur, such as a generator tripping. Thus, there is a level of reserve constraint costs which cannot be avoided in order to ensure the security of the all-island system.
- Other constraint costs arise as TSOs, unlike the market, do not have perfect foresight, so must plan and operate the system to account for possible variations in parameters such as system demand, wind generation and generator availabilities. In addition, approximations and assumptions in the market schedule software due to mathematical limitations may result in a technically infeasible market schedule, increasing divergence between market schedule and dispatch.

Dispatch Balancing Costs are an inherent aspect of SEM design, rather than costs resulting solely from dispatch decisions made by the System Operator. The *minimisation* of DBC may not always be the most efficient outcome – e.g. when traded-off against the cost of network delivery. An incentive, if introduced, must therefore take into account what is the appropriate, or efficient, level of DBC, and what degree of influence the TSOs have over the level of DBC.

The remainder of this response is structured as follows:

- Section 2 – Factors for Consideration – Builds upon the analysis in the RAs' consultation paper in relation to the level of DBC, the degree of control of the TSOs and the incentives mechanism applied to NGUK.
- Section 3 – How to incentivise dispatch balancing costs – builds upon the analysis in Section 2 to discuss, if an incentive is introduced, how it could be designed. It takes into account the potential

influence of the TSOs under the current industry and market arrangements. It also responds to the RAs' proposal in relation to greater transparency of DBC.

- Section 4 – Summarises the key points from this response.

2 Factors for Consideration

The RAs' consultation paper sets out a number of "factors for consideration" in setting an incentive on DBC. The factors noted in the RAs' paper include: level of DBC; the degree of control of the TSOs; and the incentive mechanism applied to National Grid UK. EirGrid and SONI agree that these factors are important in determining whether (and, if so, how) to incentivise DBC. This section therefore builds upon the analysis in the RAs' consultation paper to help inform the SEM Committee's decision in relation to DBC incentives.

Appropriate Level of DBC

The RAs' consultation paper notes that DBC have been a significant cost of the SEM since its introduction. EirGrid and SONI acknowledge this and agree that their prudent management is essential. However, it is important to consider the purpose and drivers of DBC and, hence, what level is appropriate for the SEM and the power system as a whole. Indeed, the SEM Committee recognises that there are inbuilt differences between physical dispatch and the market schedule for a number of reasons under the design of SEM and current market rules[1]. It is also important to note that the system operators dispatch generation to minimise production cost[2] rather than to minimise DBC, which can at times be conflicting.

The appropriate level of DBC is, as discussed in the introduction, directly influenced by the design of the SEM and therefore the *minimisation* of DBC may not always be the most efficient outcome. For example, if market rules were to change to include reserve and transmission constraints in the market schedule, this would result in higher wholesale energy costs. When the RAs approve modifications to the Trading and Settlement Code, and hence to the rules underpinning the SEM, they consider impacts on the market schedule and SMP in addition to impacts on DBC. Energy costs significantly outweigh constraint costs in the market and therefore, in making a trade-off between the two, the RAs may seek to minimise energy costs while accepting a possible increase in DBC. Similar trade-offs are taken into account when making network investment decisions. In particular, transmission constraint costs are "efficient" where the costs of network build to alleviate a constraint would be greater than the cost of constraints incurred.

In addition, there are a number of policies which are not designed with the purpose of minimising constraint costs and would be expected to, over time, increase DBC. Examples of this include the constraint costs incurred in the dispatch of non-firm generation and potential changes to TLAF policy.

An incentive, if introduced, must take into account what is the appropriate, or efficient, level of DBC.

Degree of Influence of the TSOs

Figure 4 in the RAs' consultation paper sets out a number of the factors that impact on the level of DBC and who can influence those factors. The RAs' analysis recognised that the TSOs' degree of influence is limited. EirGrid and SONI welcome this analysis and, in this section, build upon it with some further considerations.

