Imperfections Charge

October 2016 – September 2017

And

Incentive Outturn

October 2014 – September 2015

Decision Paper

SEM-16-050

19 August 2016

CONTENTS

1 EXECUTIVE SUMMARY

The Single Electricity Market (SEM) Imperfections Charge is made up of a number of components, the largest of which relates to Dispatch Balancing Costs (DBC). The purpose of the Imperfections Charge is to recover the anticipated DBC (less Other System Charges), Make Whole Payments and any net imbalance between Energy Payments and Energy Charges and Capacity Payments and Capacity Charges, over the tariff year. The K-factor adjustment mechanism enables any under or over recovery of Imperfections Costs, in the previous year and an estimate for the current year, to be accounted for in the following tariff year.

On 23rd June 2016, the Regulatory Authorities (RAs), together the Utility Regulator (UR) in Northern Ireland, and the Commission for Energy Regulation (CER) in the Republic of Ireland, published the "Imperfections Charge October 2016 to September 2017 and Incentive Outturn October 2014 to September 2015 Consultation Paper"[1] (the Consultation Paper). The Consultation Paper considered the Transmission System Operators' (TSOs) submissions in relation to the:

1. 'Forecast Imperfections Revenue Requirement for Tariff Year 1st October 2016 to 30th September 2017'[2] (2016/17 Forecast); and
2. 'Imperfections Costs Incentive for Tariff Year 1st October 2014 to 30th September 2015'[3] (2014/15 Incentive Outturn).

Formal responses to this Consultation Paper were received from the following respondents[4]:

- Eirgrid and SONI, together the Transmission System Operators (TSOs);
- The Irish Wind Energy Association (IWEA);
- Kore Energy; and
- Bord Gais Energy (BGE).

These responses have been considered by the SEM Committee (SEMC) in coming to the decisions outlined in this paper.

[1] SEM-16-031
[2] SEM-16-031a
[3] SEM-16-031b
[4] Attached as Appendices 1 to 4 of this decision paper

1.1 2016/17 FORECAST

As part of their 2016/17 Forecast the TSOs provided an estimate of Imperfection Costs for the 2016/17 tariff year which is 14% lower than that forecast for the current 2015/16 tariff year. The main factors behind the reduction relative to the current year include the following:

- Lower levels of forecasted interconnector imports during the day and higher exports during the night; and
- A significant decrease in forecast fuel prices.

Given the TSOs forecast Imperfections Costs and allowing for a K-factor adjustment of (€77.56m), results in a 2016/17 Imperfections Charge of €2.05 per megawatt-hour (MWh), compared with €4.47 per MWh for the 2015/16 tariff year. This represents a 54% decrease in tariffs from the levels currently experienced.

In the Consultation paper the RAs proposed that the TSOs forecast and K-factor adjustment be accepted and respondents to the Consultation Paper welcomed the lower tariff value. The SEMC has made the decision to allow for an Imperfections tariff of €2.05/MWh to be applied for the period from 1 October 2016 to 30 September 2017, per the table below.

	2016-17	**2015-16**	**Change**
Imperfections Allowance (€m)	146.8	170.70	(14)%
K-factor (€m)	(77.56)	(22.12)	
Total Allowance (€m)	**69.24**	**148.58**	**(53)%**
Forecast Demand (GWh)	33,700	33,230	1.4%
Tariff (€/MWh)	**2.05**	**4.47**	**(54)%**

Table 1: Imperfections Charge 2016/17 and 2015/16

The lower tariff values are primarily a result of the large over recovery of €77.56 million that will be recouped in the upcoming tariff year. This over recovery is composed of an over recovery in the 2014/15 tariff year and an estimate of the over recovery for the current 2015/16 tariff year. This over recovery has arisen for different reasons and essentially reflects differences between the TSOs estimate of Imperfections Costs and the actual Imperfections Costs incurred. The TSOs advised that the main reasons for the significant over recovery of Imperfection Costs are as follows:

- In April 2015 the carbon price floor in Great Britain (GB) increased significantly and this had a significant impact on market interconnector flows for the second half of the 2014/15 tariff year and the 2015/16 tariff year i.e. lower import (GB to SEM) volumes during the day and larger export (SEM to GB) volumes during the night. The net impact of this was a reduction in the DBC outturn;
- Decreasing wholesale fuel prices relative to that forecast; and
- Initiatives implemented by the TSOs during the 2014/15 tariff year, as outlined in detail in the TSOs' 2014/15 Incentive Outturn paper, decreased the actual outturn of DBC. Any initiatives implemented in the current year will also have had the same effect.

1.2 2014/15 INCENTIVE OUTTURN

DBC are a significant cost element passed on to the all-island consumer and represent the majority of the Imperfections Charge[5]. In light of the above, the 'Single Electricity Market Incentivisation of All-Island Dispatch Balancing Costs Decision Paper SEM-12-033' (the Decision Paper) introduced an all-island DBC incentive mechanism, with effect from 1 October 2012[6]. The purpose of the incentive mechanism is to give the TSOs a reward for reducing DBC below the forecast, while penalising them for the reverse result; subject to reasonable ex-post model adjustments to the original forecast. Any incentive payment/penalty incurred is split on a 75:25 basis between Ireland's Transmission Use of System (TUoS) and Northern Ireland's System Support Services (SSS) revenues respectively.

The TSOs originally submitted a forecast DBC, for the 2014/15 tariff year, of €177.6 million, in May 2014. The PLEXOS element of this forecast stood at €181.5 million, with the supplementary modelling component equalling (€3.9 million). In their 2014/15 Incentive Outturn the TSOs proposed that the PLEXOS component of this forecast be amended, to take account of the following ex-post review factors:

1. Model basecase refinements to include:

    a) The '12 months of benefit' principle - allowing the TSOs to gain 12 months of benefit from the Dublin Must Run and Reserve Co-optimisation initiatives, introduced in the 2013/14 tariff year.

[5] DBC has accounted for 95-100% of the forecast Imperfections Charge over the last 5 tariff years

[6] SEM-12-033 Incentivisation of All-Island Dispatch Balancing Costs Decision Paper, dated 5 June 2012

b) New generating units – correction of assumptions around Great Island connection dates and technical and commercial parameters. Also adjustment to account for all Demand Side Units (DSUs) which became operational during the 2014/15 tariff year.
c) Interconnector adjustments - During the year the flows on both interconnectors changed significantly, predominately due to the increase of the Carbon Price Floor in GB on 01/04/2015.

2. Combination of actual demand, Commercial Offer Data (COD), wind and Modified Interconnector Unit Nominations (MIUNs) data.

In the Consultation Paper the RAs proposed to allow for the above ex-post review factors. In relation to the '12 months of benefit' principle, the RAs noted that any period of benefit of less than 12 months may create a perverse incentive for the TSOs to delay new initiatives until the start of the following tariff year. Furthermore, the RAs felt that a period greater than 12 months may discourage the TSOs from implementing new initiatives as frequently.

The TSOs' 2014/15 Incentive Outturn submission detailed actual Imperfections Costs of €128.7 million, €17.2 million lower than the ex-post DBC baseline of €145.9 million[7]. This saving potentially entitles the TSOs to an incentive payment of €0.63 million[8] and the RAs recommended endorsement of this incentive payment in the Consultation Paper.

The SEMC has decided to provide the TSOs with an incentive payment of €0.63 million in light of the efficiency gains achieved by them in reducing outturn Imperfections Costs below the ex-post DBC baseline. Moreover, the SEMC has decided to endorse the '12 months of benefit' principle, meaning the TSOs are to benefit from any new initiatives introduced by them for a period of 12 months. This is the second year in which the TSOs have claimed entitlement to an incentive payment, having received an incentive payment of €2.5m last year, based on the outturn Imperfections Cost for tariff year 2013/14.

