



Imperfections Charge
October 2019 – September 2020
And
Incentive Outturn
October 2017 – September 2018

Decision Paper

SEM-19-040

29 August 2019

CONTENTS

Contents	2
1 Executive Summary	3
1.1 2019/20 Forecast.....	4
1.2 2017/18 Incentive Outturn.....	5
2 Introduction	7
2.1 The Revised Single Electricity Market	7
2.2 Objective of Paper	7
2.3 Overview.....	7
3 Imperfections Forecast 2019/20	8
3.1 Dispatch Balancing Costs.....	9
3.2 Constraint Payments.....	9
3.3 Uninstructed Imbalances	10
3.4 Testing Charges	11
3.5 Energy Imbalances.....	11
3.6 Fixed Cost Payments.....	11
3.7 Other System Charges.....	11
3.8 Recovery of Imperfections Costs	12
3.9 Demand Forecast.....	13
3.10 Imperfections Charge.....	13
3.11 Responses	14
3.12 SEMC Decision.....	17
4 Incentive Outturn Review For 2017/18	19
4.1 Ex-Post review Factors	20
4.2 PLEXOS Model Basecase Refinements	20
4.3 Supplementary Modelling And Adjustments.....	24
4.4 Incentive Calculation	26
5 TSOS Reporting And Transparency Measures.....	27

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), Fixed Cost Payments and any net imbalance between Energy Payments and Energy 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 1 July 2019, 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 2019 to September 2020 and Incentive Outturn October 2017 to September 2018 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 1 October 2019 to 30 September 2020’² (2017/18 Forecast); and
2. ‘Imperfections Costs Incentive for Tariff Year 1 October 2017 to 30 September 2018’³ (2017/18 Incentive Outturn).

Formal responses to this Consultation Paper were received from the following respondents⁴:

- Eirgrid and SONI, together the Transmission System Operators (TSOs);
- Energia
- PrePay Power
- SSE
- Breedon Group (confidential)
- Ibec
- Bord Na Mona; 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-19-031

² SEM-19-031a

³ SEM-19-031b

⁴ Attached as Appendices 1 to 7 of this decision paper

1.1 2019/20 FORECAST

As part of their 2019/20 forecast the TSOs provided an estimate of Imperfection Costs for the 2019/20 tariff year which is 53% higher than that approved for the current 2018/19 tariff year.

The submitted revenue forecast of €302.65m gave an Imperfections Charge of €11.32 per megawatt-hour (MWh). The RAs reviewed the forecast and in the Consultation paper proposed a lower overall revenue requirement of €271.33m.

In the Consultation paper the RAs invited views from respondents on delaying the recovery of the full K-factor adjustment until the subsequent year in order to smooth the effects of increases borne by consumers. One respondent to the Consultation Paper supported the recovery of part of the K-factor and one other was in favour only if there was no risk to the TSO working capital and that no further significant increases in costs could be assured in future years. The SEMC has made the decision to allow for the full K-factor adjustment.

The SEMC has decided to implement the Consultation paper proposals, including an Imperfections tariff of €10.40/MWh to be applied for the period from 1 October 2019 to 30 September 2020, as per the table below:

	2019-20 Submitted by TSOs	2019-20 Proposed in Consultation	2019-20 Final Decision	2018-19	Change 19/20-18-19
Imperfections Allowance (€m)	302.65	271.33	271.33	197.63	37.29%
K-factor (€m)	84.44	84.44	84.44	(13.86)	
Total Allowance (€m)	387.09	355.77	355.77	183.77	93.59%
Forecast Demand (GWh)	34,200	34,200	34,200	35,200	
Tariff (€/MWh)	11.32	10.40	10.40	5.22	99.23%

Table 1: Imperfections Charge 2019/20 Final and 2018/19

1.2 2017/18 INCENTIVE OUTTURN

Dispatch Balancing Costs (DBC) represent the majority of the Imperfections Charge⁵. In light of this 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 2012⁶. The purpose of the incentive mechanism is to give the TSOs a reward for reducing DBC below the forecasted value, 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 2017/18 tariff year, of €177.7 million, in April 2017. The PLEXOS element of this forecast stood at €140.04 million, with the supplementary modelling component equalling €37.62 million. In their 2017/18 Incentive Outturn the TSOs proposed that the PLEXOS component of this forecast be amended, to take account of a number of ex-post review factors:

1. Model basecase refinements to include:
 - a) SNSP was increased from 55% to 60% on 09/03/2017 and then to 65% from 14/11/2017 as a trial that later became permanent in March 2018.
 - b) New / Closing Generating Units – Demand Side Units (DSUs) along with Solar/PV were included within the base case model and the Marina Unit MRC was removed from PLEXOS from 10/09/2018.
2. Combination of actual demand, Commercial Offer Data (COD), wind and Modified Interconnector Unit Nominations (MIUNs) data. When rerun in PLEXOS, the combination of actual demand, actual wind availability and actual COD including MIUNs caused a 9.83% increase in the ex-ante DBC baseline including model refinements as above.

