

# TSO PR5 Imperfections & Constraints

## Multi-Year Plan

2022-2026

---

28 October 2021



**Table of Contents**

- 1. Introduction ..... 3
- 2. Workstream Overview ..... 3
- 3. Incentive Deliverables/Actions ..... 5
- 4. High-Level Plans 2025 – 2026 ..... 7
- 5. Interdependencies/Assumptions ..... 7
- 6. Performance Assessment for 2022 ..... 8
- 7. Next Steps ..... 9
- 8. Appendix – Acronyms ..... 10

## 1. Introduction

The CRU/20/154<sup>1</sup> Decision Paper contains direction and guidance to EirGrid as the Transmission System Operator (TSO) on Incentives and Reporting arrangements for the Price Review 5 (PR5) period, 2021-2025. The objective of the Commission for Regulation of Utilities (CRU) PR5 reporting and incentives, as per the Executive Summary of CRU/20/154, is to ensure that network companies are focused on delivering better outcomes for customers; using innovation to deliver services more efficiently; and meeting key national strategic objectives.

CRU/20/154 Section 7.12 provides an overview of the objectives of the PR5 Imperfections & Constraints incentive process. Managing system imbalance in real-time is a core role of the TSO. In doing so, the TSO seeks to optimally balance the tools and techniques available to it to ensure that any disconnect between supply and demand is addressed in a cost-effective manner. The incentive has been developed in an effort to address the higher imperfection charges that are naturally expected to arise as a direct consequence of the higher share of renewables envisaged in the Climate Action Plan. In that context, the TSO is tasked with establishing a set of planned measures to curb imperfection costs over the PR5 period, acknowledging that imperfections costs are influenced by many factors that are outside the control of the TSO.

This document outlines proposed measures to curb imperfection costs over the PR5 period through the effective execution of three specific workstreams. It contains the specific targets for 2022, 2023 and 2024 (as well as 2025 and 2026 at high level) as outlined in CRU/20/154, Section 7.12. The targets for subsequent years will be confirmed as part of the rolling annual submission.

## 2. Workstream Overview

In this section, more specific information is provided on the three workstreams that will be progressed as part of EirGrid's delivery on this incentive. The three workstreams are the review of reserve policy following commissioning of new technologies, the review of the Transmission Constraint Group (TCG) and ensuring that imperfection reporting is more widely available.

### 1. Reserve policy review following commissioning of new technologies

As new technologies displace system services from existing providers, the effect will be observed in maximising renewables and reducing imperfection costs. Once EirGrid has overseen the commissioning of new technologies, comprising the testing necessary for system services and Grid Code compliance prior to energisation, the TSO will be better-positioned to design and structure studies to help inform any changes to enduring operational policy. The process involves an internal review which will be carried out by EirGrid's Operation Policy Review Committee (OPRC); approval from this forum will be required

---

<sup>1</sup> <https://www.cru.ie/wp-content/uploads/2020/12/CRU20154-PR5-Regulatory-Framework-Incentives-and-Reporting-1.pdf>

before changes to enduring operational policies can be formalised. It is worth noting that it may be necessary to conduct trials in order to verify and stress-test the proposals put forward to the OPRC.

While it is difficult to quantify savings into the future, the current processes on imperfections (which is well-understood by industry stakeholders) will provide the TSO with opportunities to highlight changes and achieved savings.

## **2. Transmission Constraint Group (TCG) review and roadmap**

TCGs and any changes to them are published weekly to all market participants. While it is difficult to provide granularity on when individual TCGs will be reviewed, the intention of the TSO is to continue to review and update in future submissions.

Specifically, the following TCGs will be reviewed in 2022 - 2024:

- **Review of the minimum number of large synchronous units, with a view to reducing the minimum number, which would reduce imperfection costs**

This involves the following steps:

- Complete suite of studies to identify the capabilities needed to reduce the minimum number of large synchronous units requirement from 8 to 7
- Develop operational policy for operation with 7 large synchronous units
- Conduct operational trial with 7 large synchronous units

- **Implementation of the 20,000 MWs inertia floor, which would reduce imperfection costs**

This involves the following steps:

- Complete suite of studies to identify the capabilities needed to reduce the inertia floor from 23,000 MWs to 20,000 MWs.
- Develop operational policy for operation with an inertia floor of 20,000 MWs.
- Conduct operational trial with an inertia floor of 20,000 MWs.

## **3. Enhance access to Imperfection Reporting**

Options will be examined to improve accessibility to Imperfection Cost Reports such as: having a specific landing page, rather than publishing in the library and drop down menus to access historical reports more easily. However, there are various options to be considered and practicalities to understand before enhancements can be made. At this stage it is difficult to indicate, exactly what the final improvements will be and hence this will be reported on, in future updates.

