



**Imperfections Charge
October 2022 – September 2023**

and

**Reforecast Report
October 2020 – September 2021**

**Consultation Paper
SEM-22-038**

15 July 2022

CONTENTS

1. Executive Summary	2
2. Introduction	4
3. TSOs' Tariff Year 2022/23 Imperfections Charge Submission	6
3.1 Dispatch Balancing Costs (DBC)	8
3.2 DBC – Constraint Costs	8
3.3 DBC – Uninstructed Imbalances	9
3.4 DBC – Testing Charges	9
3.5 Fixed Cost Payments	9
3.6 Other System Charges	9
3.7 Clean Energy Package	10
3.8 K-factor	10
4. Provisional Imperfections Charge for Tariff Year 2022/23	11
5. RAs' Initial Review of the TSOs' 2022/23 Imperfections Charge	12
5.1 TSOs' Forecast Costs and Assumptions, and Minimising Imperfections Charges	12
5.2 Amended Approach to Imperfections Charge Calculation	13
5.2.1 12-Month Historical Average Fuel Prices	13
5.2.2 Financial Run Rate	15
5.3 Partial Deferral of K-Factor Recovery	17
5.4 Imperfections Charge Factor: Trading and Settlement Code Modification	18
6. Next Steps	19

1 EXECUTIVE SUMMARY

The Regulatory Authorities (the RAs, i.e. UR & CRU) are consulting on the Transmission System Operators (i.e. EirGrid & SONI) 'Imperfections Revenue Requirement' submission for Tariff Year 2022/23 (i.e. 1/10/2022 to 30/09/2023), prior to issuing its final decision on the Tariff Year 2022/23 Imperfections Charge.

The RAs have reviewed the TSOs' report, and seek stakeholders' views on any aspect of the proposals and, in particular, on the following:

1. Whether the TSOs' forecasts of costs and assumptions for Tariff Year 2022/23 are reasonable (see Section 5.1)
2. If there are actions the TSOs could take to minimise Imperfections Charges (see Section 5.1)
3. If the Imperfections Price for Tariff Year 2022/23 should be determined based on forecasts using *either* daily projected quarterly fuel and carbon costs averaged over a 12-month period, *or* utilising the K-factor run rate approach (see Section 5.2)
4. Whether the K-factor for under or over-recovery from previous Tariff Years should be spread over more than one subsequent Tariff Year and, if so, over how many Tariff Years (see Section 5.3)
5. The merits of implementing a biannual review of the costs covered by Imperfection Charges and a proposed modification to the Trading and Settlement Code to allow bidirectional alterations to the Imperfection Charge Factor (see Section 5.4).

The purpose of the Imperfections Charge is for the Transmission System Operators (TSOs) to recover the total expected costs associated with managing the transmission system. SEMO levies the Imperfections Charge on suppliers. It is made up of a number of components, the largest of which relates to Dispatch Balancing Costs (DBC), in particular Constraint Costs.

For 2022/23, and in common with recent Tariff Years, Imperfections Costs are mostly due to Constraints. Constraint Costs occur due to the differences between the market determined schedule of generation to meet demand and the actual instructions issued to generators by the TSOs. Costs associated from constraining generation are paid by the TSOs to the relevant generators.

Given the forecast element to the Imperfections allowance, such costs are also subject to a K-factor adjustment.

On 31 May 2022, the TSOs submitted the following documentation to the Regulatory Authorities (RAs) in order to enable a decision on setting of the 2022/23 Imperfections Tariff:

- 'Forecast Imperfections Revenue Requirement for Tariff Year 1st October 2022 to 30th September 2023' (see Annex 1)
- Imperfections K-factor Submission (see Annex 2)
- 'Reforecast Report for Tariff Year 1st October 2020 to 30th September 2021 (see Annex 3).

In their submission, the TSOs forecast an Imperfections allowance of €730.45m for the Tariff Year 2022/23, compared to the €341.01m allowed by the RAs for Tariff Year 2021/22¹. A significant driver of this increase are fuel prices and carbon prices, which the TSOs calculated to grow by €314m and €42m respectively, compared to Tariff Year 2021/22.

The TSOs have also proposed a K-factor adjustment of €140.36m for inclusion in the Tariff Year 2022/23 Imperfections Charge.

This results in a proposal by the TSOs for an Imperfections Charge of €870.81m for Tariff Year 2022/23, which is an Imperfections Price of €22.80 per megawatt-hour (MWh)², compared with an Imperfections Charge of €341.01m / Imperfections Price of €9.19 per MWh for Tariff Year 2021/22.

The TSOs' modelling is based on commodity prices for Q4 2022 to Q3 2023 as at 9 May 2022. At that time commodity prices were unprecedentedly high. As such, there is a risk that the TSO's figures risk being atypical and do not capture volatility in the commodities futures markets.

Following careful consideration of the TSOs' submission, the RAs engaged with the TSOs to develop two different potential approaches for the Tariff Year 2022/23 Imperfections Charge.