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

The TSOs' 2017/18 Incentive Outturn submission detailed actual Imperfections Costs of €184.3 million, €18.77 million lower than the ex-post DBC baseline of €203.1 million⁷. This saving potentially entitles the TSOs to an incentive payment of €0.354 million⁸.

In the Consultation Paper the RAs were minded to endorse the analysis by the TSOs with the exception of the deductions made for RoCoF payments under Other Systems Charges. This element of the process has reduced apparent savings by the TSOs, still resulting in a net savings in DBC made against forecast, but with resulting Incentive payment of €0.

Two of the responses supported the calculation of a €0 Incentive payment and five made no comments while one was opposed to the proposal.

The SEM Committee has decided to implement the proposal in the Consultation paper and award an incentive payment of €0 to the TSOs for the 2017-18 year.

⁷ Calculated as original DBC forecast (177.7m) plus basecase refinements and actual data(45.88m) less actual data minus supplementary modeling adjustments (20.42m) = 203.16m

⁸ SEM-19-031b – Table 10: Method of calculating the incentive payment with ex-post adjusted baseline

2 INTRODUCTION

2.1 THE REVISED SINGLE ELECTRICITY MARKET

The new market arrangements are designed to integrate the all island electricity market with European electricity markets, enabling the free flow of energy across borders. It consists of a number of markets including the Day Ahead Market, Intra Day Market and the Balancing Market.

Participants are responsible for meeting their ex-ante commitments, and when they cannot they are financially exposed in the Balancing Market. The market rules are set out in the Trading and Settlement Code (TSC). The SEM is governed by the SEM Committee 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 2019-20 tariff year and also determines the fifth Imperfections based TSO incentive payment. Comments received from interested parties, following the publication of the Consultation Paper on 1 July 2019, are summarised throughout this paper and published on the SEMC website⁹. 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), Fixed Cost 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 K-factor adjustment mechanism enables any under or over recovery of Imperfections Costs, in the

⁹ Attached as Appendices 1 to 7 of this decision paper

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 fifth year where an incentive payment is to be calculated, with the TSOs receiving an incentive payment of €0.46 million last year.

3 IMPERFECTIONS FORECAST 2019/20

The TSOs' 2019/20 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 €302.65 million for the 2019/20 tariff year. This forecast had been revised by the RAs to €271.33m for the consultation paper. This gave a final Imperfections revenue requirement of €271.33m and represents a 37.3% increase from the €197.63 million approved forecast for the 2018/19 tariff year. A number of key factors influenced the 2019/20 Forecast submitted by the TSOs, including:

- An increase in available priority dispatch generation in the unconstrained PLEXOS model contributes to an additional €29 million compared to the 2018/19 forecast;
- An increase in forecasted wholesale fuel costs, a change in gas supply arrangements for one large Dublin unit as well as the potential inclusion of Gas Transportation capacity charges in its offers, increases constraint costs by approximately €38 million in the PLEXOS model.
- Higher flows on the interconnectors and the North-South Tie Line along with operational constraints improvements have reduced the PLEXOS model constraints by €19 million.
- Provision of €19.05 million for the imbalance price design through CPREMIUM and CDISCOUNT.

The RAs reviewed the key factors and made the following proposals in the consultation paper.

- Provide a €0.0 million allowance for the inclusion of NI Gas Transportation Charges instead of €18m requested.
- Provide a €0.0 million allowance for the Interconnector Ramp Rate Disparity instead of €3.2m requested, as this is considered a volatility issue rather than an expected cost.
- Allow a provision of €10m for the settlement of Pumped Storage units in the new market instead of the €14.42 million requested.
- Deny the inclusion of €5.7 million for Undo Actions.