[7] Calculated as original DBC forecast (177.6m) + model basecase refinements (3.5m) less actual data (52.6m) plus supplementary modeling adjustments (17.4m) = 145.9m
[8] SEM-16-031b – Table 10: Method of calculating the incentive payment with ex-post adjusted baseline

2 INTRODUCTION

2.1 THE SINGLE ELECTRICITY MARKET

The all-island wholesale electricity market was established as the SEM in November 2007. The SEM is a centralised gross mandatory pool market, with electricity being bought and sold through the pool under a market clearing mechanism.

Generators receive the System Marginal Price (SMP) for their scheduled dispatch quantities, Capacity Payments for their actual availability and Constraint Payments for dispatches outside the market schedule due to system constraints and other specific factors.

Suppliers purchasing energy from the pool will pay the SMP for each trading period, Capacity Charges, and System Support Charges. The SEM market rules are set out in the Trading and Settlement Code (TSC)[9]. The SEM is governed by the SEMC which was set up by the Governments in the Republic of Ireland and Northern Ireland. This Committee has representatives from both RAs, UR in Northern Ireland and CER in the Republic of Ireland, together with an Independent Member. The SEM is operated by the Single Electricity Market Operator (SEMO) which is a contractual joint venture between the System Operators EirGrid and SONI.

2.2 OBJECTIVE OF PAPER

This decision paper outlines the SEMC's determination on the Imperfections Charge for the 2016-17 tariff year and also allows for the second Imperfections based TSO incentive payment to be made. Comments received from interested parties, following the publication of the Consultation Paper on 23rd June 2016, are summarised throughout this paper and published on the SEMC website[10]. All responses received have been considered in preparation of this decision paper.

2.3 OVERVIEW

The Imperfections Charge is levied on suppliers by SEMO. The purpose of the Imperfections Charge is to recover the anticipated DBC (less Other System Charges), Make Whole Payments,

[9] http://www.sem-o.com/MarketDevelopment/MarketRules/TSC.docx
[10] Attached as Appendices 1 to 4 of this decision paper

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 K-factor adjustment mechanism enables any under or over recovery of Imperfections Costs, in the previous year and an estimate for the current year, to be accounted for in the upcoming tariff year.

In 2012 the RAs introduced an incentive mechanism to encourage the TSOs to minimise Imperfection Costs where possible. The TSOs' entitlement to an incentive payment is assessed by comparing outturn Imperfections Costs against the ex-post DBC forecast for the same period. This is the second year where an incentive payment is due, with the TSOs receiving an incentive payment of €2.5 million last year. Payment of the €0.63 million incentive amount will be paid to the TSOs in line with the specified 75/25 proportions between Eirgird and SONI respectively.

3 THE 2016/17 FORECAST

The TSOs' 2016/17 Forecast was prepared jointly by EirGrid and SONI, and captures an all-island estimate of the Imperfections Charge for that year. All costs are estimated ex-ante and recovered from suppliers on a MWh basis through the Imperfections Charge. The TSOs forecast an Imperfections revenue requirement of €146.8 million for the 2016/17 tariff year. This represents a 14% decline from the €170.7 million forecast for the 2015/16 tariff year. A number of key factors influenced the 2016/17 Forecast, including:

- Lower levels of forecasted interconnector imports during the day and higher exports during the night contribute to a reduction in forecast Constraint Costs. Interconnector flows, on both Moyle and the East West Interconnector (EWIC), have predominantly been imports from GB to SEM in recent years. On the 01/04/2015 the Carbon Price Floor in GB increased significantly, resulting in the price spread between SEM and GB narrowing significantly. This increase in the Carbon Price Floor resulted in significant exports from SEM during the night and a reduced level of imports to SEM during the day. Lower levels of forecasted interconnector imports during the day and higher exports during the night contribute to a reduction in forecast Constraint Costs, as more generating units fall into merit in the unconstrained model, therefore closing the gap between the constrained and unconstrained production costs;

- A significant decrease in forecast fuel prices leads to a reduction in forecast Constraint Costs;

- An increase in wind generation relative to overall demand contributes to an increase in forecast Constraint Costs; and

- There is a significant programme of capital works on the transmission system scheduled for the 2016/17 tariff year which results in an increase in forecast Constraint Costs.

For the purpose of the 2016/17 Forecast the TSOs assumed that ROI and NI generators will continue to bid Gas Transportation Capacity (GTC) charges in line with current practice. Currently no generators in NI are including GTC within their bids and the TSOs have assumed that this behaviour will continue for the 2016/17 tariff year. The RAs deemed these GTC assumptions to be reasonable and considered that if generator bidding behaviour does change then this could be considered as part of the ex-post review process during the 2016/17 incentive outturn process. The SEMC agrees that these GTC assumptions are reasonable.

Detail on the forecasts for each of the Imperfections Charge components is provided in the sections below.

3.1 DISPATCH BALANCING COSTS

DBC refers to the sum of Constraint Payments, Uninstructed Imbalance Payments and Generator Testing Charges. DBC makes up 98% of the Imperfections Charge in the 2016/17 Forecast. DBC for the 2016/17 tariff year is forecast as €144.3 million.

3.2 CONSTRAINT PAYMENTS

Constraint Payments make up the entirety of the 2016/17 DBC forecast (€144.3m), as Uninstructed Imbalances and Testing Charges are forecast at zero. Constraint Costs arise due to the TSOs having to dispatch some generators differently from the ex-post market unconstrained schedule, in real time, to ensure security of supply on the system. Generators receive Constraint Payments to compensate them for any difference between the market schedule and actual dispatch. A generator that is scheduled to run by the market but which is not run in the actual dispatch (or run at a decreased level) is 'constrained off/down'; a generator that is not scheduled to run or runs at a low level in the market, but which is instructed to run at a higher level in reality is 'constrained on/up'.

PLEXOS Constraints

The majority of the forecast Constraint Costs are derived using the PLEXOS modelling tool. The RAs performed validation of the TSOs' PLEXOS model using their in house PLEXOS database. The TSOs' modelling assumptions were sense checked against an externally validated PLEXOS model produced by the RAs. The RAs investigated any differences between the models and the TSOs provided explanations for any divergences. In some cases the TSOs used actual data rather than the forecast data contained in the RAs' validated PLEXOS model. Additionally, certain parameters were updated to enable a more realistic PLEXOS outcome, based on the TSOs' experience. The PLEXOS element of the TSOs' Constraint Costs forecast is €125.8 million, a significant reduction from the forecast Constraint Costs of €152.4 million for the PLEXOS component of the 2015/16 tariff year. The reasons for this decrease are detailed in the bullet points in section three above. The assumptions underlying the TSOs' forecast PLEXOS Constraints are detailed within the 2015/16 Forecast submission[11].

[11] SEM-16-031a Page 23 and 35

Supplementary Modelling Constraints

As it is not possible to model all Constraint Cost drivers in PLEXOS, part of the TSOs' Constraint forecast is made up of supplementary modelling results. The supplementary model includes forecasts for the following areas that PLEXOS is unable to effectively model; perfect foresight, specific reserve constraints, specific transmission system constraints, market modelling assumptions, system security constraints and other factors[12]. The supplementary modelling component of the 2016/17 forecast for Constraint Costs, is €18.5 million. This represents an increase of €7.4 million from the forecast for the 2015/16 tariff year. The largest influencing factor behind this increase is the reduction in the impact of System Operator interconnector countertrading[13].