The first alternative approach is to instead of using fuel and carbon prices for Q4 2022 to Q3 2023, taken at a single point in time, use average daily projected quarterly fuel prices (Q4 2022 to Q3 2023) from the preceding 12 months (that is, 10 May 2021 to 9 May 2022), thereby smoothing commodity price volatilities. 12-month historical average prices are 47% lower for natural gas and 25% lower for carbon than those used in the TSOs' original submission. This would result in an estimated Imperfections allowance of €517.51m. When the unadjusted K-

¹ The TSOs' submission for Tariff Year 2021/22 was €473.09m, see [Decision Paper SEM-21-061](#)

² The TSOs forecast demand for the 2022/23 tariff year is 38,200 GWh, which represents a 6.1% increase from the 2021/22 forecast demand of 36,000 GWh.

factor is added it results in a total estimated Imperfections Charge of €657.87m / Imperfections Price of €17.22/MWh (see Section 5.2.1).

The second alternative involves applying a run-rate approach to smooth out the increasing costs forecast by the TSOs for Tariff Year 2022/23. Using current financial information as a predictor, a run rate approach would extrapolate current performance and assume conditions – such as fuel prices and carbon prices – continue a similar trajectory.

For calculating the Imperfections Charge, one way to apply a run rate is to use the within-year K-Factor. The K-factor is an estimation of the shortfall of funding for the current Tariff Year (in this case, 2021/22) based on the actual outturn for the first seven months of the Tariff Year (1 October 2021 to 30 April 2022) and extrapolated for the following five months (1 May 2022 to 30 September 2022).

If a similar level of shortfall is assumed for Tariff Year 2022/23, it would add approximately €150m to Tariff Year 2021/22's allowed Imperfection Charge (including existing K-factor), to give an estimated total of €621.19m for 2022/23, which works out at a Imperfections Price of €16.26/MWh (see Section 5.2.2).

In addition to the alternative approaches to calculating the Imperfections Charge outlined above, The RAs are seeking stakeholders' views on two other areas.

We invite comment on whether the K-factor element (which is projected to be significantly greater for Tariff Year 2022/23 than in previous Tariff Years) should be partially recovered over one or more Tariff Year and, if so, at what quantum (see Section 5.3).

In light of the increase in the submitted Imperfections Charge, the RAs are also considering implementation of a biannual review process, which could potentially adjust the Tariff (up or down) within-year. If this were to be put in place, there could also be the need to modify the Trading and Settlement Code to allow bidirectional alterations to the Imperfection Charge Factor. We welcome views on both of these proposals (see Section 5.4).

2 INTRODUCTION

The RAs are consulting on TSOs' submission for Tariff Year 2022/23 (i.e. 1/10/2022 to 30/09/2023), prior to issuing a final decision on the 2022/23 Imperfections Price and Imperfections Charge Factor.

Imperfections Charges allow SEMO to recover the total expected costs associated with managing the transmission system, and is levied on suppliers, under the provisions of the Trading and Settlement Code. Typically, costs covered by Imperfections Charges are due to network constraints, resulting in generators being compensated for being redispatched.

Under the Trading and Settlement Code, Imperfections Charges are levied on the Loss-adjusted Metered Quantities of Supplier Units. These charges are intended to recover the Dispatch Balancing Costs (DBC), Fixed Cost Payments and Charges, and any other imbalances between Trading Payments, Trading Charges, Capacity Payments and Capacity Charges over the Year (see Figure 1).

DBC are the largest component of these costs, and also are largely responsible for the significant increase in projected costs for the forthcoming Tariff Year 2022/23. DBC cover costs of balancing the system, and result from a combination of offer and bid prices of re-dispatched generation, which have seen substantial increases recently, and how successfully the TSOs manage network constraints, including through measures such as network and outage planning. The vast majority of DBC are caused by constraints on the system.

Section F.12 of the Trading and Settlement Code requires SEMO to report to the RAs proposing values, for approval, of the Imperfections Price (PIMPy) and Imperfections Charge Factor (FCIMPy), which are used in the calculation of Imperfections Charges. The Trading and Settlement Code also requires that SEMO sets out relevant research of analysis and justifying the values proposed.

The TSOs have submitted a report, 'Imperfections Revenue Requirement submission for Tariff Year 2022/23' (see Annex 1), with their forecasts of the costs to be covered by Imperfections Charges during the period 1 October 2022 to 30 September 2023.

In this Consultation Paper, the RAs are consulting these forecasts. In response to views received, the RAs may request SEMO to revise these forecasts, and will approve proposed values of Imperfections Price and Imperfections Charge Factor, determined on this basis.