Detail on the rationale for the decisions 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 over 95% of the Imperfections Charge in the 2019/20 Forecast. Final DBC for the 2019/20 tariff year was forecast as €256.97 million.

3.2 CONSTRAINT PAYMENTS

Constraint Payments make up the entirety of the 2019/20 final DBC forecast (€256.97m), 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 and have sense checked the TSOs' modelling assumptions. The RAs investigated any differences between the models and the TSOs provided explanations for any divergences. The PLEXOS element of the TSOs' Constraint Costs forecast is €216.57 million, which has increased from the forecast Constraint Costs of €149.48 million for the PLEXOS component of the 2018/19 tariff year. The reasons for this increase are detailed in the bullet points in section three above. The assumptions underlying the TSOs' PLEXOS Constraints are detailed within their submission¹⁰.

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 factors¹¹. The supplementary modelling component of the 2019/20 forecast for Constraint Costs, is €40.40 million. By comparison the proposed figure for the 2018/19 tariff year was €66.5 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.

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.

¹⁰ SEM-19-031a

¹¹ See SEM-19-031a for further detail on these components

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 that were considered a part of imperfections in SEM are assumed to be managed by the new balancing design, for the purposes of the TSO submission and will be monitored by the TSOs throughout the tariff year.

3.6 FIXED COST PAYMENTS

Fixed Cost Payments in the new market comprise of : Make Whole Payments , Recoverable Start Up Costs and recoverable No-Load Costs. A provision for the Fixed Costs Payments for the entire 2019/20 year is included in the TSO submission based on the Fixed Cost Payments estimate for the 2019/20 tariff year. As the Recoverable Start Up Costs were already captured in the PLEXOS production cost difference in order to avoid double counting the Recoverable Start Up part was subtracted from the total yearly estimate. A provision of €14.35 million has been made by the TSOs for Fixed Cost Payments.

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 2019/20 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 IMPERFECTIONS 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 submitted by the TSOs to be applied to the Imperfections Charge for 2019/20 is €84.44m. This is comprised of the following:

Summary of K-factor adjustment

under-recovery in tariff year 2017/18	€-4.44m
Estimated under-recovery for tariff year 2018/19	<u>€-80m</u>
Total Imperfections K-factor to be applied in 2019/20	<u>€-84.44m</u>

This €84.44million under-recovery would usually be applied to the 2019/20 forecast Imperfections Charge leading to an increase in the Imperfections Charge for the 2019/20 tariff year. However, the RAs recognised that this is a significant rise in the Imperfections Charge for 2019/20 and invited comments on the option to apply a percentage of the under-recovery over a number of tariff years.

3.9 DEMAND FORECAST

Based on outturn 18/19 demand and 19/20 year to date figures the TSOs have forecast demand for the 2019/20 tariff year at 34,200 GWh, representing a 2.8% decrease from the 2018/19 forecast demand of 35,200 GWh. The reduction is due mainly to the movement of Residual Error Volumes out of the supplementary process.

3.10 IMPERFECTIONS CHARGE

As stated in section 3.2 above, the final forecast Constraint Costs are €256.97 million for the 2019/20 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 Fixed Cost (Make Whole) Payments of €14.35 million, based on 2018/19 outturn to date. The remaining elements of the Imperfections Charge are forecast at zero, meaning the forecast Imperfections Charge for 2018/19 stands at €271.33 million. Allowing for the K-factor adjustment, provides a total forecast Imperfections Charge of €355.77 million, which when divided by the forecast demand, of 34,200 GWh, equates to an Imperfections Charge of €10.40/MWh for the 2019/20 tariff year.

The comparable figure for the current 2018/19 tariff year is €5.22/MWh. Any under or over recovery of Imperfections Costs in the 2019/20 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	2019-20 Final	2018-19	2017-18	2016-17	2015-16	2014-15
Total Constraints costs	256.97	190.44	177.6	144.3	163.5	177.6
Uninstructed Imbalances		-	-	-	-	-
Testing charges		-	-	-	-	-
Dispatch Balancing Costs	256.97	190.44	177.6	144.3	163.5	177.6
Energy Imbalance		-	-	-	-	-
Fixed Cost (Make whole) payments	14.35	7.19	2.7	2.5	7.2	3.6
K-factor Adjustment	84.44	(13.86)	(7.34)	(77.6)	(22.1)	5.2
Other System Charges		-	-	-	-	-
Total Imperfections Charge	355.76	183.77	173.02	69.2	148.6	186.4
Forecast Demand ('000 MWh)	34,200	35,200	34,550	33,700	33,230	33,320
Imperfections Charge/ MWh	10.40	5.22	5.00	2.05	4.47	5.60

Table 2: Imperfections Charge over time

3.11 RESPONSES

BGE

BGE acknowledged the increase in Imperfections Charges and were of the opinion this included one-off costs which should not need to be repeated in next year's forecast. They expressed concern about the €19.05m allowance for CPREMIUM and CDISCOUNT and referred to their response to the CRU/19/054 consultation stating disagreement that proposed changes to curtailment and constraints be brought in at all.