A provision of €0.8 million for Secondary Fuel start-up tests was made within the supplementary model. This is included as CER have requested that Eirgrid carry out Secondary Fuel start-up testing, for security of supply reasons. The TSOs anticipate that the fuel switching arrangements will come into place in NI in 2016/17 and the obligations have been in place in ROI since 2010. The TSOs aim to fully commence secondary fuel testing during unit start-ups in the 2016/17 tariff period. A provision has been made to constrain on Open Cycle Gas Turbines (OCGTs) and to constrain on the marginal unit during Combined Cycle Gas Turbine (CCGTs) tests for a period of time. A provision is included for one test on all applicable units during the 2016/17 tariff year. The TSOs provided a detailed breakdown of how they arrived at the forecast figure for Secondary Fuel start-up testing, at a meeting with the RAs.

Combining both the PLEXOS and supplementary modelling Constraints, a forecast of €144.3 million is included for 2016/17 Constraint Costs, representing a decrease of 12% from the 2015/16 forecast of €163.5 million.

3.3 UNINSTRUCTED IMBALANCES

Uninstructed Imbalances occur when there is a difference between a generator unit's dispatch quantity and its actual output. Uninstructed Imbalances and Constraint Costs are related, with Uninstructed Imbalances having a direct effect on Constraints Costs, as TSOs re-dispatch generators to counteract the impact of Uninstructed Imbalances on the system.

[12] See SEM-16-031a page 13 and 25 for further detail on these components

[13] See SEM-16-031a page 11 for further information on this

A forecast of zero is included for Uninstructed Imbalances as it is assumed that the additional Constraint Costs as a result of Uninstructed Imbalances will, on average, be recovered by the Uninstructed Imbalance payments for the forecast period.

3.4 TESTING CHARGES

The testing of generator units results in additional operating costs to the system, in order to maintain system security. As a testing generator unit typically poses a higher risk of tripping, additional operating reserve will be required to ensure that system security is not compromised, which will give rise to increased Constraint Costs.

A zero forecast has been included for Testing Charges, as it is assumed that any testing generator unit will pay Testing Charges to offset the additional Constraint Costs that will arise from out-of-merit running of other generators on the system as a result of the testing.

3.5 ENERGY IMBALANCES

Energy Imbalances occur in SEM in the event that the sum of Energy Payments to generators does not equal the sum of Energy Charges to suppliers. An Energy Imbalance will generally impact Constraint Costs in the opposite direction, artificially increasing or decreasing the total Constraint Costs. A forecast of zero is included as it is assumed that if Energy Imbalances do occur that they will have an equal and opposite effect on Constraint Costs and will offset any increase or decrease accordingly.

3.6 MAKE WHOLE PAYMENTS

Make Whole Payments account for any difference between the total Energy Payments to a generator and the production cost of that generator on a weekly basis. As such, Make Whole Payments are a feature of the SEM rules and are generally independent of dispatch and DBC. SEMO is responsible for administering all Make Whole Payments and they are funded through the Imperfections Charge. The TSOs included a forecast of €2.5 million for Make Whole Payments, based on the TSOs' experience of actual outturn, from 1st October 2015 to 2nd April 2016, extrapolated out for a 12 month period. Make Whole Payments to Interconnector Users have accounted for almost all of these payments in recent years. Make Whole Payments are not included within the incentive mechanism, as they are viewed as being independent of dispatch and DBC.

3.7 OTHER SYSTEM CHARGES

Other System Charges (OSC) are levied on generators whose failure to provide necessary services to the system lead to higher DBC and Ancillary Service Costs. OSC include charges for generator units which trip or make downward re-declarations of availability at short notice.

In their submission the TSOs assume that generators are compliant with Grid Code and that no charges will be recovered through Other System Charges i.e. a forecast of zero is included for OSC for the 2016/17 tariff year. The TSOs argued that any deviation from this assumption would result in an increase to DBC, and that any monies recovered through Other System Charges will net off the resultant costs to the system in DBC.

3.8 RECOVERY OF IMPERFECTION COSTS

Imperfections Costs are estimated ex-ante and recovered during the following tariff period, through the Imperfections Charge.

Differences between the amount of Imperfections Charges paid out by SEMO to generators and the amounts paid to SEMO by suppliers will lead to instances where SEMO will:

- Require working capital to fund Imperfections Costs that exceed revenue collected through the Imperfections Charge, or,
- Have collected revenue through the Imperfections Charge that exceeds the amount being paid out on Imperfections Costs.

To allow for the first scenario, SEMO may require funding from EirGrid Group to cover fluctuations during the tariff period. Any allowed under-recovery of revenue during the tariff period will be paid to SEMO, in the subsequent tariff period(s), with the appropriate amount of interest. This reflects the cost of short-term financing required to meet SEMO's working capital needs.

Similarly, for situations where the revenue recovered by SEMO through the Imperfections Charge is greater than that paid out in Imperfections Costs (second scenario above), the Imperfections Charge in the following tariff period will be reduced by an appropriate amount to reflect the allowed over-recovery and the associated interest.

The K-factor mechanism accounts for any under or over recovery of Imperfections Costs, in previous periods and the current period and adjusts the following period's tariff accordingly. The K-factor to be applied to the Imperfections Charge for 2016/17 is (€77.56m). This is comprised of the following:

Summary of K-factor adjustment

Over-recovery in tariff year 2014/15	(€37.56m)
Estimated over-recovery for tariff year 2015/16	(€40.00m)
Total Imperfections K-factor to be applied in 2016/17	(€77.56m)

This €77.56 million over-recovery is netted off the 2016/17 forecast Imperfections Charge leading to a reduction in the Imperfections Charge for the 2016/17 tariff year. This over recovery is composed of an over recovery in the 2014/15 tariff year and an estimate of the over recovery for the current 2015/16 tariff year. The over recovery has arisen for different reasons and essentially reflects differences between the TSOs estimate of Imperfections Costs and the actual Imperfections Costs incurred. The TSOs advised that the main reasons for the significant over recovery of Imperfection Costs are as follows:

- In April 2015 the carbon price floor in GB increased significantly and this had a significant impact on market interconnector flows for the second half of the 2014/15 tariff year and the 2015/16 tariff year i.e. lower import (GB to SEM) volumes during the day and larger export (SEM to GB) volumes during the night. The net impact of this was a reduction in the DBC outturn;

- Decreasing wholesale fuel prices relative to that forecast; and

- Initiatives implemented by the TSOs during the 2014/15 tariff year, as outlined in detail in the TSOs' 2014/15 Incentive Outturn paper, decreased the actual outturn of DBC. Any initiatives implemented in the current year will also have had the same effect.

3.9 DEMAND FORECAST

Based on outturn 14/15 demand and 15/16 year to date figures the TSOs have forecast demand for the 2016/17 tariff year at 33,700 GWh, representing a 1.4% increase from the 2015/16 forecast demand of 33,230 GWh.

3.10 IMPERFECTIONS CHARGE

As stated in section 3.2 above, the TSOs forecast Constraint Costs of €144.3 million for the 2016/17 tariff year. As the other components of DBC are forecast at zero, this figure also equates to the forecast for DBC. As discussed in section 3.6 above, the TSOs forecast Make Whole Payments of €2.5 million, based on 2015/16 outturn to date. The remaining elements of the Imperfections Charge are forecast at zero, meaning the forecast Imperfections Charge for 2016/17 stands at €146.8 million. Allowing for the K-factor adjustment, provides a total

forecast Imperfections Charge of €69.24 million, which when divided by the forecast demand, of 33,700 GWh, equates to an Imperfections Charge of €2.05/MWh for the 2016/17 tariff year.