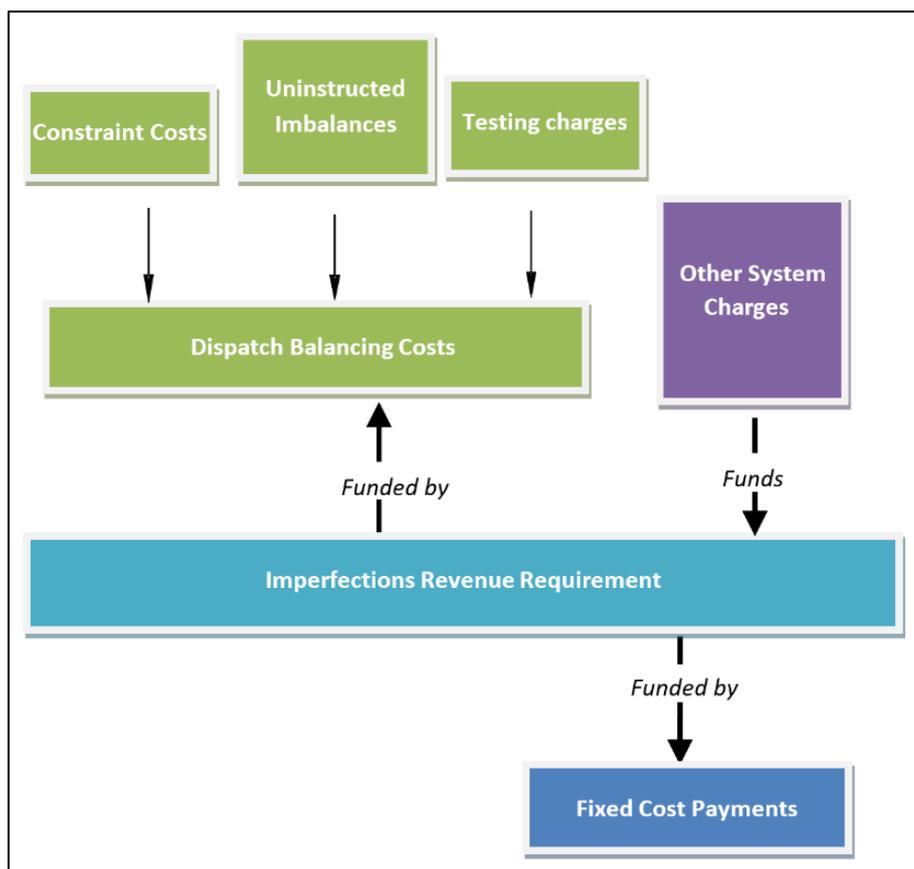


Figure 1: Imperfections Charge Components

3 TSOS' TARIFF YEAR 2022/23 IMPERFECTIONS CHARGE SUBMISSION

The TSOS' Tariff Year 2022/23 forecast was prepared jointly by the TSOs (EirGrid and SONI). It presents an all-island estimate of the Imperfections Charge for Tariff Year 2022/23. All costs are ex-ante estimates to be recovered from suppliers on a MWh basis.

The TSOs have forecast for Tariff Year 2022/23 an Imperfections allowance of €730.45m, which when the K-factor is added, equals an Imperfections Charge of €870.81m to be recovered from suppliers at an estimated Imperfections Price of €22.80/MWh³. This represents a 62% increase from the €330.83.01m allowed Imperfections Charge for Tariff Year 2021/22. Figure 2 details the key drivers of change, relative to Tariff Year 2021/22.

³ Based on a TSO estimated total demand in the SEM for 2022/23, compared to 36 TWh for 2021/22.

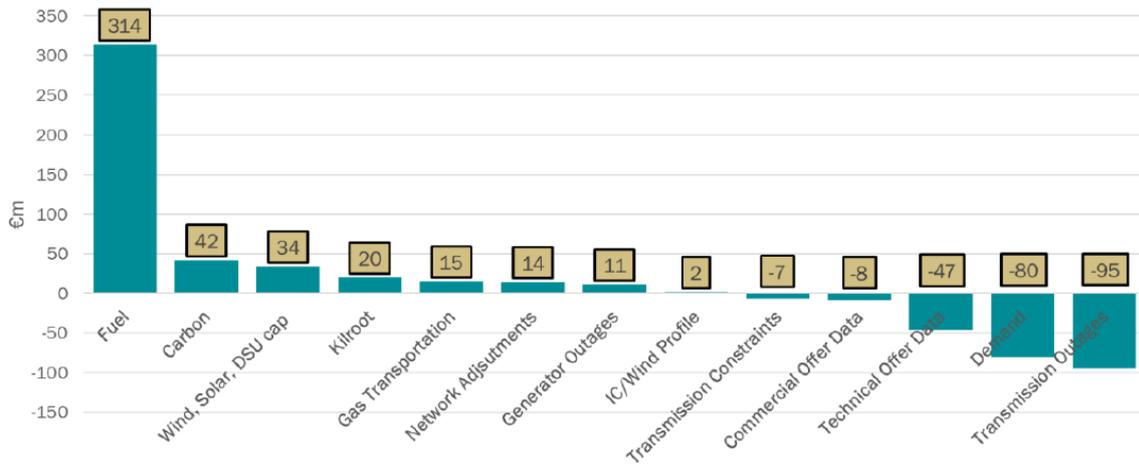


Figure 2. The key drivers of change in the TSOs' Tariff Year 2022/23 Plexos Imperfections Costs relative to Tariff Year 2021/22.

Figure 2 details the key drivers of change, relative to Tariff Year 2021/22, as identified by the TSOs. The main change is the projected increase in fuel prices relative to Tariff Year 2021/22. Figure 3 provides more detail on the individual fuel price components of this increase.