BGE acknowledged the RAs reasons for the omissions made to the TSO forecast but stated they were not in a position to comment further.

With regard to the delay of part of the recovery of the K-factor until subsequent years in order to smooth effects, BGE make points that support the application of the full K-factor. They note there is a reasonable chance of a high K-factor in following years, and the history of DBC suggests few future reductions and as the full 2018/19 year is not yet over a full K-factor may not be captured. Further, a potential reduction in PSO levy may help offset the Imperfections charge.

BGE suggest that as the RAs now have sight of wholesale price curve, TUoS/DUoS charges and other system related costs, the RAs consider these before making a decision on putting the K-factor through as a whole or over a number of years.

TSOs

The TSOs raised concerns around the removal of the Interconnector Ramp Rate Disparity forecast and stated that this effect causes a net charge to the TSOs and that there is evidence from actual imbalance volumes and prices that proves exposure of the Imperfections budget to this new market feature.

The TSOs raised a number of concerns around the reduction of the NI Gas Transportation Charge from €18m to zero. They suggest there is no evidence that NI Generators will discontinue including a gas product charge in their offers. As the RAs provided an allowance for this factor in the 2018/19 imperfections forecast of €7m, the TSOs strongly advised that an allowance should be included as part of the revenue requirement and advised that €10 m should be added.

The TSOs accepted the RA decisions to remove the submission of €5.7m for Undo Actions and reduce the submission of €14.42m for the settlement of pumped storage to €10m.

They advised that they will closely monitor these items over the course of the Tariff year.

The TSOs welcomed the RAs minded to position to allow the full K-factor but raised concerns over the invitation for views on the merits of delaying the recovery stating the K-factor has already undergone a degree of smoothing regarding the projected €80m being lower than expected outturn for the year to date.

Energia

Energia were of the opinion the information within the consultation paper made it difficult to comment on a number of proposals due to modelling results and assumptions being unclear. They would prefer to see an improved consultation paper in future and welcome any opportunity to be involved in a review.

They supported the profiling of the K-factor provided; there is no risk to the TSO's working capital being exhausted and, the RAs are satisfied that proposed increases for 2019/20 will not be replicated in future years.

They requested that the RAs provide a simple explanation of the charge in the decision paper.

Prepay Power

PrePay Power responded to the consultation with a document which focused on issues around exploitation of the market rules by generators with market power.

They expressed concern that the Imperfections Budget is running at €80m over, stating it reflected mainly in premium and discount components. They were of the opinion that the risks associated with the recovery of the K-factor over a period longer than a year were too large.

The response contained other expositions related to the Balancing Market that, while not related directly to the setting of the 2019-20 tariff, are relevant to related workstreams – these have been referred to the relevant teams within the RAs.

SSE

SSE raised concerns on systems defects and the Balancing Market Options paper regarding Simple NIV tagging application asking these factors be considered under relevant consultations. SSE did not see any value in staggering the recovery of the K-factor as it could compound costs in future years. They point out that the TSOs were given significant allowances to provide for new market systems and would like to see systems defects reducing.

SSE were in particular, not supportive of the TSO proposal that gas transportation costs anticipated to be booked by NI gas-fired plant should be borne by electricity customers but request clarification that the reduction to €10m for provision of Pumped Storage is reflective of gas transportation costs appropriately being extracted.

SSE further considered that the provision of €19m for CDISCOUNT and CPREMIUM is a cost that should be borne by the TSOs as it could have been reduced by TSO dispatch and balancing actions along with management of volatile cashouts and pricing. System defects in relation to CDISCOUNT also gave concern regarding future under –recovery.

IBEC

IBEC welcomed the RAs amendments to the Imperfections Revenue requirement but were concerned about the proposal to allow the €84.44m K-factor adjustment. They suggest that part of this amount be delayed until the subsequent year. Whilst they do not wish to see the TSOs experience working capital issues, they feel an appropriate delay/reduction is vital.