[1] Refer to the RA Paper: Monitoring the divergence of the Market Schedule from Dispatch and the Impact on Consumers, SEM -11-002, issued on 18th January 2011.

[2] Refer to the SEM Committee Paper: Principles of Dispatch and the Design of the Market Schedule in the Trading and Settlement Code: SEM Committee Proposed Position Paper and Request for Further Comment, SEM-10-060, issued on 2nd September 2010.

The TSOs' limited control is exacerbated under the split responsibility industry model in Ireland and Northern Ireland, i.e. the separate TAO and TSO responsibilities. One of the most powerful tools that a combined system operator/owner would have to manage the level of DBC is the ability to make trade-offs between the costs of delivering network build or returning outages more quickly versus the costs of constraints caused by the network not-delivered or outages. This is the case for National Grid UK as owner and operator of the transmission system in England and Wales.

A further consideration of whether (and, if so, how) to incentivise DBC, is the timeframe over which the TSOs can have an influence. Of the factors with the potential to impact on constraints within a given year, the TSOs have limited influence. Such factors include forced outages, the timely return of outages, fuel costs, system demand, and wind variability. That is, in the short term, the TSOs have limited ability to take actions to materially impact constraint costs. The TSOs have greater ability to take actions to impact constraint costs over a longer (2 years +) timeframe, e.g. through a change in network design. To illustrate this point, the table below shows the timeframe over which different factors can influence DBC and whether or not they are within the TSOs' control.

Control Factors	Constraint Cost	TSOs' Control?	Timeframe for impact
Reserve Policy	Reserve constraint	Influence (bounded by licence obligations)	Within year and longer term (2 years +)
Network Planning/Design	Transmission	Influence	5 years +
Generator Reserve characteristics	Reserve constraint	Influence	Within year and longer term (2 years +)
Outage planning	Transmission	Influence	Within year
Policy/Legislation (e.g. industry model, scheduling & dispatch policy)	All constraint costs	Limited influence	Within year and longer term (2 years +)
Wind/Demand Forecast Accuracy	All constraint costs	Limited influence	Within year
Timely return of outages	Transmission	Very Limited influence	Within year
System Demand	Transmission	No influence	Within year
Forced outages (generation and transmission)	Reserve and Transmission	No influence	Within year
Fuel Costs	All constraint costs	No influence	Within year (daily)
Wind Variability	All constraint costs	No influence	Within year (daily) and longer term with increase in wind penetration

Table 1: Key factors which impact DBC, degree of control of TSOs, and time-frame for the impact of a decision.

These factors mean that the extent and effect of an incentive on constraint costs may be limited at this time, while the split-responsibility model remains in place. In the event that an incentive is introduced, it can be designed to take into account the limited degree of influence, for example, through the application of asymmetry in upside and downside risk. Section 3 considers options for doing this.

The National Grid UK Scheme

The RAs propose "a model similar to that employed in GB around National Grid for EirGrid and SONI". It is important to analyse the direct applicability of the GB incentive. In particular:

- There are crucial differences regarding industry and market structure relative to GB which mean that National Grid UK (NGUK) has greater ability to influence constraints costs in the short-term (e.g. ability to make trade-offs between costs of returning an outage more quickly versus costs of constraints). Furthermore, the UK incentive against "Incentivised Balancing Costs" includes other costs such as Ancillary Services through which NGUK has the ability to contract directly with individual generators to provide specific services.
- The adjustment mechanisms applied in the UK are complex, e.g. to automatically adjust for "market length" and power price in addition to the potential for *ex-post* adjustments for "income adjusting events". This complexity, in effect, removes a significant degree of risk to NGUK for impacts outside of its control, though it would require an increased level of resources for both TSOs and Regulatory Authorities which may not be justified in a SEM context.

These two factors above imply that, if a similar incentive is introduced to SONI and EirGrid TSOs, the design will need to encapsulate: (1) the lack of control of EirGrid and SONI compared with NGUK; and (2) alternative (less complex) adjustment mechanisms to ensure that the risk to the TSOs is lessened. Assuming that these features can be incorporated, the TSOs agree that if an incentive is introduced, it should be against the total DBC pot, similar to NGUK.

