



# 2020/21 Imperfections Outturn Report

**01 October 2020 to 30 September 2021**

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# 1 Executive Summary

This report to the Commission for Regulation of Utilities (CRU) and the Northern Ireland Authority for Utility Regulator (UR), collectively known as the Regulatory Authorities (RAs), has been prepared by EirGrid and SONI, in their roles as the TSOs for Ireland and Northern Ireland respectively, concerning the 2020/21 Imperfection Costs Reforecast. This report covers the period from 01/10/2020 to 30/09/2021 inclusive, referred to as the Tariff Year 2020/21.

Imperfections costs are an inherent feature of the SEM design and arise due to the differences between the ex-ante market schedule and the real-time dispatch. These costs are levied on suppliers through the Imperfections Charge. EirGrid and SONI, as Transmission System Operators (TSOs), are responsible for managing imperfections costs, through efficient dispatch of generation, whilst maintaining a secure electricity system.

The TSOs submitted a 2020/21 Forecast to the RAs on 30 June 2020. Using the submitted forecast as a base, the TSOs then updated a number of inputs based on actual data for this period, to create an ex-post adjusted forecast, the “reforecast”. A summary comparison of the 2020/21 Forecast (Submitted and Approved), the 2020/21 Reforecast, and the 2020/21 Actuals are shown in Figure 1 below. The 2020/21 reforecast is in the general range of the 2020/21 actual costs.

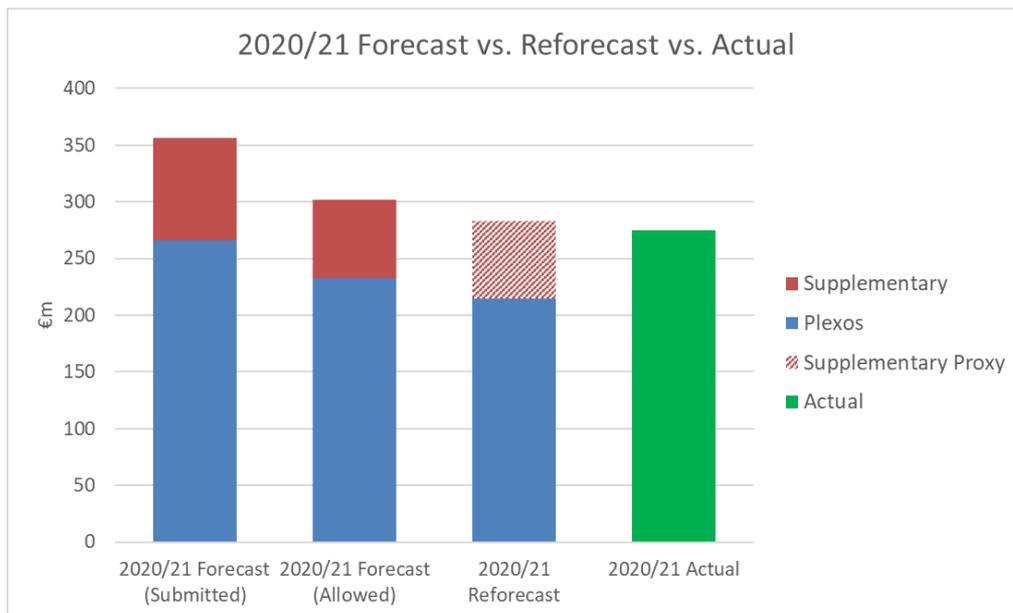


Figure 1: 2020/21 Forecast vs. Reforecast vs. Actual comparison

## 2 PLEXOS Comparison

The PLEXOS modelled component of the backcast for 2020/21 was found to be €214.3m. This is a decrease from the submitted PLEXOS forecast cost of €265.6m. As shown in

Figure 2 updating the 2020/21 Forecast PLEXOS model with actual data led to a decrease of €51.3m.