IBEC also wish to discuss with the RAs as to how the Imperfections charge notification process could become timelier and more accessible in future.

Bord Na Mona

Bord Na Mona were aligned with the RAs minded to position to allow the full K-factor to apply agreeing with the general sentiment that profiling may not be wise at this time.

Bord Na Mona see an opportunity for the TSOs to share further modelling work with Industry to provide greater visibility of market dynamics.

With regard to Undo Actions, Bord Na Mona see no rationale for excluding Undo Actions and suggest it is fully appropriate to include them.

3.12 SEMC DECISION

The SEMC have considered all the responses as summarised above and acknowledge the main concern from several respondents, of the large increase of the Imperfections charge for the 2019/2020 tariff year.

In particular the issue around timely notice, full transparency around modelling work by the TSOs, K-factor re-occurring, systems defects and fixed cost payments, demand forecast reduction, structure and content of the consultation paper and accessibility of forecast information have been noted.

A theme of the responses has also been on the new market design and in system defects and associated errors along with reference to previous papers related to mitigation of market power.

The SEMC considers that the new market will require a settling in period and that this initial jump in Imperfections charge should, all else equal, not be a recurring event. Although the SEMC have proposed a number of reductions to the TSOs proposed forecast, the TSOs have raised concerns on some of these items, whilst accepting others.

The TSOs have maintained that the Interconnector ramp rate is a real and tangible charge to the TSO and that it should be included in the forecast. Notwithstanding the observed outturn from the market to-date, the SEMC remain unconvinced that this charge is anything other than a volatility issue and see no analytical argument to refute this view.

For the NI Gas Transportation Charge, the TSOs have suggested that as there is no evidence that GTC charges will not continue in the 2019/20 tariff year a provision of €10m should be allowed to remain more consistent with the SEMC decision to allow a €7m provision for the 2018/19 forecast. The SEMC note the distinction made by the TSOs between the two gas-fired power

stations in NI, and do accept that the balance of probabilities may result in some of these charges being reflected in commercial offers rather than zero. However, the Committee is of the view that this effect is small relative to the scale of the other assumptions made elsewhere within the Plexos and Supplementary modelling exercises, and so have decided to retain a zero amount be included for the 2019/20 forecast as proposed in the Consultation paper.

In regard to the full inclusion of €84.44m K-factor as proposed in the consultation paper, most respondents were of the opinion that it be included in full rather than any staged delay as this would not help customers in the longer term. Some respondents did feel that a smoothing process could be adopted only if there was no risk to the TSOs working capital and that the occurrence of a high under recovery would not be replicated in future year. The TSOs were concerned about the K-factor under recovery being reduced due to strain on their contingent capital facilities leading to a possible need to increase the Imperfections Charge at short notice. Following the review by the RAs and consultation process, the SEM Committee has decided to implement the K-factor of €84.44m in full during 2019-20 rather than spread it over multiple years.

SEMC Decision: 2019/20 Imperfections Charge to be set at €10.40/MWh in line with Table 2 above.

4 INCENTIVE OUTTURN REVIEW FOR 2017/18

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 Paper¹², 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 2017/18 tariff year is the sixth year to fall within the incentive mechanism and the fifth year where an incentive payment has been claimed. The TSOs submitted the 'Forecast Imperfections Revenue Requirement for Tariff Year 1st October 2017 to 30th September 2018' (ex-ante DBC forecast) in April 2017¹³. The submission detailed outturn Imperfections Costs of €184.33 million; €18.77 million lower than the ex-post DBC baseline. Based on this, the TSOs are potentially

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

¹³ [TSO Revenue Submission](#)

entitled to an incentive payment of €0.354 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.

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 TSO submission forecast DBC for the 2017/18 tariff year at €177.7 million. The submission contains proposed ex-post adjustments which increase the value to a baseline of €203.1 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 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 €140.04 million to €185.92 million.

INITIATIVES INTRODUCED IN 2016/17

SNSP was increased from 55% to 60% on 9/03/2017. This change affects the 2017/18 incentive payment due to the “12 months of benefit principle” in which the RAs apply the effects over a 12 month period, spanning two tariff years as necessary.