3 Response to RAs' Incentive Proposals

The RAs have proposed two potential incentive mechanisms:

1. "A model similar to that employed in GB around National Grid for EirGrid and SONI", i.e. an incentive against the DBC forecast; and
2. A proposal to incentivise TSO forecasting of wind and demand.

This section comments on the two potential incentive mechanisms in turn and also comments on the RAs' proposals in relation to a new reporting mechanism.

Incentive on DBC Forecast

EirGrid and SONI agree that an asymmetric incentive on the total DBC "pot"[3], similar to that proposed in the RAs' paper, is the most appropriate mechanism to incentivise the TSOs in relation to dispatch balancing costs. In designing such a mechanism, it will be important to take into account the factors outlined in the previous section, i.e. how dispatch balancing costs arise, the limited degree of influence that the TSOs have over their level, and the applicability of a GB-like incentive mechanism.

As noted by the RAs, a number of external factors which heavily influence DBC outturn are outside of the control of the TSOs. The incentive mechanism will need to ensure that the "target" can change to take account of external shocks or events that are not accounted for in the initial forecast and that are beyond the control of the TSOs. The RAs' paper notes that "any ex-post review would need to take into account external factors which heavily influenced DBC outturn in the tariff period, e.g. unforeseen long-term outage of plant and other High-Impact Low-Probability events (HILPs) outside the control of the TSOs".

The TSOs believe that a carefully designed *ex-post* adjustment mechanism is crucial to the success of any incentive mechanism for DBC. For example, if fuel prices decreased or increased over the course of the year, this would likely lead to a decrease or increase in constraint costs. An *ex-post* adjustment mechanism would thus ensure that the TSOs do not receive windfall gains or losses in such a situation. Similarly, an ex-post adjustment would remove some of the risk for events outside of the TSOs' control, such as an unexpected and extended outage of generating plant.

Looking specifically at how the *ex-post* mechanism could be designed:

- The TSOs agree with the RAs' suggestion that the baseline should be adjusted to take account of actual changes in fuel prices. The TSOs propose that the impact of the difference between actual and forecast fuel costs would be calculated against the baseline, and if the impact on DBC is greater than €5m (in either direction) the baseline would be adjusted to take account of this.
- In addition to fuel prices, a similar adjustment should be made for measurable factors which could have a significant influence on the DBC outturn, including exchange rates, system demand, and wind generation.
- The TSOs agree with the RAs' suggestion that the baseline should be adjusted *ex-post* to exclude any HILP events that would have an impact of €5m or greater. As, by its nature, any HILP is unexpected, the TSOs believe that it is not appropriate to explicitly define the set(s) of circumstances which would trigger the *ex-post* assessment prior to the tariff year. Notwithstanding this, a HILP could include,

[3] Annex 1 sets out some practical considerations in relation to exactly what the "pot" would include for the purposes of measuring outturn performance against forecast.

inter alia, the long-term outage of a generator or key reserve provider, long-term outage of key transmission plant, changes in market rules with a major impact on DBC etc. The TSOs would work with the RAs in providing and agreeing an assessment of the materiality of a HILP during the tariff year.

- The TSOs recommend that the baseline should also be adjusted to take into account the Other System Charges (OSC) levied on generators for the tariff year.
- Adjustment to the baseline would also be required in the event of the above factors having a combined impact of €5m on DBC.

Although an *ex-post* adjustment mechanism removes some of the risk to the TSOs of events outside of their control, a significant degree of risk remains – especially given the limited influence of the TSOs and the sheer number of factors that impact on DBC which cannot necessarily be adjusted for. It is therefore essential that the incentive mechanism takes account of the ability of the TSOs to bear this risk.