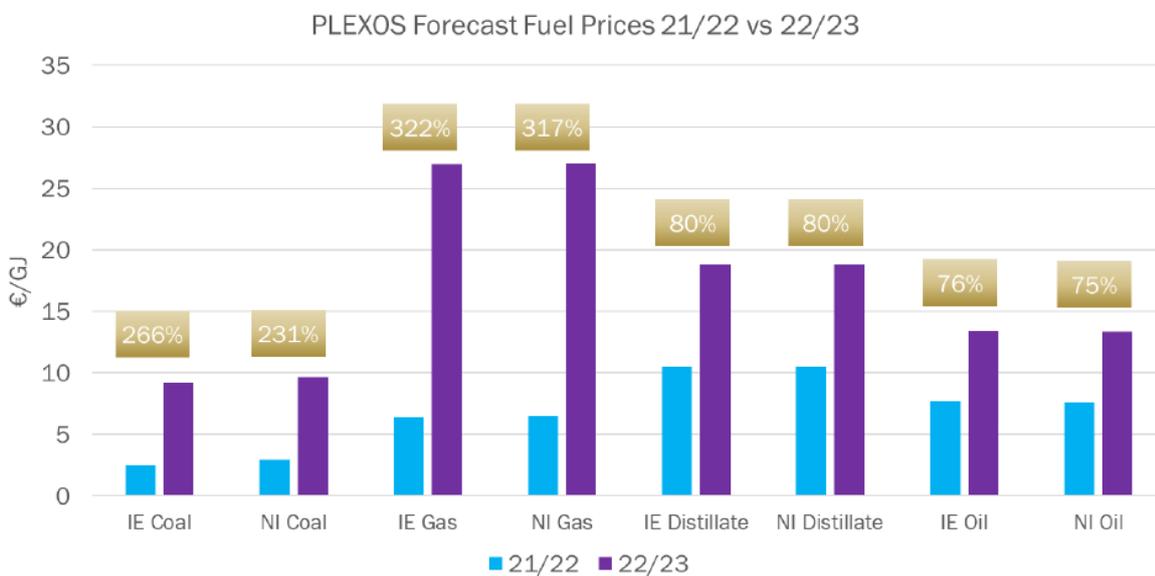


Figure 3. The increase in key fuel prices seen between Tariff Year 2022/23 and Tariff Year 2021/22.

Details on the forecasts for each of the Imperfections Charge components, comprising Dispatch Balancing Costs (DBC), Fixed Costs payments and Other System Costs, are provided below and in the TSOs' submission, which is attached as Annex 1.

3.1 DISPATCH BALANCING COSTS

DBC include Constraint Costs, Uninstructed Imbalance Payments and Generator Testing Charges the majority of the TSOs' forecast costs for Tariff Year 2022/23⁴.

3.2 DBC - CONSTRAINT COSTS

Constraint Costs comprise all of the DBC forecast, as Uninstructed Imbalances and Testing Charges are forecast in TSOs' Tariff Year 2022/23 at zero (see sections 3.3 and 3.4).

Constraints arise where the TSO needs to reduce the output of one or a specific group of generation units to manage an issue, such as a restriction in the transmission network. In such an instance, the TSOs compensate generators for costs incurred from where they are scheduled to run by the market but are not run (or are run at a decreased level) by the TSO's actual dispatch.

Constraint Costs are forecast using a combination of a PLEXOS model, which has been reviewed by the RAs, and supplementary modelling.

PLEXOS Modelled Constraints

The PLEXOS Model forecast is €532.94m. As mentioned above, the greatest proportion of the increase is due to the increases in projected fuel prices, however, the costs themselves are usually caused by constraints on the system. The RAs welcome stakeholder's views on this and alternative approaches, as detailed in Section 5.

Supplementary Modelling Constraints

The Supplementary Model forecast is for €197.51. It is not possible to model all Constraint Cost drivers in PLEXOS. Therefore, the TSOs' include further costs that are derived through Supplementary Modelling, as detailed in Annex 1. These further costs amount to €197.51m for Tariff Year 2022/23. The RAs acknowledge that fuel costs are a factor in some of the individual components within the supplementary modelling. However, due to the complexity in accurately disentangling such data the RAs do not propose to amend the TSOs' Supplementary Modelling methodology.

⁴ 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.

3.3 DBC - UNINSTRUCTED IMBALANCES

Uninstructed Imbalances occur when there is a difference between a Generator Unit's Dispatch Quantity and its Actual Output. Uninstructed Imbalances have a direct effect on DBCs, as TSOs re-dispatch generators to counteract the impact of Uninstructed Imbalances on the system.

The forecast for Uninstructed Imbalances is zero in the TSOs' Imperfections Charges submission for Tariff Year 2022/23 as it is assumed that any resulting additional Constraint Costs will, on average, be recovered by separate Uninstructed Imbalance Payments.

3.4 DBC - TESTING CHARGES

As a testing generator unit typically poses a higher risk of tripping, additional operating reserve is required to ensure that system security is not compromised, which gives rise to increased system operating costs.

A forecast of zero is included in the TSOs' Imperfections Charges submission for Tariff Year 2022/23 for Testing Charges, as it is assumed that Testing Charges will offset any additional Constraint Costs.

3.5 FIXED COST PAYMENTS

Fixed Cost Payments in the new market comprise: Make Whole Payment, Recoverable Start Up Costs and recoverable No-Load Costs. In their report, the TSOs have assumed that these costs have largely been captured in the PLEXOS model.

3.6 OTHER SYSTEM CHARGES

Other System Charges (OSC) include Generator Performance Incentive Charges, Short Notice Declaration Charges, Trip Charges, which are Transmission Use of System Charges levied on Generators Users in respect of events or the provision of services that affect DBC and Ancillary Service Costs.

The TSOs assume that generators are compliant with the Grid Code requirements and no charges will be recovered through Other System Charges, i.e. a forecast of zero is included for OSC for Tariff Year 2022/23. It is assumed that any deviation from this assumption will result

in an increase in DBC, and that any monies recovered through OSC will net off the resultant costs to the system in DBC.