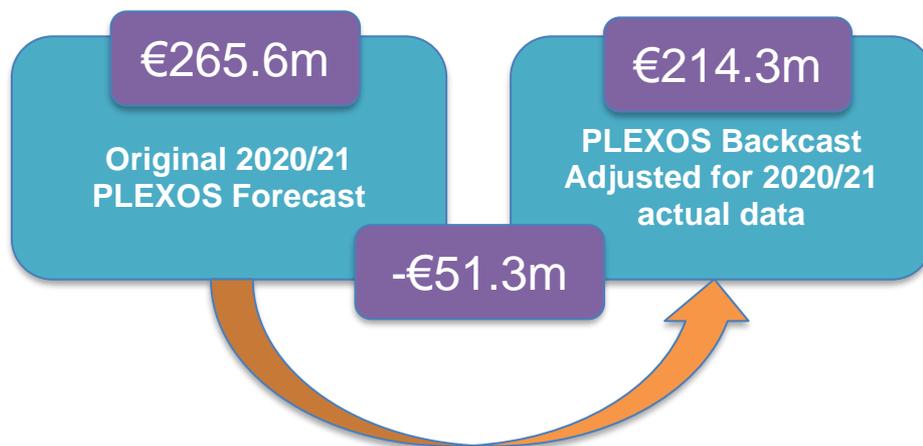


Figure 2: PLEXOS adjustment for actuals

Figure 3 shows the drivers which make up this decrease of €51.3m.