This is imperative in the case of EirGrid and SONI TSOs, which are relatively asset-light and have very limited potential return on equity. This directly impacts on our ability to absorb downside risk. Any new incentive will also need to take into account existing downside risk from previously agreed incentives (e.g. the System Performance Incentives applying to EirGrid TSO).

In Figure 5 in the consultation paper, the potential mechanism makes an allowance for some of this risk through the incorporation of asymmetry (2:1) and a dead-band around the central target. EirGrid and SONI agree with the application of these principles. In particular:

- Asymmetry is widely used internationally where there is a significant potential upside benefit to consumers but where the business has limited ability to bear risk; in such a situation it allows for an increase in the strength of the incentive.
- Asymmetry is also beneficial where there are limitations on the extent that performance can be improved or uncertainty regarding the ability of the business to influence outcomes.
- Incentive dead-bands may be appropriate where there is uncertainty as to the appropriate target to set or where there are likely to be uncontrollable fluctuations around the target. The disadvantage is that it reduces the strength of the incentive.

The TSOs propose two adjustments to the example mechanism in the consultation paper to cater for EirGrid and SONI's limited ability to bear risk:

1. Firstly, in relation to the degree of asymmetry, based upon the parameters as outlined in Figure 5 of the RAs' Paper, the penalty for DBC "above target" should be amended to "TSO penalised 5% of every 5% above". The proposal as currently drafted (10% of every 5% above) would subject the TSOs to a potential downside of €1.4m[4] which is broadly equivalent to the combined equity return of both TSOs – this is clearly more risk than the TSOs could bear.
2. Secondly, the TSOs propose that the Dead-Band be narrowed to 5% below forecast DBC and 10% above forecast DBC. This is because there is less ability to reduce DBC than for DBC to increase relative to forecast[5]. In addition, given the limited degree of influence of the TSOs, improving on the forecast by greater than 10% is unlikely to be achievable, hence rendering the incentive ineffective.

[4] Maximum downside based upon an example forecast of DBC of €140m.

[5] There are a number of risk factors that could significant increase DBC were they to materialise but are not included in the forecast. As such there is less ability to reduce DBC than for DBC to increase relative to forecast.

Based on these two adjustments to the model in the RAs' paper, the proposed mechanism is as follows:

€m	Lower Bound	Dead Band	Upper Bound	Below Target	Above Target
Dispatch Balancing Costs	15% below forecast DBC	5% below and 10% above forecast	20% above forecast DBC	TSO retains 20% of DBC between dead-band and outturn (subject to lower bound)	TSO penalised 5% of DBC between dead-band and outturn (subject to upper bound)
ILLUSTRATIVE NUMBERS	*ILLUSTRATIVE NUMBERS*	*ILLUSTRATIVE NUMBERS*	*ILLUSTRATIVE NUMBERS*	*ILLUSTRATIVE NUMBERS*	*ILLUSTRATIVE NUMBERS*
€140m	*€119m-€133m*	*€133m-€154m*	*€154m-€168m*	*Payment of €200,000 per €1m below €133m*	*Penalty of €50,000 per €1m above €154m*

Table 2: TSOs' Proposed Incentive Mechanism

While asymmetrically designed in terms of potential upside to downside to the TSOs, the potential gain to customers still far outweighs the potential incentive payment. For example, if outturn performance (based on the illustrative numbers in the table above) is €130m, then the benefit to consumers is outturn €10m less than the DBC forecast, while the payment to the TSOs is €0.6m (i.e. a gain-sharing mechanism of approximately 17:1 towards consumers).

This section has commented on the forecast incentive design proposed by the RAs. EirGrid and SONI stress that these comments are based upon the high-level discussion in the consultation paper. In the event that an incentive on DBC forecast is introduced, EirGrid and SONI would work alongside the RAs to further refine the specific parameters and practicalities regarding the incentive's implementation. Noting the joint management of DBC by EirGrid and SONI, our assumption is that there is no impediment to the ability of the TSOs to share information under single accountability and corporate governance structures.