3.7 CLEAN ENERGY PACKAGE COSTS

As per SEMC's Decision ([SEM-22-009](#)) to implement and compensate any payments for curtailment beginning in Tariff Year 2024/25, the TSOs did not include provision for Clean Energy Package in their Tariff Year 2022/23 submission.

3.8 K-FACTOR

The K-factor is the TSOs' within-year estimate of the shortfall of funding for the current Tariff Year, i.e. 2021/22), based on the actual outturn for the first seven months (1 October 2021 to 30 April 2022) plus an estimate for the remaining five months (1 May 2022 to 30 September 2022).

Differences between the amount of Imperfections Charges paid out by SEMO to generators and the amounts paid to SEMO by suppliers on the basis of the Imperfections Price for the current Tariff Year lead a surplus or shortfall across the Tariff Year. SEMO refunds any surplus or seeks to recover any shortfall through an adjustment to the Imperfections Price in the next following Tariff Year. A further adjustment, to account for differences between the estimate and the outturn made for the remaining five months, may be required in the next Tariff Year but one.

For Tariff Year 2021/22, the K-factor is a forecast of September 2022's financial position. The TSOs state that as at 30 April 2022, their Imperfections costs were 33% over the RA allowed forecast, creating an under-recovery of €77.81m (see Annex 2 for the TSOs' Imperfections K-factor submission). The TSOs estimate Imperfections expenditure will continue to under-recover, primarily due to high forecast fuel and carbon prices.

Item	€ million
Actual over-recovery 2020/21	9.64
Estimated under-recovery 2021/22	-150.00
Total K-factor to be applied 2022/23	-140.36

Table 1. K-factor calculation for 2022/23.

The K-factor submitted by the TSOs to be applied to the Imperfections Charge for Tariff Year 2022/23 is €140.36m, comprising of an estimated €150m under-recovery for Tariff Year 2021/22 and a €9.64m adjustment for Tariff Year 2020/21 (see Table 1).

4 PROVISIONAL IMPERFECTIONS CHARGE FOR TARIFF YEAR 2022/23

The TSOs proposed an Imperfections Charge of €870.81m for the Tariff Year 2022/23. This comprises Imperfections allowance of €730.45m, most of which are attributable to Constraint Costs.

Allowing for the K-factor adjustment provides a total forecast Imperfections Charge of €870.81m, which, when divided by the forecast demand, of 38,200 GWh,⁵ equates to a Imperfections Price of €22.8/MWh for Tariff Year 2022/23. This is a 62% increase on Tariff Year 2021/22 (€330.83m / €9.19/MWh). The trend in the Imperfections Prices and costs is summarised in Table 2 below:

€ m	TSO proposed 2022-23	2021-22	2020-21	2019-20	2018-19	2017-18	2016-17	2015-16
Total Constraints costs	730.45	341.01	271.09	256.97	190.44	177.6	144.3	163.5
Uninstructed Imbalances			-			-	-	-
Testing charges			-			-	-	-
Dispatch Balancing Costs	730.45	341.01	271.09	256.97	190.44	177.6	144.3	163.5
Energy Imbalance			-			-	-	-
Fixed Cost Payments		-	15.38	14.35	7.19	2.7	2.5	7.2
K-factor Adjustment	140.36	(10.18)	(0.37)	84.44	(13.86)	(7.34)	(77.6)	(22.1)
Other System Charges			-	-	-	-	-	-
Total Imperfections Charge	870.81	330.83	286.10	355.76	183.77	173.02	69.2	148.6
Forecast Demand ('000 MWh)	38,200	36,000	33,600	34,200	35,200	34,550	33,700	33,230
Imperfections Price/ MWh	22.80	9.19	8.51	10.40	5.22	5.00	2.05	4.47

Table 2: Imperfections Charge over time

⁵ The TSOs forecast demand for the 2022/23 tariff year is 38,200 GWh.

5 RAs' INITIAL REVIEW OF THE TSOs' 2022/23 IMPERFECTIONS CHARGE

The RAs have reviewed the TSOs' Imperfections Charge submission reports (see Annexes 1 and 2), and seek stakeholders' opinions on the following:

1. The reasonableness of the TSOs' forecast of costs and their assumptions for Tariff Year 2022/23 (see Section 5.1)
2. If there are actions the TSOs could take to minimise Imperfections Charges (see Section 5.1)
3. Calculating the Imperfections Price for Tariff Year 2022/23 on *either* applying daily projected quarterly fuel and carbon costs averaged over a 12-month period, *or* utilising the K-factor in a run rate approach (see Section 5.2)
4. Whether the K-factor element should be partially recovered over one or more Tariff Year and, if so, the number of years and quantum (see Section 5.3)
5. Implementation of a biannual review of the Imperfection Charge and a proposed modification to the Trading and Settlement Code to allow bidirectional alterations to the Imperfection Charge Factor (see Section 5.4).

5.1 TSOs' FORECAST COSTS AND ASSUMPTIONS, AND MINIMISING IMPERFECTIONS CHARGES

The TSOs have forecast costs of €730.45m for Tariff Year 2022/23. In addition, they are requesting an under-recovery K-factor of €140.36m, bringing their total submission Imperfections request to €870.81m.