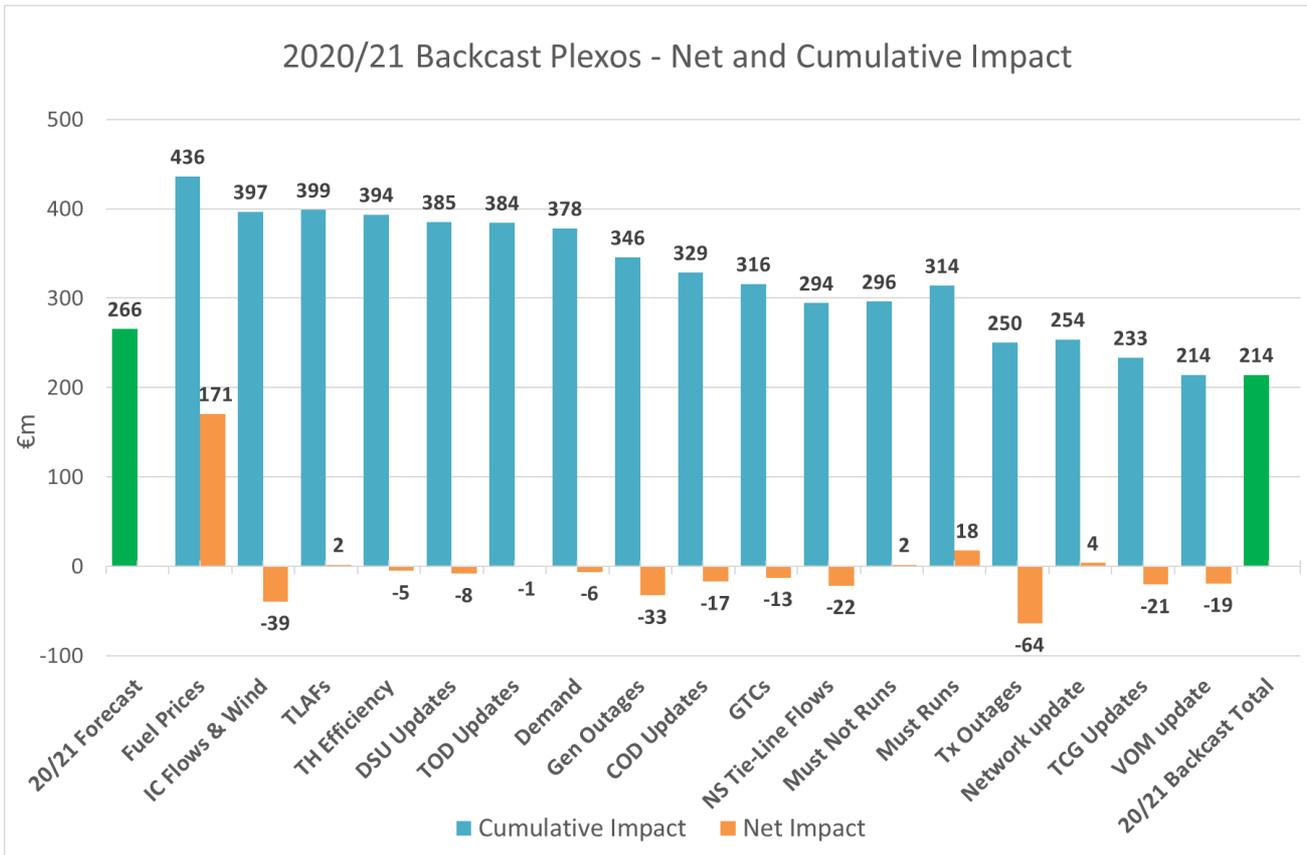


Figure 3: 2020/21 Reforecast PLEXOS – Net Impact

## 2.1 Fuel & Carbon Prices

Updating the model for actual fuel costs increased model costs by €171m. This was primarily due to significant increases in all fuel types, most significantly gas, between the 2020/21 Forecast and the Reforecast. There were also significant increases in carbon prices. See summary of model prices below:

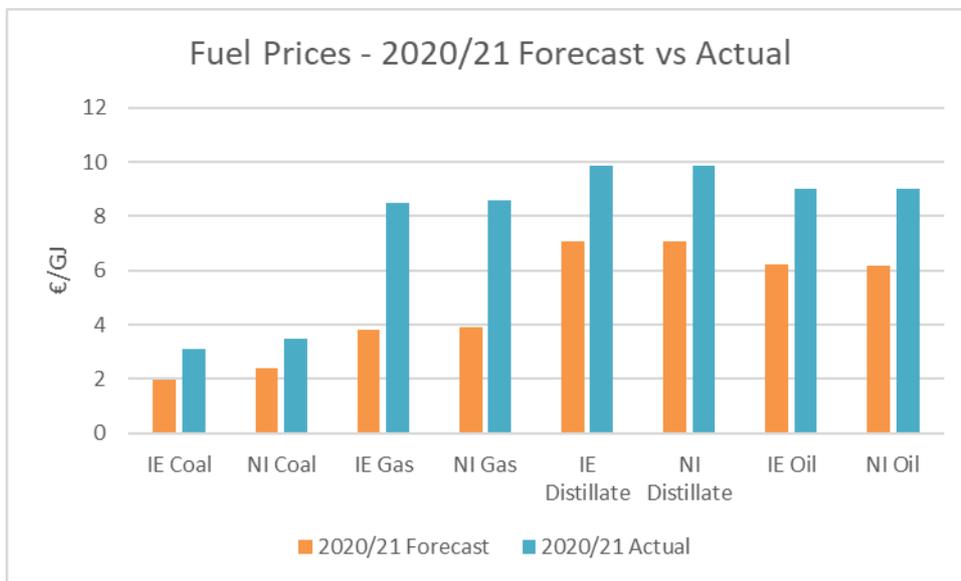


Figure 4: Fuel Prices – 2020/21 Forecast vs Actual

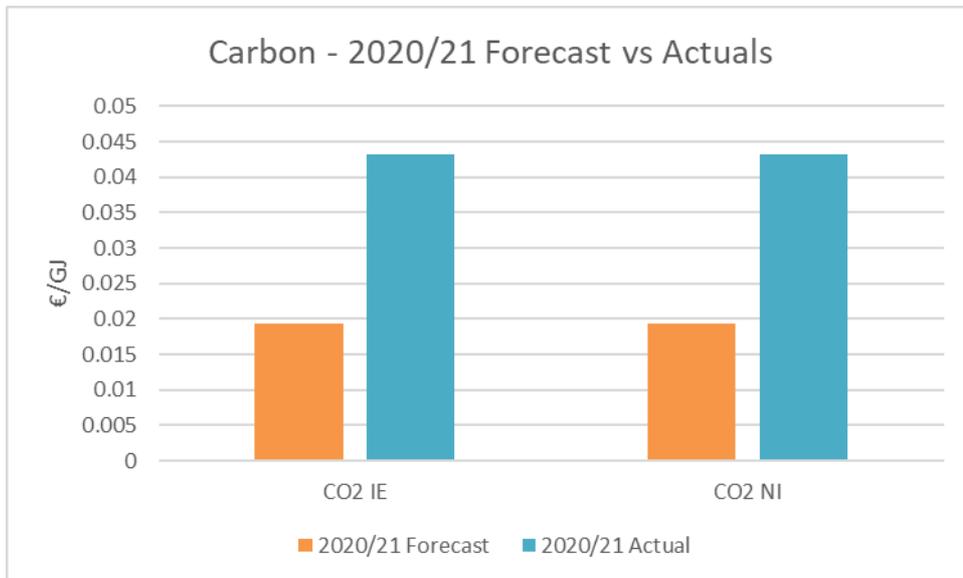


Figure 5: 2020/21 Carbon Prices – Forecast vs Actual

## 2.2 IC Flows, Wind Availability & Capacity

There is a strong link between interconnector flows and wind patterns, therefore both were updated at the same time. Imperfection costs decreased by €39m, and some of this will have been due to 2020/21 being a low wind year – where the actual available wind was lower than that assumed in the forecast. Lower wind would have reduced the need to accommodate priority dispatch.

## 2.3 TLAFs

Updating the model with actual TLAFs for the year, there was a slight increase in model costs of just under €2m.

## 2.4 Turlough Hill Efficiency

Using the latest data from Turlough, the model was updated with a slightly higher efficiency, which reduced imperfections costs by €5m.

## 2.5 DSU Updates

Year on year we have more data on DSU running, resulting in better modelling of their actual energy capabilities and availabilities. There has been an increase in the number of connected DSUs. This has led to a decrease in model costs of €8m.

## 2.6 Technical Offer Data (TOD)

For TOD, some units have changed their minimum stable generation levels, and others have increased their 'min off' times. These resulted in a minimal change in model costs of under €1m.

## 2.7 Demand

The actual all-island demand was just under 3% higher than forecast. Increasing demand tends to reduce the impact of constraining a system, unless margins are tight. As such, updating the demand resulted in a €6m decrease in model costs.

## 2.8 Generator Outage Updates

Forecast outages were updated to reflect the actual outages that happened in 2020/21, and there were less outages than planned, partly due to the impact of carrying out works with Covid restrictions. This led to a decrease in the model costs of €33m.

## 2.9 Commercial Offer Data (COD)

Commercial offer data for each unit (based on analysis of historic bids) was updated. This update resulted in decreased constraints costs, where the units had been constrained on in the dispatch, to meet reserve, transmission or security constraints on the power system. This amounted to a decrease in model costs of €17m.

## 2.10 Gas Transportation Capacity Charges

GTC charges were back calculated using actual offers from applicable units over the last 12 months. Many units saw relatively little change from those used in the forecast. The calculation for Ballylumford units used a more refined approach, as their application is slightly different to IE units. This led to a decrease in model costs of €13m.

## 2.11 North South Tie Line

When looking at actual flow data in the 2020/21 year, the changes in the model resulted in an increase in flow capability from North to South, the direction where the tie-line would typically be constrained. This resulted in a €22m decrease in model costs.

## 2.12 Must Not Runs (MNRs)

As a result of the Covid pandemic, a number of generation units were not able to schedule their maintenance and therefore had limited run hours available. This impact began in the 2019/20 tariff year, but continued into the 2020/21 tariff year for B31, B32, HN2 & DB1. Limited run hours were placed on these units, which led to increases in CDISCOUNTs for these units, and additional CPREMIUMs for other units that were dispatched on/up to meet demand. When modelled, this led to an increase in model costs of €2m.

## 2.13 Must Runs

For reasons including system security, various units were made must runs throughout the year. These impact the ability to select the cheapest unit, and can force on units that had no physical nominations (PNs), increasing costs. Modelling the times units were must runs throughout the year had the impact of increasing imperfections costs by €18m.

## 2.14 Transmission Outages

The model was updated to reflect the actual transmission outages that took place in 2020/21. During this year, a significant number of scheduled outages did not take place for a variety of reasons. These decreased model costs by €64m.

## 2.15 Network Adjustments

Performing general network updates, including updates to reflect most common current operational busbar and coupler configurations, resulted in an increase in model costs of €4m.

## 2.16 Transmission Constraint Groups (TCGs) & Operational Policies

The Transmission Constraint Groups and Operational Policies were updated to reflect updates on the system in 2020/21. These resulted in a decrease of €21m in the model costs. Some of the main changes from forecast to reforecast included:

- Battery capacity allowed for a reduction in the dynamic primary operating reserve requirement
- SNSP moved to 70% at an earlier date than forecast
- Negative reserve for IE was removed
- Inertia was forecast to reduce to 20,000MWs during the 2020/21 year, but actually remained at 23,000MWs

## 2.17 Variable Operational & Maintenance (VOM) Updates

VOM was updated for units, based on latest available information. This led to a decrease in the model costs of €19m.