The comparable figure for the current 2015/16 tariff year stood at €4.47/MWh. Any under or over recovery of Imperfections Costs in the 2016/17 tariff year will feed into the K-factor of subsequent tariff years. The trend in the Imperfections Charge is summarised in Table 2 below:

€m	**2016-17**	**2015-16**	**2014-15**	**2013-14**	**2012-13**	**2011-12**
Total Constraints costs	144.3	163.5	177.6	165.5	142.0	142.6
Uninstructed Imbalances	-	-	-	-	-	-
Testing charges	-	-	-	-	-	-
Dispatch Balancing Costs	144.3	163.5	177.6	165.5	142.0	142.6
Energy Imbalance	-	-	-		-	-
Make whole payments	2.5	7.2	3.6	0.1	0.1	0.1
K-factor Adjustment	(77.6)	(22.1)	5.2	(18.9)	12.8	42.5
Other System Charges	-	-	-	-	-	-
Total Imperfections Charge	**69.2**	**148.6**	**186.4**	**146.7**	**154.9**	**185.2**
Forecast Demand ('000 MWh)	33,700	33,230	33,320	33,220	32,900	34,030
Imperfections Charge/ MWh	**2.05**	**4.47**	**5.60**	**4.42**	**4.71**	**5.44**

Table 2: Imperfections Charge over time

CONSULTATION PAPER PROPOSALS

As stated in the Consultation Paper, the RAs have sense checked the assumptions within the TSOs' forecast against the RAs' validated PLEXOS model. The RAs honed in on any values, in the TSOs' forecast, that differed from those contained in the RAs' validated model and the TSOs provided explanations for any differences. For this reason the Consultation Paper proposed endorsing the Imperfections Charge of €2.05/MWh shown in Table 2 above.

RESPONSES

IWEA welcomed that the total Imperfections Charge has fallen from the previous year. In their response IWEA also highlighted the need for timely grid build out which they argued would reduce Constraint Costs. IWEA considered that that the full implementation of the Delivering a Secure Sustainable Electricity System (DS3) programme should help with certain constraints and they underlined the importance of ensuring this programme continues to progress.

Kore Energy welcomed the 54% reduction to the Imperfections Charge. They also made reference to the large K-factor adjustments and the possibility of swings in the opposite direction in future years. Kore Energy asked that the SEMC take all reasonable steps to prevent any rate increases for Imperfections Charges in future years. They also commented that the 14% reduction to the Imperfections Charge from 2015/16 to 2016/17, pre any K-factor adjustment, appears reasonable given falling wholesale prices.

BGE commented on the large K-factor adjustment and argued that there is a potential for under-recovery of charges between years. They considered that such swings are undesirable for both suppliers and their customers.

SEMC DECISION

Given the level of RA sense checking the SEMC are satisfied that the TSOs' assumptions are reasonable and have made the decision to endorse the TSOs' 2016/17 Forecast and a K-factor adjustment of (€77.56m), in line with that proposed in the Consultation Paper.

The SEMC agree that further grid build out and the full implementation of DS3 should help to minimise Constraint Costs, however consideration of these issues is outside the scope of this decision paper.

In response to both Kore Energy's and BGE's comments on ensuring Imperfection Charges do not rise in future years the SEMC consider that the DBC Incentivisation mechanism has been designed to reduce this very risk. The SEMC further assert that Imperfection Costs may increase as a result of the new market arrangements under the I-SEM, but point out that they will take all reasonable steps to ensure Imperfection Costs are minimised in the new market. The SEMC would like to clarify that the K-factor represents, amongst other things, a mismatch between the TSOs forecast of Imperfection Costs and the actual Imperfections Costs, and an over-recovery represents the situation were Imperfection Costs are lower than expected, hence creating an over recovery. It is possible that an under recovery of Imperfections Costs will arise in the future, especially given the uncertainty surrounding the costs in the I-SEM. However, the SEMC will continue to work with the TSOs to ensure as accurate a forecast as possible is derived for the I-SEM.

SEMC Decision: 2016/17 Imperfections Charge to be set at €2.05/MWh in line with Table 2 above.

4 INCENTIVE OUTTURN REVIEW FOR 2014/15

The TSOs are responsible for managing DBC through efficient dispatch of generation, while still maintaining a secure electricity system. In light of this, a process to incentivise the TSOs to reduce DBC was introduced by the SEMC, with effect from 1 October 2012. The current parameters, as detailed in the Decision Paper[14], are presented in Table 3 below. Any payments or penalties associated with the incentivisation of DBC are administered across both TSOs on a 75:25 split basis.

	Lower Bound	Dead Band	Upper Bound	Below Target	Above Target
Dispatch Balancing Costs	7.5% - 20% below baseline	7.5% below and above the baseline	7.5% - 20% above baseline	TSOs retain 10% of every 2.5% below	TSOs penalised 5% of every 2.5% above

Table 3: DBC incentive parameters

The cost categories included in the incentive baseline are detailed in the Decision Paper and listed in Table 4 below:

INCLUDED	NOT INCLUDED
Constraint Costs	Make Whole Payments
Uninstructed Imbalances	Capacity Imbalances
Testing charges	Other Imperfection Charge Components
Energy Imbalances	
Other System Charges	
SO-SO Trades	

Table 4: Cost categories included in the DBC incentivisation mechanism

The 2014/15 tariff year is the third year to fall within the incentive mechanism and the second year where an incentive payment has been claimed. The TSOs' 2014/15 Incentive Outturn submission detailed outturn Imperfections Costs of €128.7 million; €17.2 million lower than the ex-post DBC baseline. Based on this, the TSOs are potentially entitled to an incentive payment of €0.63 million. The resultant incentive payment would be applied on a 75:25 split between Ireland's Transmission Use of System (TUoS) and Northern Ireland's System Support Services (SSS) revenues respectively.

[14] SEM-12-033 Incentivisation of All-Island Dispatch Balancing Costs Decision Paper, dated 5 June 2012

4.1 EX-POST REVIEW FACTORS

The ex-post review is designed to take into account any external factors which heavily influenced DBC during the tariff period, e.g. unforeseen long-term outage of plant and other High Impact Low Probability events (HILPs). An effective ex-post adjustment mechanism should ensure the protection of both the TSOs and the all-island consumer from potential windfall gains or losses, as it removes some of the risk for events outside of the TSOs' influence.

Table 6 of the Decision Paper details the allowable ex-post review factors as follows:

- Changes in SEM market rules or any RA decision affecting DBC.
- Changes in demand forecast/exchange rates/fuel prices (inc. bids)/wind generation.
- High Impact Low Probability (HILP) events: long-term unforeseen outage of generators, key reserve providers or transmission network.

In addition to the above, the Decision Paper states that the RAs will, as part of the ex-post review, examine any significant factors not identified above which affected DBC outturn. Combinations of the above factors which lead to DBC outturn being 10% either side of the ex-ante baseline will also be reviewed in detail by the RAs. The SEMC consider the ex-post review process enables a more accurate and effective incentive mechanism.

The TSOs submitted the 'Forecast Imperfections Revenue Requirement for Tariff Year 1st October 2014 to 30th September 2015' (ex-ante DBC forecast) in May 2014. This submission forecast DBC for the 2014/15 tariff year at €177.6 million. The 2014/15 Incentive Outturn paper contains the TSOs' ex-post adjustments to this €177.6 million baseline, to form an ex-post DBC baseline of €145.9 million. Details of the adjustments made to the ex-ante DBC forecast are discussed in the proceeding paragraphs.

4.2 PLEXOS MODEL BASECASE REFINEMENTS

In their 2014/15 Incentive Outturn submission the TSOs assert that the combined effect of the PLEXOS model basecase refinements, detailed below, is to increase the originally submitted (ex-ante) PLEXOS model from €181.5 million to €185 million.