Incentive on Wind/Demand Forecasts

The RAs' Paper also notes that "the incentive placed on the ex-ante SEMC allowed amount for DBC could be combined with an incentive on wind/demand forecasting… this would act in a complementary role to the proposal outlined… and would incentivise the TSOs to not just focus on reducing DBC, but also improving its forecasting methodology".

As noted above, EirGrid and SONI have relatively limited ability to bear downside risk. The TSOs' proposal for the incentive against DBC forecast (see previous section) provides for a maximum downside of €700,000 on an all-island basis, which is very significant in the context of the limited equity return of EirGrid and SONI. The downside risk of the incentive regime needs to be looked at for all incentives taken together; i.e. if an additional incentive is introduced, the downside risk associated with the general incentive would correspondingly need to be reduced so that the overall downside (taking all incentives together) is reasonable.

If the RAs' ultimate aim is to reduce DBC, then this aim is better served through a single incentive against the DBC forecast. That is, introducing an additional incentive with the same ultimate goal is merely reducing the potential strength of the general incentive. Customers would be better served through an incentive that encourages the TSOs to seek out the most cost-effective means to reduce DBC. EirGrid and

SONI are also mindful of the fact that the TSOs have relatively limited ability to improve the models of load and wind forecasts. Moreover, the impact on DBC is contained within 'perfect foresight', which in turn represents only a small proportion of the DBC.

EirGrid and SONI acknowledge that there are other benefits to improvements in wind/load forecasting accuracy e.g. benefits to cross-border trade and the accuracy of the *ex ante* market schedule. However, such benefits are harder to quantify, and the potential benefits of incentivising wind/load forecasting should be weighed against the potential benefits of incentivising a quantifiable reduction in DBC.

In summary, if the RAs' ultimate aim is to reduce DBC, then this aim is better served through a single incentive against the DBC forecast. Otherwise, the downside would need to be split between the two incentives, reducing the strength of the general incentive.

Proposed Reporting

The RAs' consultation paper states that "the SEM Committee considers that it is important that clarity around levels of DBC is provided to market participants. This will allow participants to understand the drivers behind DBC, the impact that DBC has on all-island customers and the steps being taken by the TSOs to reduce DBC". It goes on to propose that the TSOs develop a report template for submission to the SEM Committee.

The TSOs would welcome any moves toward greater transparency in relation to the key drivers of constraint costs and the degree of control of the TSOs. It is to this end that EirGrid and SONI have hosted workshops with industry participants on DBC drivers and have been working closely with the CER and NIAUR in recent years in relation to forecasts and mitigation measures.

As per the RAs' paper, the TSOs propose to develop a template for reporting on DBC on a quarterly basis. This template will include figures for outturn DBC against forecast for the year to date and commentary on the key drivers of constraints and relevant mitigation measures.

4 Conclusion and Key Points

The potential for the incentivisation of constraints has been discussed for a number of years, and EirGrid and SONI welcome the Regulatory Authorities' (RAs) consultation. To the extent that incentives can be implemented in support of the efficient management of DBC, then EirGrid and SONI welcome their application.

Key Points: Factors for Consideration

- In deciding whether or not to incentivise DBC, it is important to consider the extent to which the TSOs actions can influence constraints. It is also important to take into account the appropriate, or efficient, level of DBC such that an incentive does not lead to perverse outcomes.
- A crucial factor in Ireland and Northern Ireland is the split-responsibility industry arrangements. One of the most powerful tools that a combined operator/owner would have is the ability to make trade-offs between, for example, returning outages more quickly versus constraints caused by the outage. In the absence of being able to make such trade-offs, the TSOs have limited ability to influence DBC in the short-term (e.g. within a year or two).
- These factors mean that the extent and effect of an incentive on constraint costs may be limited at this time, while the split-responsibility model remains in place. In the event that an incentive is introduced, it can be designed to take into account the limited degree of influence, for example, through the application of asymmetry in upside and downside risk.