# 3 Reforecast Results Compared to Actuals

This section contains a comparison of the following for the Tariff Year 2020/21:

- The 2020/21 Forecast Submission & RA Allowance
- The 2020/21 Reforecast (PLEXOS revision only) & Actual Outturn<sup>1</sup>

## 3.1 2020/21 Forecast Submission & RA Allowance

For the 2020/21 Tariff year, the TSOs submitted an Imperfections forecast of €356.67m. This comprised of €265.6m for the PLEXOS model and €91.07m for the supplementary model. Following consultation, the RAs determined a total allowance of €301.47m for the year, deducting elements from both the PLEXOS model and supplementary model. These values are represented by the first two bars in Figure 6 below:

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<sup>1</sup> The actual outturn used in this document is the current total including the latest M+13 resettlement.

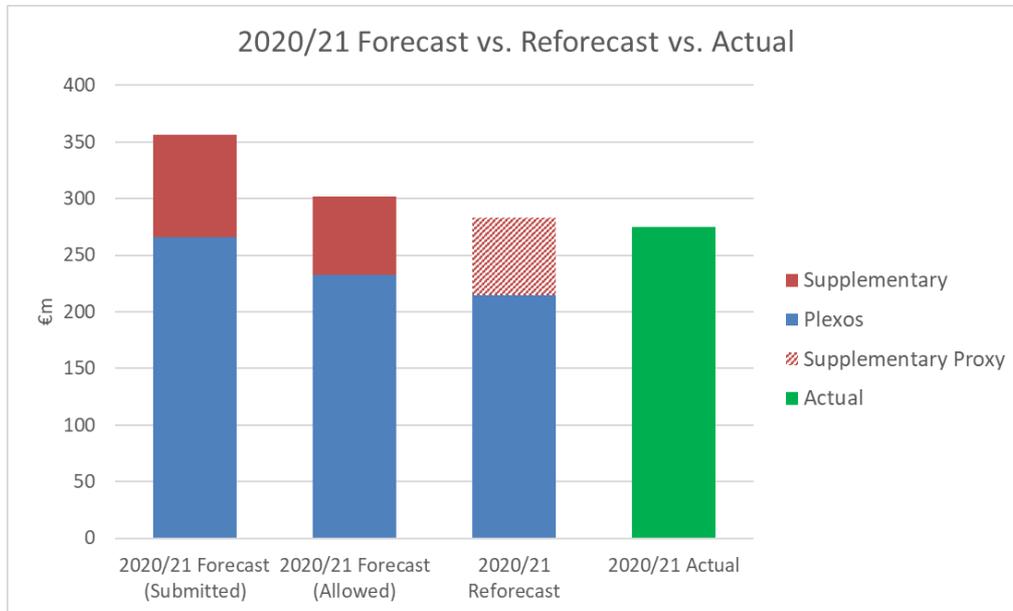


Figure 6: 2020/21 Forecast vs. Reforecast vs. Actual comparison

### 3.2 2020/21 Reforecast & Actual Outturn

**Reforecast PLEXOS:** From Figure 6 it can be seen that when updating the original forecast with actual data, the PLEXOS element decreases from €265.6m to €214.3m.

**Reforecast Supplementary:** The purpose of this report is to see the changes in the PLEXOS model from using actual data, with supplementary modelling not being considered. The TSOs have therefore included a proxy for the supplementary model, which was the RA approved value. For reference, the RAs reduced the TSOs' submitted supplementary model from €91.07m to €68.87m.

The current resettled actual cost for the 2020/21 year are €274.6m (shown in green in Figure 6), and the total reforecast cost of €283.1m are in the general range of these actual costs. It should be noted that the TSOs' Control Room Operators strive to reduce costs in their daily practices, via decisions based on practical experience. It is impossible to add these efficiencies into the model, but the continued TSOs' efforts to reduce Imperfection Costs can be seen in the fact that the actual costs (€274.6m) are lower than the reforecast costs (€283.1m).