As with previous years' submissions, the primary Imperfections costs are DBCs, in particular Constraint Costs. Constraint Costs arise due to the differences between the market determined schedule of generation to meet demand and the actual dispatch instructions issued to generators by the TSOs. A generator that is scheduled to run by the market, but which is not run in the actual dispatch by the TSO (or run at a decreased level) is 'constrained off/down'. Costs associated from constraining generation are paid by the TSO to the relevant generators and are passed through to customers as part of the Imperfections Charge⁶.

⁶ See [SEM-12-003](#) Incentivisation of All-Island Dispatch Balancing Costs

The TSOs attribute the increase in forecasted Imperfections Charge to higher fuel prices (€314m increase, based on 9 May 2020 prices) due to price spikes and volatilities in the commodity futures markets following the Russian invasion of Ukraine. The TSOs submission is summarised in section three of this Consultation Paper and is provided in full in Annex 1 and Annex 2.

The RAs' would like to hear stakeholders' views on the TSOs' Tariff Year 2022/23 costs forecasts and the assumptions used.

The RAs' would also welcome suggestions on whether there is more the TSOs could do to minimise Dispatch Balancing Costs and other costs covered by Imperfections.

5.2 AMENDED APPROACH TO IMPERFECTIONS CHARGE CALCULATION

As set out above, the main feature for the significant increase in the proposed Imperfections Charge for Tariff Year 2022/23 is the projected cost of fuels, which using data from 9 May 2022 the TSOs' forecast at €405m, an increase of €314m on Tariff Year 2021/22. In addition, the TSOs project carbon costs of €107m in Tariff Year 2022/23, an increase of €42m.

An effect of increased fuel and carbon costs is the cost of constraining out-of-merit generation becomes more expensive. For Tariff Year 2022/23, taken together, fuel and carbon costs are estimated by the TSOs to account for €512m: 71% of the non-K-factor submitted Imperfections Charge ⁷.

The TSOs' modelling is based on commodity prices for Q4 2022 to Q3 2023 as of a 'data freeze' on 9 May 2022. By taking prices on a single day, the TSOs' figures are at risk of being atypical and, as such, do not account for the significant volatility and price spikes in the commodity markets since February 2022.

Below, two alternative approaches are outlined. The RAs invite comment from stakeholders on each.

5.2.1 12-MONTH HISTORICAL AVERAGE FUEL PRICES

The RAs consider an option to better reflect the volatility of forward fuel (and to a lesser extent carbon) prices, is to apply average prices for Q4 2022 to Q3 2023, taken daily for the 12 months preceding the data freeze, that is from 10 May 2021 to 9 May 2022.

⁷ This 71% compares to fuel and carbon accounting for 46% of the total non-K-factor Imperfections Charge for Tariff Year 2021/22.

As fuel and carbon costs account for 71% of the total TSOs' submitted Imperfection allowance for Tariff Year 2022/23, the prices used in modelling them are crucial.

Under Section F.12.1.2 of the Trading and Settlement Code⁸ the RAs may request alternative values from those proposed by the TSOs. For the purposes of calculating the Tariff Year 2022/23 Imperfection Charge, the RAs requested the TSO also model the proposed costs based on averaged daily fuel prices and averaged daily carbon prices for Q4 2022 to Q3 2023 taken daily for the preceding 12 months (see Appendix 7 of TSOs report in Annex 1). Table 2, below, provides a summary.

The TSOs' estimated commodity prices based on a 12-month historical average are 47% lower for fuel, and 25% lower for carbon than those used in the TSOs' original submission⁹. This results in fuel costs of €217m and carbon costs of €90m, a total of €307m. In comparison, the total fuel and carbon cost in the TSOs' original submission was €512m.

	Original € m	Original €/MWh	Revised € m	Revised €/MWh
PLEXOS	532.94	13.95	320.00	8.38
Supplementary	197.51	5.17	197.51	5.17
Allowance	<i>730.45</i>	<i>19.1</i>	<i>517.51</i>	<i>13.55</i>
K-factor	140.36	3.67	140.36	3.67
Total	870.81	22.80	657.87	17.22

Table 2. TSOs' original and revised Imperfections Costs 2022/23

Table 2 is based on a total SEM demand of 38,200 GWh¹⁰ and shows on a per MWh basis both the TSOs' original submission and the revised submission, using the 12-month historical average. In the revised model, the total costs reduce from €870.81m (or €22.80/MWh) to €657.87m (€17.22/MWh). This compares to Tariff Year 2021/22 where the Imperfection Charge was €330.83m (€9.19/MWh).

⁸ The [Trading and Settlement Code](#), Part B, F.12.1.2 states: "The Market Operator's report must set out any relevant research or analysis carried out by the Market Operator and the justification for the specific values proposed. The report may, and shall if so requested by the Regulatory Authorities, include alternative values from those proposed and must set out the arguments for and against such alternatives."

⁹ Price decrease estimates depend on type of fuel: coal 54%, gas 47%, gasoil 30%, LSFO, 19%. Carbon estimated decrease is 25%. See Appendix 7 of the appended Forecast Imperfections Revenue Requirement

¹⁰ 38,200 GWh is the TSOs' estimated total demand in the SEM for Tariff Year 2022/23, compared to 36,000 GWh for Tariff Year 2021/22

A similar historical average price approach was recently used by the CRU and GNI in determining gas distribution tariffs and allowed revenue for 2022/23 ([CRU/202248](#)). In previous revenue determinations, gas prices from a fixed date were applied. However, due to volatility in the gas futures markets, a different approach of a six-month weighted average of Winter and Summer futures prices was employed for 2022/23.