Initiatives introduced in 2013/14

The TSOs introduced a number of operational initiatives at various points in the 2013/14 tariff year. The TSOs adjusted the 2014/15 ex-ante DBC forecast to allow for 12 months of benefit from each initiative. These initiatives are outlined below:

a. Dublin Must Run Generation - The number of units in the Dublin operational constraint, for voltage support, was reduced from three by night/two by day to two (plus EWIC) at all times, following a period of successful testing on 25/10/2013. The original 2014/15 forecast, submitted to the RAs, included the new operational constraint rules for the entire tariff year, therefore this needed to be readjusted so that the old operation rule of three by night/two by day was effective from 01/10/2014 to 25/10/2014 and the new rule, of two (plus EWIC) at all times, was made effective after this date.

b. Reserve Co-optimisation - Countertrading for reserve co-optimisation was introduced by the TSOs on 03/03/2014, following consultation with the RAs. The principle behind this initiative was that the TSOs would countertrade with GB to export across EWIC in order to prevent it from becoming the Largest Single Infeed (LSI). By doing this it meant that EWIC could still hold reserve and the amount of reserve required on the island was minimised. The original 2014/15 forecast, submitted to the RAs, included an estimate of both the production cost saving and revenue from the trades, as part of the supplementary modelling, for the entire tariff year. The TSOs argue that this needs to be readjusted as the TSOs have only realised approximately six months (03/03/2014 to 30/09/2014) of benefit in the 2013/14 tariff year. The TSOs' ex-post DBC baseline included adjustments to the ex-ante DBC baseline for the six month period from 01/10/2014 to 03/03/2015, to remove the effect of countertrading for reserve co-optimisation from the baseline and allow the TSOs to realise 12 months of benefit.

CONSULTATION PAPER PROPOSALS

The RAs were minded to endorse the TSOs' '12 months of benefit' principle and to allow for the above "initiatives introduced in 2013/14" amendments, to the ex-ante DBC baseline. The RAs were cognisant of the fact that not allowing 12 months of benefit, for each new TSO initiative, may provide the TSOs with a perverse incentive to delay new initiatives, until the beginning of the next tariff period. Furthermore, the RAs felt that any period longer than 12 months may disincentivise the TSOs from introducing new initiatives on as frequent a basis. This '12 months of benefit' principle may be applied to any outperformance of System Non-Synchronous Penetration (SNSP) targets, achieved by the TSOs as part of the DS3 programme.

RESPONSES

The TSOs welcomed the RAs endorsement of the '12 months of benefit' principle and asserted that in order for the incentive to avoid unintended timing consequences it is important that the benefit of any initiative is ascribed for at least a full financial year following its introduction. To

that end it is presumed by the TSOs, that any such initiatives shall be applied in full to the financial year following their year of introduction when considering the overall modelling of any incentive payment.

In relation to the RAs comments on the '12 months of benefit' principle applying to any outperformance of SNSP targets achieved by the TSOs, the TSOs considered that although SNSP targets were developed and driven by them that they require external parties to contribute to the successful delivery of each milestone before any increases can be realised. The TSOs further asserted that any consideration of an incentive arrangement around SNSP levels needs to be considered in the context of the DS3 programme and its objectives. They argued that it is essential that the cumulative effect of all incentives placed on the respective TSO are taken into consideration.

SEMC DECISION

The SEMC has decided to endorse the '12 months of benefit' principle which entitles the TSOs to 12 months worth of benefit from new DBC minimising initiatives introduced by them. In their response the TSOs state that any such initiative shall be applied in full to the financial year following their year of introduction. The SEMC has decided that the benefit of a new initiative will be applied for a maximum of 12 months, for example if an initiative is introduced six months into a tariff year then the TSOs can benefit from it for the remaining six months of that tariff year and the first six months of the following tariff year.

SNSP increases are not an issue for the 2014/15 Incentive payment but we propose to include a policy for any incentive payment due for the 2015/16 tariff year[15].

SEMC Decision: Ex-post review adjustments to the ex-ante DBC baseline to allow for 12 months worth of benefit for new DBC minimising initiatives introduced by the TSOs.

New Generating Units

In the TSOs' ex-ante DBC forecast, submitted in May 2014, the TSOs made a number of assumptions around the connection dates of new generation capacity. Additionally, as these units had not undergone testing the technical and commercial parameters of these units could

[15] SNSP increased from 50% to 55% in October 2015

only be estimated. The TSOs made the following adjustments to the ex-ante DBC baseline to account for these new generating units:

a. Great Island - The new Great Island CCGT went into commercial operation on 16/04/2015. The original 2014/15 forecast assumed a commercial operational date of the start of the tariff year i.e. 01/10/2014. The technical and commercial parameters, determined by the owner, also changed considerably relative to those contained within the ex-ante forecast. These parameters were updated in the ex-post DBC model.
b. DSUs – Some DSUs become commercially operational more quickly than was expected. The ex-ante DBC model was therefore updated to include all DSUs which became operational during the 2014/15 tariff year.

Interconnector Adjustments

In their ex-ante DBC forecast the TSOs included fixed flows on both interconnectors, as this was the trend at the time of submission. During the year the flows on both interconnectors changed significantly, predominately due to the increase of the Carbon Price Floor in GB on 01/04/2015. In the ex-ante DBC forecast the import and export limits on both interconnectors were not binding, due to their fixed flow profiles. To reflect the change in actual flows the TSOs updated the ex-ante DBC forecast to reflect the following:

- Moyle: Export limit from SEM to GB increased from 80 MW to 250 MW as measured in Northern Ireland;
- EWIC: Export limit from SEM to GB increased from 400 MW to 526 MW as measured in Ireland; and
- EWIC: import limit from GB to SEM increased from 500 MW to 504 MW.

Furthermore, refinements were made to how the Moyle interconnector was modelled to align this with that used for EWIC. This amendment was made to reflect the actual flows for the 2014/15 tariff year.

CONSULTATION PAPER PROPOSALS

As stated above, the SEMC Decision Paper on DBC Incentivisation states that the RAs will, as part of the ex-post review, examine any significant factors not identified which affected DBC outturn. Although the above factors are not specifically referred to as allowable ex-post review adjustments in the Decision Paper, the RAs were minded to allow for their inclusion. Allowing for these amendments provides a more accurate ex-post DBC baseline by which to assess the

TSOs' performance. The TSOs' advised that if the refinements for new generating units and interconnector adjustments were not made that the ex-post DBC baseline would be higher and the TSOs' outturn performance appear better as a result. The RAs stated that they wished to ensure as transparent an ex-post review process as possible.

RESPONSES

There were no responses received in relation to the inclusion of the new generating unit and interconnector adjustments described above.

SEMC DECISION

The SEMC has decided to allow for inclusion of the above amendments within the ex-post DBC model. The SEMC wishes to ensure the TSOs are held to account and incentivised against as accurate data as possible. The TSOs' performance would have appeared better had these adjustments not been made and the SEMC welcomes the TSOs' transparency in this matter.

SEMC Decision: Ex-post review adjustments to the ex-ante DBC baseline to allow for amendments to reflect new generating units and actual interconnector flows.

4.3 SEM RULES OR ANY RA DECISION

The TSOs reviewed any changes to SEM market rules and any RA decision that became effective between the data freeze date of 27/03/2014 and the end of the 2014/15 tariff year. The TSOs identified that there were no changes to the SEM rules or RA rule changes which impacted on the 2014/15 ex-post review process.

4.4 DEMAND

The actual average monthly demand for Ireland was 1% lower than forecast, while the actual demand for Northern Ireland was 5% lower than forecast. When actual demand figures were rerun in PLEXOS, DBC decreased by 3%, therefore meeting the criteria for inclusion in the ex-post adjustment process[16].