Key Points: Response to RAs' Incentive Proposals

- EirGrid and SONI agree that an asymmetric incentive on the total DBC "pot", similar to that proposed in the consultation paper, is the most appropriate mechanism.
- An *ex-post* adjustment mechanism is necessary to protect both the TSOs and consumers from unexpected events which have a material impact on DBC. EirGrid and SONI agree with the proposals in relation to fuel prices and HILPs and have also proposed an adjustment mechanism in relation to exchange rates.
- The incentive design also needs to take account of the TSOs' ability to bear risk, which is limited by the asset-light nature of the TSOs. To this end, EirGrid and SONI agree with the RAs' proposals to incorporate asymmetry and a dead-band, though we have proposed amendments to the proposed design as follows:

€m	Lower Bound	Dead Band	Upper Bound	Below Target	Above Target
Dispatch Balancing Costs	15% below forecast DBC	5% below and 10% above forecast	20% above forecast DBC	TSO retains 20% of DBC between dead-band and outturn (subject to lower bound)	TSO penalised 5% of DBC between dead-band and outturn (subject to upper bound)

- While asymmetrically designed in terms of potential upside to downside to the TSOs, the potential gain to customers still far outweighs the potential incentive payment.
- Regarding the proposal to also incentivise wind and demand forecasting, EirGrid and SONI consider that, if the RAs' ultimate goal is to reduce DBC, this aim is better served through a single incentive against the DBC forecast.
- As per the RAs' paper, the TSOs are proposing to develop a template for reporting on DBC on a quarterly basis. This template will include figures for outturn DBC against budget for the year to date and commentary on the drivers of constraints and relevant mitigation measures.

Next steps

- EirGrid and SONI hope that the information in this submission assists the RAs in their consideration of whether and, if so how, to incentivise DBC.
- As the RAs thinking advances in this area, EirGrid and SONI would welcome the opportunity to further engage in relation to the specifics of the design of any incentive. The final incentive design will need to be considered in the context of the ability of the TSOs to bear the associated risk.

Annex 1: What "pot" to incentivise

Clause 4.155 of the T&SC states that the purpose of the Imperfections Charge is to recover the anticipated Dispatch Balancing Costs (less Other System Charges), Make Whole Payments, any net imbalance between Energy Payments and Energy Charges and Capacity Payments and Capacity Charges over the year, with adjustments for previous years as appropriate.

The three components of Dispatch Balancing Costs, namely Constraint Costs, Uninstructed Imbalances and Testing Charges are managed by the TSOs and are the subject of this consultation. However, there is significant interaction between Energy Imbalances and DBC. Energy Imbalances may arise due to features in the SEM rules, such as if the Dispatch Quantity of a Generator Unit Under Test differs from the Nomination Profile submitted to SEM. Although SEM rules are not within the control of the TSO, the inherent link between Energy Imbalances and Constraint Costs needs to be captured, as an Energy Imbalance will generally impact Constraint Costs in the opposite direction, artificially increasing or decreasing the total Constraint Costs. In order to capture this effect, Energy Imbalances should also be included within the incentive mechanism.

Other System Charges are levied on generators whose failure to provide necessary services to the system leads to higher Dispatch Balancing Costs, i.e. Generator Performance Incentives, Trip Charges and Short Notice Declaration Charges. As DBC and generator performance are intrinsically linked, the TSOs recommend that the Other System Charges levied across the tariff year should be included in any incentive mechanism on DBC for that tariff year.

Make Whole Payments are a feature of the SEM rules and are generally independent of dispatch and DBC. As such, Make Whole Payments should be excluded from any incentive mechanism. In addition, the other components recovered via the Imperfections Charge (e.g. capacity imbalances) should be excluded from the proposed incentive mechanism, as they are outside the control of the System Operators. Finally, where the TSOs schedule SO Interconnector Trades for system security reasons (or in the future to facilitate priority dispatch), then these should also be excluded from the baseline.