INITIATIVES INTRODUCED IN 2017/18

For 2017/18:

- a. SNSP increased to 65% from 14/11/2017 as a trial that later became permanent in March 2018. This was accompanied by an increase in System Inertia requirement from 20,000 MWs to 23,000 MWs on 14/11/2017
- b. Dublin Generator Rules – requirement for 1 unit in South Dublin (for load flow and voltage control) constraint was removed from 15/05/2018.
- c. Dublin Constraints amended from 15/05/2018, load flow control and system demand addressed via changes to the number of units required.
- d. Kilroot Generation Rules – the Kilroot constraint for 1 unit on load for NI system demand above 1,400MW and 2 units on load for 1,500 MW was removed from 15/01/2018.

OTHER SYSTEM CHANGES

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

- a. New/Closing Generator Units to include DSUs along with Solar/PV and the Marina Unit MRC removal from PLEXOS on 10/09/2018.
- b. Inclusion of Turlough Hill Efficiency in ex-post PLEXOS model rather than the supplementary modelling as it was a more accurate representation of the actual efficiency.
- c. STAR Scheme - From June 2018 the STAR scheme was discontinued (the scheme allowed a reduction of 54 MW of static reserve). The minimum daytime operating reserve requirement in Ireland increased from 110MW to 115MW as a result.

- d. DS3 Systems - from July 2018 the minimum daytime operating reserve requirement, in Ireland decreased from 155MW to 135MW due to System services Contracts, also the minimum daytime operating reserve requirement in NI decreased from 50 MW to 49 MW.
- e. Reserve requirements for North-South Tie-Line Outage – Jurisdictional reserve in the model was adjusted to represent actual reserve during the 10 day outage, when more conventional units were run, at lower levels.

SEM RULES OR ANY RA DECISION

The TSOs reviewed the changes to SEM market rules and the RA decisions that became effective between the data freeze date of 31/03/2017 and the end of the 2017/18 tariff year. The TSOs identified that there were no changes to the SEM rules or RA rule changes which impacted on the 2017/18 ex-post review process.

DEMAND

The actual all-island monthly demand was 0.26% higher than forecast. Ireland was 2.4% higher than forecast and Northern Ireland was 8.8% lower.

WIND, SOLAR, DSU AND PEAT

Actual all-island wind, Solar, DSU and Peat availability was higher than the assumed respective availabilities in the submitted forecast.

It was found that the shape of DSU available energy does not have a flat profile but varies considerably with time. The actual DSU available energy was included in the ex-post model.

COMMERCIAL OFFER DATA & MIUNS

Actual COD was compared to the submitted ex-ante forecast COD and these differed enough to consider for inclusion. Actual Interconnector flows for 2017/18 were updated as these differed significantly from the forecast flows.

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 9.83% increase to the ex-ante DBC baseline (including model refinements discussed above), and meets the 8% threshold for inclusion in the ex-post adjusted model.

HILP EVENTS

Transmission outages and forced and scheduled generator outages were assessed by the TSO for the 2017/18 tariff year. Scheduled outage overruns and other generator issues were also examined. The combination of the generation and transmission outages met the HILP criteria as they resulted in an increase in DBC of 5.55%. This was therefore considered material and was included in the ex-post adjustment process.

OVERALL EX-POST PLEXOS ADJUSTMENTS

The above amendments relate to the PLEXOS modelled component of the DBC forecast and result in an ex-post PLEXOS component value of €185.92 million. This is an increase, relative to the ex-ante forecast of €140.04 million, largely due to actual COD & MIUN levels differing from forecasts.

	€m
Ex-ante DBC PLEXOS forecast	140.04
Net of base case refinements and actual data change adjustments	45.88
Ex-post DBC PLEXOS value	185.92

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

CONSULTATION PAPER PROPOSALS

As with the TSOs' 2019/20 Forecast, the RAs sense checked the reasonableness of the TSOs' PLEXOS models against the RAs' validated PLEXOS model. The RAs investigated any reasons for differences between the models and the TSOs provided justification and evidence to explain any divergences.

RESPONSES

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

SEMC DECISION

The adjustments for actual data which are included in table 5 above appear reasonable as the allowable ex-post adjustment factors within the Decision Paper. 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.

4.3 SUPPLEMENTARY MODELLING AND ADJUSTMENTS

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 €17.18 million. This represents a decrease of €20.44 million from the submitted ex-ante forecast. The results of the supplementary modelling process are summarised in the TSOs submission.