[16] Per SEM-12-033 Incentivisation of All-Island Dispatch Balancing Costs, Table 6

4.5 WIND

Actual all-island wind availability was 2% higher than the assumed wind availability in the submitted ex-ante DBC forecast. This was considered a material difference and a rerun of the PLEXOS model was carried out. This model rerun showed an increase in DBC of 2% when compared with the submitted ex-ante DBC forecast. This change to DBC did not meet the criteria for inclusion in the ex-post DBC model, when considered in isolation.

4.6 COMMERCIAL OFFER DATA & MIUNS

Actual COD was compared to the submitted ex-ante forecast COD and these differed significantly. The main reason for this was a considerable reduction in wholesale fuel prices across the island. The impact of this divergence between actual and forecast generator COD was assessed in PLEXOS and resulted in a reduction to the DBC ex-ante baseline of 8%.

Forecast MIUNs on both Interconnectors were based on historical flows, observed on both interconnectors, over a number of years. Actual MIUNs, however, differed significantly on both interconnectors. The increase in the Carbon Price Floor in GB, from 01/04/2015, was the main driver behind this change. The introduction of the Carbon Price Floor in GB significantly reduced the price spread between SEM and GB, with the result that both interconnectors exported more energy from SEM to GB, than was forecast. The impact of the actual MIUNs on DBC was assessed in PLEXOS and resulted in a reduction to DBC of 16%.

The actual COD (including actual MIUNs) was considered material and a rerun of the PLEXOS model was carried out. This resulted in a €43 million decrease to DBC, which equates to a 23% reduction, to the ex-ante DBC baseline. As this exceeds the threshold of 3% of the baseline, the SEMC has included it in the ex-post DBC model.

4.7 COMBINATION OF DEMAND, WIND AND COD & MIUNS

When rerun in PLEXOS the combination of actual demand, actual wind availability and actual COD (including MIUNs) caused a €52.6 million (€185 million - €132.4 million) decrease to the ex-ante DBC baseline (including model refinements discussed above). This equates to a 29% decrease in DBC and meets the 8% threshold for inclusion in the ex-post DBC model.

CONSULTATION PAPER PROPOSALS

The €52.6m of adjustments, to reflect actual data, are clearly defined as allowable ex-post adjustment factors within the Decision Paper and the ex-ante DBC baseline should be amended to reflect these actuals.

RESPONSES

There were no responses received in relation to amendments to reflect the combination of actual demand, actual wind availability and actual COD (including MIUNs).

SEMC DECISION

The SEMC has made the decision to allow for the adjustments to the ex-ante DBC model to reflect actual demand, actual wind availability and actual COD (including MIUNs). These amendments are clearly labelled as allowable ex-post review factors within Table 6 of the decision paper on Incentivisation of all-island DBC. Again, allowing for these amendments insures the TSOs' performance is assessed on as accurate a basis as possible.

SEMC Decision: Ex-post review adjustments to the ex-ante DBC baseline to allow for amendments to reflect actual demand, actual wind availability and actual COD (including MIUNs).

4.8 HILP EVENTS

Transmission outages, both forced outages and scheduled outage overruns, were assessed by the TSO for the 2014/15 tariff year. Generator forced outages, scheduled outage overruns and generator issues were also examined. The combination of the generation and transmission outages did not met the HILP criteria as they resulted in a change in DBC of less than 1%. This was therefore not considered material and was not included in the ex-post adjustment process.

4.9 CONCLUSION ON EX-POST PLEXOS ADJUSTMENTS

PLEXOS Results

The above amendments relate to the PLEXOS modelled component of the DBC forecast and result in an ex-post PLEXOS component value of €132.4 million. The PLEXOS portion of the DBC

forecast has decreased, relative to the ex-ante forecast of €181.5 million, largely due to actual COD & MIUN levels differing from forecasts.

	€m
Ex-ante DBC PLEXOS forecast	181.5
PLEXOS Model basecase refinements	3.5
Adjustments for actual demand, exchange rates, wind, COD & MIUNs	(52.6)
Ex-post DBC PLEXOS value	132.4

Table 5: PLEXOS amendments in the Ex-post review process

CONSULTATION PAPER PROPOSALS

As with the TSOs' 2016/17 Forecast, the RAs sense checked the reasonableness of the TSOs' PLEXOS models against the RAs' validated PLEXOS model for the same period. The RAs investigated any reasons for differences between the models and the TSOs provided justification and evidence to explain any divergences. As noted previously, in some cases the TSOs used actual data rather than the forecast data contained in the RAs' validated PLEXOS model. Additionally, certain parameters were updated within the TSOs' models to enable a more realistic PLEXOS outcome, based on the TSOs' experience.

SEMC DECISION

For the reasons stated in the paragraphs above the SEMC has decided to endorse the proposals contained in the Consultation Paper and to include the ex-post review factors detailed in Table 5 above.

SEMC Decision: Ex-post review adjustments to the ex-ante DBC baseline to be included per Table 5 above.

5 SUPPLEMENTARY MODELLING RESULTS

The supplementary modelling component of the DBC forecast is designed to take account of the specific external factors that cannot be captured by the PLEXOS model. The TSOs calculated an ex-post supplementary model DBC value of €13.5 million. This represents an increase of €17.4 million from the submitted ex-ante forecast of €(3.9) million. System Operator Interconnector Trades for countertrading account for the majority of this €17.4 million movement from the ex-ante forecast. As mentioned previously, the increase in the Carbon Price Floor in GB reduced the potential for countertrading for reserve co-optimisation and this has been reflected in the ex-post model. The results of the supplementary modelling process are summarised in the TSOs 2014/15 Incentive Outturn submission[17].

The table below shows the effect of both the PLEXOS and supplementary modelling ex-post amendments on the ex-ante DBC forecast.

€m	Ex-ante DBC baseline	Ex-post DBC baseline
PLEXOS	181.5	132.4
Supplementary model	(3.9)	13.5
Total constraints	177.6	145.9

Table 6: Ex-ante DBC v Ex-post DBC

CONSULTATION PAPER PROPOSALS

As stated previously, the supplementary modelling takes account of the specific external factors that cannot be captured by the PLEXOS model. The RAs sense checked the TSOs' supplementary model for accuracy and reasonableness of assumptions and were minded to endorse the above amendments.

RESPONSES

No responses were received in relation to the ex-post adjustments to the supplementary modelling component of the DBC baseline.

[17] SEM-16-031b Table 8

SEMC DECISION

Given the explanation provided, in relation to the increase in the Carbon Price Floor in GB reducing the potential for countertrading for reserve co-optimisation, the SEMC has decided to endorse the ex-post adjustments to the supplementary modelling element of the DBC forecast.

SEMC Decision: Ex-post review adjustments to the ex-ante DBC baseline to allow for amendments to the supplementary modelling element of the DBC forecast as detailed in Table 6 above.

6 AMENDMENTS TO OUTTURN DBC

In their 2014/15 Incentive Outturn submission the TSOs proposed additional amendments to the ex-post review adjustments detailed above. The TSOs argued that outturn DBC should be amended to take account of two SEM Settlement Disputes, raised by the TSOs during the 2014/15 tariff year. The TSOs provided the following information on these disputes:

1. SEM Dispute #1: When a generating unit is under test in the SEM it can increase Imperfection Costs as additional units are constrained on/up for system security reasons. The SEM Testing Tariff is designed to help recover some of the additional costs associated with this testing. An incorrect SEM Testing Tariff was applied in the SEM settlement systems for periods during the 2014/15 tariff year. The TSOs identified this and raised a formal settlement dispute. This was resettled outside of the normal SEM settlement process, however the cost associated with this testing would have increased DBC. As this is an accounting issue the TSOs included this as a separate line item;

2. SEM Dispute #2: The SEM systems assign Market Scheduled Quantities (MSQ) to the maximum of a generating units Firm Access Quantity (FAQ) or Dispatch Quantity (DQ). An incorrect FAQ was issued to a new generating unit for a period during the 2014/15 tariff year. The TSOs identified this and raised a formal settlement dispute. This was resettled outside of the normal SEM settlement process. As this is an accounting issue the TSOs included this as a separate line item.