Furthermore, a historical average is used by the RAs to determine the commodity prices to calculate prices and volumes of Directed Contracts (see [SEM-21-076](#)).

While the RAs consider commodity prices averaged over the preceding 12 months are more likely to address volatility in the commodities markets than the fixed-date approach used originally by the TSOs, it is acknowledged the current and predicted instability in fuel prices means that a significant level of uncertainty remains. Nonetheless, this is the case for whichever approach is decided upon. Proposals to mitigate this are outlined in Section 5.3 and 5.4.

The RAs welcome comment on the suitability of applying a model based on 12-month historical fuel and carbon prices to calculate the Imperfections Charge instead of using a fixed-date approach.

5.2.2 FINANACIAL RUN RATE

Using current financial information as a predictor, a run rate approach extrapolates current performance and assumes continued price conditions.

For estimating the Imperfections costs, one way to apply a run rate is to use the within-year K-Factor. The K-factor is an estimation of the over/under funding for the current Tariff Year (in this case, 2021-22) based on the actual outturn for the first seven months of the Tariff Year (1 October 2021 to 30 April 2022) and extrapolated for the following five months (1 May 2022 to 30 September 2022). There is also scope in the extrapolation for taking into account Imperfections costs movements in the most recent weeks (e.g. because of fuel price increase trends slowing in April 2022, compared to March 2022).

To apply a run rate for Tariff Year 2022/23, the K-factor is further extrapolated for the following 12 months. In effect it would be assuming that the predicted variance between forecast and outturn for Tariff Year 2021/22 is replicated in Tariff Year 2022/23.

As applying a run rate approach based on the within-year K-factor uses data already provided by the TSOs as part of their submission, the RAs have not requested the TSOs to provide

revised values for this approach. Rather, the RAs have produced the estimates using the figures set out by the TSOs in their Imperfections K-Factor Submission report (see Annex 2).

In their K-Factor Submission, the TSOs included information on how they estimated the K-factor for Tariff Year 2021/22. The TSOs calculated that actual outrun costs were 33% over the RA Approved Forecast resulting in an under-recovery of €77.81m. The TSOs also estimated that Imperfections expenditure will continue to move adversely compared to the original forecast leading to an increase in the forecast outturn under-recovery position.

The TSOs' bases for their estimated under-recovery are comparable to those outlined above in Section 1 for the overall increase in the Imperfections Charge, particularly fuel and carbon prices. They also note similar downward pressures, for example from a more limited transmission outage schedule. The TSOs estimate the total K-factor for Tariff Year 2021/22 at €150m. However, in their submission they request €140.36m due to an over-recovery in the previous Tariff Year of €9.64m.

If a similar level of shortfall is seen in 2022/23 it would add approximately €150m to Tariff Year 2021/22's allowed Imperfection Charge (including existing K-factor) to give an estimated total of €621.19m for Tariff Year 2022/23, which works out at €16.26/MWh (28.7% lower than the TSOs' original submission). See Table 4.

	€ m	€/MWh
2021-22 total allowed	330.83	8.66
2021-22 projected K-factor*	140.36	3.67
<i>2021-22 total</i>	<i>471.19</i>	<i>12.33</i>
Run rate K-factor to apply in 2022-23	150.00	3.93
Total for 2022-23	621.19	16.26

*K-factor for Tariff Year 2021-22 includes an over-recovery from 2020-21 of €9.64m

Table 4. Run rate K-factor

There is merit in using a run rate approach as it is based on actual outturn figures. Using the K-factor here also has the advantage of utilising both for commodity inputs and other real-world factors such as ongoing planned outage schedules and demand levels.

Therefore, the run rate approach may have a stronger logic base than the 12-month historical fuel price model as it reflects real world outcomes and avoids the need to make a judgment on the validity of the Supplementary Model costs as these are included in the actual outturn.

It is also interesting to note the high prices in the SEM DAM over the seven months of the within-year K-factor (October 2021 – April 2022) are at comparable level (average €223/MWh) to those expected for Tariff Year 2022/23 (average €238/MWh)¹¹.

In the current circumstances, most of the variance between forecast and outturn, and extrapolated is due to increased fuel and carbon prices, which could continue across Tariff Year 2022/23. Furthermore, other variations in cost included in the within-year K-factor such as constraints and generation plant scarcity could be seen at similar levels in Tariff Year 2022/23 as in Tariff Year 2021/22, as many of the factors involved are known.

Nevertheless, a K-factor run rate, while based on seven months of outturn data can only serve as a proxy, which would become weaker the greater the extrapolation. Using 12-month historical fuel price averages is also a proxy but the run rate approach is less able to capture unusual variations such as those seen recently in fuel prices where the main difference between future quarter prices was not seasonality (i.e. the difference between summer and winter prices), but rather how far into the future the commodity is (e.g. the closer in time the quarter, the cheaper it is, despite the season). Moreover, a run rate approach would not include the predicative evidence from PLEXOS that goes into the standard approach to calculating the Imperfections Charge.

The RAs invite views on the merits of applying a method of calculating the Imperfections Charges by using a K-factor run rate approach.