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

€m	Ex-ante DBC baseline	Ex-post DBC baseline
PLEXOS	140.04	185.92
Supplementary model	37.62	17.18
Total constraints	177.66	203.1

Table 6: Total Constraints

CONSULTATION PAPER PROPOSALS

The SEM Committee was satisfied with the additional measures including supplementary modelling, with exception of the inclusion of ROCOF revenues in the outturn. Normally, the revenues from Other System Charges are fully deducted from the Plexos and Supplementary elements as part of the final calculation. In discussion with the TSOs the RAs asked why RoCoF GPI payments, collected as part of OSC, should be included in the reforecast measurement. The TSOs explained the definitions of DBC and OSC in the SEM paper SEM -12-033 and also within the RAs RoCoF decision paper and that it would be inconsistent to exclude RoCoF GPI payments.

In considering this further, the RAs minded-to view was that, unlike the other components of the OSC which as outlined in Section 3.7 are deemed to be offset by higher DBC, RoCoF GPI charges do not carry a corresponding DBC cost as the DBC of a given day would be the same, regardless of whether a certain unit was on time with its RoCoF compliance commitments. The TSOs confirmed that the RoCoF GPI payments initially included in the Other Systems Charges are €6.2 million.

RESPONSES

The TSOs did not agree with the removal of the Incentive payment and stated they had followed the rules of the incentive process and that it was unreasonable to remove all of the Incentive payment for the 2017/18 year based on an Ad-hoc decision made post calculation.

SEMC DECISION

The SEM Committee notes the TSO's opposition to its position on ROCOF revenue inclusion, but do not consider the proposed approach in the consultation paper to be a contradiction of the framework in the Incentive Decision Paper. The TSO response does not offer an analytical or

logical rebuttal as to how or why the collection of ROCOF GPI revenue through the OSC in any way impacts on the cost of balancing the system relative to forecast.

The SEMC has decided to endorse the ex-post adjustments and the supplementary modelling element of the DBC forecast, with the exception of the ROCOF GPI inclusion as proposed in the consultation paper.

4.4 INCENTIVE CALCULATION

Actual Imperfections Costs for the tariff year 2017/18 equalled €190.5 million. This is €12.61 million lower than the ex-post DBC baseline of €203.1 million. The table below summarises the 2017/18 incentive outturn.

€m	2015/16		
	Actual	Ex-post baseline	Ex-ante forecast
Total constraints	206.2	203.1	177.7
SO Countertrading	(3.4)	-	-
Uninstructed Imbalances	(3.57)	-	-
Testing Charges	(1.04)		
Total DBC	198.2	203.1	177.7
Energy Imbalance	(2.5)	-	-
Other System Charges (less RoCoF)	(5.2)	-	-
Total Imperfections Charge	190.5	203.1	177.7

Table 8: Actual v Forecast Imperfections Costs

Based on this outcome, the TSOs are entitled to an incentive payment of €0 million. The incentive payment has been calculated in accordance with Table 3, 'DBC Incentive Parameters' above. The €12.61 million saving equates to a 6.2% reduction to the ex-post adjusted Imperfections Cost.

CONSULTATION PAPER PROPOSAL

The RAs were minded to allow a payment of €0 million to the TSOs, in line with the specified proportions.

RESPONSES

From the eight consultation responses received, four made no specific comments on the RAs proposal to allow an Incentive payment of €0.

TSOs

The TSOs did not agree with the exclusion of the ROCOF GPI revenue as outlined above but did not make any other comment related to the incentive calculation.

SSE

SSE supported the exclusion of the incentive payment for the 2017/18 tariff year and also suggested the controls of the mechanism should be tightened to ensure greater efficiency by the TSOs in reducing and bearing certain costs.

BGE

BGE's view on the proposed zero incentive payment was that there are KPI's in place and when applied by the RAs should it result in a €0 incentive then this should be upheld. BGE suggest that the KPI's should be revisited and amended as the current KPI's do not target the correct outcomes.

Bord Na Mona

Bord Na Mona suggested that the Incentive payment mechanism needs to be carefully designed and suggested there may be some merit in the calculation having increased ex-post weighting based on actual performance against what action should have been taken.

SEMC DECISION

SEMC Decision: TSOs to be paid €0 million incentive payment for the 2017/18 year.

5 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 April to June 2019¹⁴ and includes a year-to-date section.

¹⁴ [SONI Ltd - Publications](#)