The RAs asked for further reasoning as to why outturn Imperfections Costs should be adjusted for the above disputes. The TSOs argued that the SEM settlement disputes relate to the actual outturn and not the ex-post DBC baseline. The settlement disputes were considered material by SEMO and resettled accordingly. The TSOs further asserted that this means the cost recovery will be passed through to the all-island consumer, however it was not included in the initial settlement data for the 14/15 tariff year. As this is merely an accounting anomaly the TSOs are strongly of the view that it warrants inclusion in the actual outturn figures.

CONSULTATION PAPER PROPOSALS

Amendments to outturn Imperfections Costs for dispute resolutions are not specifically referred to within the Decision Paper on DBC incentivisation and this is the first time the TSOs have proposed such amendments within the DBC incentivisation process.

The RAs wish to ensure the TSOs' performance is assessed on an accurate basis and were therefore minded to allow for the above amendments to outturn DBC. The RAs want to promote transparency within the incentivisation process and equal treatment for such amendments will apply, whether they increase or decrease outturn Imperfection Costs.

RESPONSES

No responses were received in relation to the adjustments for the two SEMO disputes detailed above.

SEMC DECISION

In relation to SEM Dispute #1 detailed above the TSOs have clarified this process and every under test approval from the TSO to SEM now states what testing tariff that generator should be on for that particular test. A testing tariff guidance paper was published by the TSOs on the Eirgrid website[18].

As regards SEM Dispute #2 an extra check has been incorporated in the registration process to ensure that all the necessary registration and deregistration data is provided should a similar situation arise.

Based on the information provided by the TSOs and the new processes put in place the SEMC have made the decision to allow the outturn DBC figure to be adjusted to reflect the two SEM disputes discussed above.

The table below shows actual outturn Imperfections Costs:

	Actual Outturn €m
Dispatch Balancing Costs	140.6
Energy Imbalance	(3.5)
Other System Charges	(6.2)
SEM Dispute #1	(1.8)
SEM Dispute #2	(0.4)
Total Imperfections Costs	**128.7**

Table 7: Actual Outturn Imperfections Costs

[18] http://www.eirgridgroup.com/site-files/library/EirGrid/16.02.01.TT-Selection-Guideline_Ext.pdf

SEMC Decision: Outturn DBC figure to be amended to reflect the two SEM disputes detailed above. Actual Imperfections Costs equal €128.7 million per Table 7 above.

7 IMPERFECTIONS OUTTURN AND INCENTIVE CONCLUSIONS

As shown in Table 7 above, actual Imperfections Costs for the tariff year 2014/15 equalled €128.7 million. This is €17.2 million lower than the ex-post DBC baseline of €145.9 million, shown in Table 6 above. The table below summarises how actual Imperfection Costs compare to the both the ex-post and ex-ante DBC baseline.

€m	**2014/15**		
	Actual	**Ex-post baseline**	**Ex-ante forecast**
Total constraints	144.05	145.90	177.60
Uninstructed Imbalances	(2.00)	-	-
Testing charges	(1.48)	-	-
Total DBC	**140.56**	**145.90**	**177.60**
Energy Imbalance	(3.50)	-	-
SEM Dispute #1	(1.80)	-	-
SEM Dispute #2	(0.40)	-	-
Other System Charges	(6.20)	-	-
Total Imperfections Charge	**128.70**	**145.90**	**177.60**

Table 8: Actual v Forecast Imperfections Costs

Based on this the TSOs are entitled to an incentive payment of €0.63 million. The incentive payment has been calculated in accordance with Table 3, 'DBC Incentive Parameters' above. The €17.2 million saving equates to an 11.8% reduction to the ex-post DBC baseline and the TSOs have calculated the €0.63 million by extrapolating between 10% and 12.5% under the baseline.

CONSULTATION PAPER PROPOSALS

The TSOs calculation is in accordance with the Decision Paper on DBC incentivisation[19]. The RAs were minded to endorse the payment of €0.63 million to the TSOs, in line with the specified proportions.

RESPONSES

IWEA welcomed the progress that has been made in relation to forecasting the Imperfections Charge and the improvements that have been made. They also considered that the introduction of a number of initiatives appears to have had a considerable impact on DBC which is to be commended and considered that it is important to ensure that these initiatives continue to be incentivised. IWEA stated that they supported the RAs minded to position to pay the incentive amount to the TSOs, however they requested further information on how the DBC savings were made and felt such information would be useful to industry as a whole.

IWEA believes that there is further scope for developing innovative solutions on the transmission and distribution networks which can bring additional benefits to the system in terms of reduced constraint and curtailment (e.g. uprating to higher voltages, load flow controllers etc.). IWEA argued that there should be further incentives to reduce the level of wind curtailment on the system and that the incentive to minimise DBC does not provide the correct signal in this instance.

SEMC DECISION

The SEMC consider that the DBC incentive mechanism provides a natural incentive to reduce the curtailment of wind. A reduction in the curtailment of wind directly reduces the level of constraint payments as less wind generators are constrained off in the dispatch schedule. The SEMC further asserts that the ongoing successful implementation of the DS3 programme which has increased the level of SNSP from 50% to 55%, from October 2015, will continue to reduce the level of curtailment.

In response to IWEAs request the RAs asked that the TSOs provided further information, over and above that already provided in their 2014/15 Outturn Submission[20], on how their initiatives

[19] See SEM-16-031b Table 10 page 19 for further details on calculation

[20] SEM-16-031b page 19

had reduced DBC below the ex-post DBC baseline. The TSOs response to this is provided in the 'TSO initiatives to reduce DBC' section below.

Given the detail provided in the TSOs 2014/15 Outturn submission and the further explanation provided by the TSOs in response to IWEA's request, the SEMC are satisfied that the TSOs have provided sufficient detail behind their DBC reducing initiatives.

The SEMC has decided pay the TSOs an incentive amount of €0.63 million, to be split between SONI and Eirgrid on a 25% to 75% basis between Ireland's TUOS and Northern Ireland's SSS revenues respectively.

SEMC Decision: TSOs to be paid €0.63 million incentive payment in line with specified proportions.

8 TSO INITIATIVES TO REDUCE DBC

As mentioned above, the RAs requested further explanation from the TSOs as to how their initiatives brought about a reduction in DBC. The TSOs responded with the following narrative on each of the initiatives discussed in the TSOs' 2014/15 Incentive Outturn Submission.

1. Dublin Must Run - The TSO changed the number of units in the Dublin operational constraint for voltage support from three generators by night/two generators by day to two generators (plus EWIC) at all times, following a successful testing period. This means that fewer generators are required to run in Dublin and therefore the overall production costs and DBC are reduced. This initiative was introduced by the TSOs on 25/10/2013 so the ex-post adjusted model for tariff year 2014/15 only included it from 25/10/2014. This was to allow a full 12 month benefit to the TSOs as part of the incentive scheme, part of which was included in the incentive calculation for tariff year 2013/14.