5.3 PARTIAL DEFERRED OF K-FACTOR RECOVERY

The K-factor is a means of adjusting for variance between forecast Imperfections revenue in a given Tariff Year and the outturn. It is a correction mechanism that enables under or over-recovery of Imperfections Costs incurred in the previous Tariff Year and an estimate for the current year, to be accounted for in the following Tariff Year. The K-factor is based on a within-year assessment of this variance between forecast and outturn financials (taken at the end of month seven), which the TSOs then extrapolate to estimate the variance across the whole Tariff Year.

¹¹ SEM DAM price averaged October 2021 – April 2022 prices as given in SEM Monthly Monitoring Report ([SEM-22-022](#)). Quarter 4 2022 to Quarter 3 2023 average SEM DAM price as given in Round 19 of Quarterly Directed Contracts Information Paper ([SEM-22-029](#))

At €140.36m¹² the K-factor requested by the TSOs for Tariff Year 2022/23 is significantly greater than any earlier submission, however, Tariff Year 2019/20 was proportionally larger (see Table 5).

	2022/ 23	2021/ 22	2020/ 21	2019/ 20	2018/ 19	2017/ 18	2016/ 17	2015/ 16
Allowance (€ m)	730.45	341.01	286.47	271.32	197.63	180.3	146.80	170.70
K factor (€ m)	140.36	-10.18	-0.37	84.44	-13.86	-7.34	-77.6	-22.1
K-factor % of total	19.2%	3.0%	0.1%	31.1%	7.0%	4.1%	52.9%	12.9%

Table 5. K-factor 2015/16 to present

Given the significant amount, the RAs are considering the possibility of delaying the recovery of part of the K-factor until subsequent year(s). This would help smooth the effects of the increases borne by suppliers and, ultimately, consumers.

The RAs invite comment on whether to apply the full K-factor amount or to spread it across subsequent year(s). We are interested in opinion on both the principle of (partial) deferral and on the quantum of any recovery amount to be delayed to subsequent tariff year(s).

5.4 IMPERFECTIONS CHARGE FACTOR: TRADING AND SETTLEMENT CODE MODIFICATION

If commodity prices are significantly higher than those used in the models proposed in Section 5.1, the TSO will require an additional funding mechanism to manage the shortfall between revenues collected via Imperfections Charges and costs actually incurred.

Conversely, the RAs note, if the decision is made to proceed using the current TSO proposal (which assumes very high commodity prices to Q3 2023), it is possible that if commodity prices stabilise, the TSO may over-recover costs¹³ for Tariff Year 2022/23, resulting in a positive K-factor in Tariff Year 2023/24.

¹² €140.36m comprises an estimated €150m under-recovery for Tariff Year 2021-22 and a €9.64m actual over-recovery for Tariff Year 2020-21 (see Table 3)

¹³ Currently, for many banks deposits above €5m are subject to negative interest rates. Balances between €5m and €10m are circa -0.3% and balances over €10m circa -0.5%)

In a scenario where lower fuel prices are used but commodity prices remain high for the foreseeable future, there is a risk that the K-factor for the next Tariff Year could be significant. It is also possible for such a situation be in combination with increased forecasted revenue requirements, resulting in increased costs for the end customer.

A biannual review of the Imperfection Charge could allow for recalculation to ensure it is reflective of actual costs incurred by the TSOs. Here, the RAs would develop a method to monitor Imperfections Charges and costs, which the RAs envisage would be based on TSOs' Quarterly Imperfections Cost Reports. If a significant divergence between Imperfections Charges and costs were anticipated for the remainder of the Tariff Year, an adjustment to Imperfections Charges would be affected by adjusting the Imperfections Charge Factor.

The Trading and Settlement Code¹⁴ (section F.12.1.4) allows for situations of significant variation between forecast and outturn costs to be addressed through within-year alterations to the Imperfections Charge Factor:

The Market Operator may, of its own accord or in response to a request from the Regulatory Authorities, make additional interim reports to the Regulatory Authorities during the Year, proposing revisions to the Imperfections Charge Factor in the event that the values as originally proposed do not provide for the adequate recovery of anticipated costs and such under recovery is such that it is not appropriate to include as an adjustment in subsequent Years.

However, the Code only provides for amendments to the Imperfections Charge Factor in situations of under-recovery. As outlined above, due to the significant volatility in fuel prices over-recovery is also possible. Therefore, to help mitigate the volatility risks the RAs propose to modify section F.12.1.4 to allow bidirectional (downwards as well as upwards) amendments to the Imperfections Charge Factor.

The RAs seek opinions on the principle of implementing a biannual review of the Imperfection Charge and on whether there should be a modification to the Trading and Settlement Code to allow bidirectional alterations to the Imperfection Charge Factor.

6 NEXT STEPS

The RAs invite stakeholders' responses on the TSOs' Imperfections Charge for Tariff Year 2022/23. All responses received will be published, unless the respondent specifically requests

¹⁴ [Trading and Settlement Code](#) Part B, April 2017

otherwise. Accordingly, respondents should submit any sections that they do not wish to be published in an appendix that is clearly marked “confidential”.

Responses to this paper should be forwarded to Gavin Miller (mmg@cru.ie) and Leigh Greer (leigh.greer@uregni.gov.uk) **by close of business on 5th August 2022.**

Following consideration of responses received and further review of the TSOs’ submission, the RAs intend publishing a decision in August 2022.