2. Reserve Co-Optimisation Countertrading - This is sometimes referred to as 'Countertrading to Reduce the Largest Single Infeed (LSI)'. There is an operational requirement for the TSOs to hold 75% of the LSI in reserve. This can mean constraining on generators that are out of merit in the SEM to meet this criteria, which increases DBC. When EWIC is the LSI the TSOs will countertrade with GB in order to reduce the import flow on EWIC so that EWIC will not be the LSI. This results in less constrained on generation as a lower amount of reserve is required to cover the LSI; it also frees up

static reserve on EWIC itself. There is an added benefit in that the revenue from exporting to GB is netted off DBC and thus reduces the total DBC spend.

3. Dublin Load Based Constraint Rule - This TSO initiative reduced DBC in a number of ways. Firstly, by removing Poolbeg as a must-run the constrained production costs on the island were reduced, as Poolbeg was an out of merit generator in the SEM. At the time the constraint costs associated with Poolbeg were one of the largest contributors to DBC. As a consequence of removing Poolbeg as a must-run the TSOs used an innovative approach to manage system contingencies, by introducing new load based constraints for Dublin. This was introduced on 18/11/2014 and meant that Huntstown was constrained on when the island's system demand was greater than 3800 MW and Poolbeg would be constrained on when the island's system demand was greater than 4400 MW. This initiative reduced the constrained running of out of merit generators and thus reduced DBC. Following further operational experience, the TSOs improved the load based rule on 04/02/2015, by changing the requirement for Poolbeg to be constrained on to when system demand was greater than 4600 MW. This further reduced the constrained on running of Poolbeg and helped to reduce DBC.

4. North - South Total Transfer Capacity - The TSOs made a change to the scheduling software with regard to reserve flows between NI and ROI. The change optimised how reserve is calculated and essentially allows for greater utilisation of the reserve held in each jurisdiction and can allow for increased flows on the Tie Line. This allows cheaper generation to be utilised therefore reducing DBC.

5. Short Circuit Tool - In order to reduce the requirement for must run generation in Dublin the TSOs introduced a bespoke Short Circuit Tool to the Energy Management System (EMS) in the National Control Centre, on 16/06/2015. As outlined in the TSO 2014/15 Incentive submission, one of the biggest benefits of this tool was to allow the TSOs to couple Shellybanks 220kV station at times. This helped to reduce DBC, as cheaper generation could be used instead of constraining on out of merit generation.

New initiatives involving improvements to constraint groups are captured in the monthly updates of the Operational Constraints document published on the EirGrid[21] and SONI[22] websites.

[21] http://www.eirgridgroup.com/library/

[22] http://www.soni.ltd.uk/InformationCentre/Publications/

In addition to the above initiatives, from tariff year 2014/15 weekly constraint studies have been carried out by the TSOs to ascertain the level of generation that can be sourced from known areas of the network which are limited by constraints. In early 2015 the TSOs improved the methodology of the weekly constraint studies by using a software analysis package called Voltage Stability Assessment Tool (VSAT). VSAT is from the same software suite as the Wind Security Assessment Tool (WSAT), which the TSOs have used for a number of years. This software will continue to help to trial new initiatives by the TSOs.

9 DBC FORECAST & INCENTIVISATION IN THE I-SEM

The 2016/17 Forecast covers the period to the end of the SEM on 30 September 2017. The forecast for the 2017/18 tariff year will be based on different parameters, under the new European Integrated model. As the Integrated Single Electricity Market (I-SEM) design differs significantly from the current SEM design, any incentivisation mechanism around DBC in the I-SEM will have to reflect these market differences. The Consultation Paper considered that, given time constraints, there potentially may not be an incentive mechanism in place for the first year of the I-SEM, however the RAs noted the importance of ensuring an accurate DBC forecast for tariff setting purposes.

RESPONSE

In relation to the need for accurate DBC forecasting for tariff setting purposes under the I-SEM the TSOs asserted that while they will be working to provide as accurate a forecast as possible, it must be recognised that the changes to the market arrangements and how this may outturn in practice will be difficult to forecast. The TSOs pointed out that DBC may be higher than current levels with a greater degree of uncertainty and risk in their management. They would welcome early engagement with the RAs on the forecast and any potential incentive process as part of the I-SEM.

BGE had concerns about the current procedure regarding the calculation of the Imperfections Charge, particularly with regard to the transition to the I-SEM in October 2017. BGE wish to ensure stability and certainty in supplier charging and BGE contended that this stability in charging could be improved by more robust governance of inputs and assumptions used by the TSOs in their charging forecast. While BGE do not challenge the integrity of the PLEXOS modeling work carried out by the TSOs and RAs, they consider that allowing market participants to review the assumptions and inputs would contribute to the transparency and accuracy of the modeling exercise. They commented that had such a process been in place in 2015, then market participants could have alerted the RAs to the increased GB carbon price floor and a

discussion been opened on any amendment to the Imperfections Charge at that point. BGE propose that from the 2017/18 tariff year, the RAs present their modeling methodology (the non-confidential inputs and assumptions) for consultation before the Imperfections Charge is finalised by the RAs and that the modeling data is made available to interested market participants. BGE also considered that the change in the Imperfections Charge methodology that will be brought about by the introduction of the I-SEM rules next year is conducive to making an amendment in the way these charges are calculated.

Kore Energy asserted that there is a possibility that the actual 2017/18 Imperfections Charge may increase and asks that the SEMC take all reasonable steps to prevent any rate increase for Imperfections Charges in future years.

IWEA commented that TSO incentives will become even more important under the I-SEM. They also considered that it is essential that any incentives introduced do not distort the efficient functioning of the market and that the Balancing Market Principles Statement (BMPS) provides the required transparency into system security requirements and the situations where non-energy actions need to be taken.

SEMC DECISION

In response to BGE's proposal that from the 2017/18 tariff year the RAs present their modeling methodology for consultation the SEMC considers that the 2017/18 tariff year will fall under the I-SEM and the TSOs will be required to refine their approach to modeling and the transparency of such models in the new market. In principle the SEMC would support BGE's proposition, but further work needs to be done before a final decision can be made as to what information can be made public.

To answer Kore Energy's comment the SEMC asserts that Imperfections Costs flow from physical constraints on the system and the SEMC will as always endeavour to take all reasonable steps towards the mitigation of such costs.

In relation to IWEA's observation on incentives within the I-SEM, the SEMC reply that such incentives are yet to be developed and any mechanism that is implemented will be compatible with the BMPS.

SEMC Decision: TSO incentives for the I-SEM yet to be developed, decisions on the same are outside the scope of this paper.

10 TSOS REPORTING AND TRANSPARENCY MEASURES

In order to increase transparency around DBC, the SEMC has introduced reporting requirements on the TSOs. The TSOs provide quarterly updates on the levels of Constraint Costs, drivers behind Constraint Costs, mitigating measures being taken and other information or commentary that the TSOs believe will aid transparency in this area.

These Quarterly Imperfections Costs Reports are available on EirGrid's and SONI's websites. The most recent report relates to the period January to March 2016[23] and includes a year-to-date section.

11 IMPERFECTIONS CHARGE SUMMARY

Based on the above decisions, the Imperfections Charge will be €2.05/MWh for the period from 1 October 2016 to 30 September 2017. The €2.05/MWh tariff represents a 54% decrease from the current tariff of €4.47/MWh, as shown in the table below.

	2016-17	2015-16	Change
Imperfections Allowance (€m)	146.8	170.70	(14)%
K-factor (€m)	(77.56)	(22.12)	
Total Allowance (€m)	**69.24**	**148.58**	**(53)%**
Forecast Demand (GWh)	33,700	33,230	1.4%
Tariff (€/MWh)	**2.05**	**4.47**	**(54)%**

Table 9: Imperfections Charge 2016/17 and 2015/16

[23] SONI Ltd - Publications