### 3. Incentive Deliverables/Actions

Workstream	2022	2023	2024	Outcomes for customers and market participants
<p><b>1.Reserve policy review following commissioning of new technologies</b></p>	<p>Ongoing review</p>	<p>Ongoing review</p>	<p>Ongoing review</p>	<p>As new technologies commission and operational experience is gained, the TSOs will learn and adapt polices and operational processes to maximise renewables and reduce costs. It is difficult to predict the exact areas this will appear in any given year. As new technologies connecting demonstrate that they can provide reliable sources of operational reserve, this enables TCGs associated with reserve to be relaxed, and the benefits to customers is that over time, costs reduce and/or an increase of renewables on the power system.</p>
<p><b>2.Transmission Constraint Group (TCG) review and roadmap</b></p>	<p>Operations to develop a plan for future TCG changes. The priority of work and how it is implemented will be based on which TCGs are most impactful and which TCGs can be adjusted, removed or replaced while maintaining system security</p> <p>Q2 - Undertake suite of studies to identify the capabilities needed to reduce the minimum number of large synchronous units</p>	<p>Implement recommendations regarding changes, improvements and enhancements to TCG's</p> <p>Q2 Implement enduring operational policy and conduct trials for operation with 7 large synchronous units and 20,000 MWs Inertia Floor</p> <p>Q4 The commissioning, and operational experience, of the</p>		<p>EirGrid TSO publishes TCGs. As the power system evolves there will be opportunities to undertake review of TCGs. It is difficult to provide granularity at this stage. However, the process is on-going across the timeline. It should be noted that security of supply will always be a priority as demonstrated with the TCG updates across 2021. The benefit to customers is that removing, or “relaxing” constraints results in lower costs; however, this needs to be balanced against acceptable risk.</p> <p>If the TSO can securely operate the transmission system with a minimum of 7 large synchronous units and reduce the inertia floor to 20,000 MWs, this will reduce imperfection costs and the imperfections charge, which should aid downward pressure on electricity prices for customers.</p> <p>The Ballyvouskill reactor will reduce high voltages in the local area and reduce reliance on conventional generator to provide steady state reactive power. This will reduce imperfection costs.</p>

Workstream	2022	2023	2024	Outcomes for customers and market participants
	<p>requirement from 8 to 7 and the inertia floor from 23,000 MWs to 20,000 MWs</p> <p>Q2 - Develop operational policy for operation with 7 large synchronous units and 20,000 MWs Inertia Floor</p> <p>Q1 The commissioning, and operational experience of, the Ballyvouskill Reactor, will enable a TCG in the South West to be reviewed, and removed, or relaxed</p>	<p>of Moneypoint Synchronous Condenser, will enable a TCG, in this area, to be reviewed, and removed, or relaxed</p>		
<p><b>3.Enhance access to Imperfection Reporting</b></p>	<p>Q2 - Review of options and deliverability and look to implement changes that will provide greater transparency and ease of access.</p>			<p>The benefit to customers from enhancements in reporting is in making more informed decisions and/or challenging the approach of the TSO.</p>

## 4. High-Level Plans 2025 – 2026

The high-level plans for 2025 and 2026 will be dependent on the outcome of the work undertaken in 2022 to 2024; more detail on the proposed plans for 2025 and 2026 will be provided in subsequent years as part of the rolling annual submission.

It is expected, however, that work in these years may shift away from some of the workstreams currently detailed in this incentive and towards new challenges; significant infrastructure projects being delivered will result in operational policy changes. For example, the new North-South Tie-Line, would significantly reduce imperfection costs, subject to appropriate amendments to operational policy being introduced to fully benefit from this change.

## 5. Interdependencies/Assumptions

The success of EirGrid's multi-year plan is dependent on the approval of our programme of work that will firmly set out target dates and objectives for the above initiatives. This roadmap is due to be finalised by late 2021.

With the increase of future generation and system service providers expected to be connected to the distribution system as the portfolio decentralises and diversifies, EirGrid will need to partner with the Distribution System Operator (DSO) to ensure that the needs of both distribution and transmission systems, and ultimately the needs of consumers, are met.

There will be a dependence on the timely execution of new connections (e.g. new technologies such as synchronous condensers). In addition, successful assimilation of these new technologies into the power system, and the proving of their capabilities, in a controlled manner, will influence the ability of the TSO to transform and/or remove existing TCGs.

## 6. Performance Assessment for 2022

EirGrid propose that the incentive should be split in accordance with the allocation detailed in Table 1 below, with 50% of the available incentive value apportioned to the TCG workstream and the other two allocated a 25% weighting each. In the EirGrid’s annual outturn performance report to CRU, evidence will be provided outlining performance against the multi-year plan.

Item	Criteria	Weighting	Approach	Strong	Acceptable	Below Acceptable	Audit Methodology
1	Reserve policy review following commissioning of new technologies.	25%	Policy review based on data.	Significant changes in Policy with imperfection cost reduction.	Minor changes in Policy with limited imperfection cost reduction.	No change across the period.	End of year reporting based on Plexos modelling.
2	Transmission Constraint Group review and roadmap.	50%	Study based approach.	Significant changes to TCGs across the period with material imperfection cost savings.	Limited changes to TCGs across the period with imperfection cost savings.	No change across the period.	End of year reporting based on Plexos modelling.
3	Enhance access to Imperfection Cost Reports.	25%	Improvements in accessibility to imperfection cost reports on website	Significant change in user experience and enhanced accessibility to reports and data	A number of incremental changes across the period.	No change across the period.	End of year reporting as per this process

Table 1: Performance Assessment



## 7. Next Steps

The consultation period will run for four weeks, beginning on 28 October 2021, and closing on 26 November 2021.

Stakeholders are invited to respond outlining their views on the proposed structure of and approach to the proposals in this Imperfections & Constraints multi-year plan.

Consultation responses are invited until COB on 26 November 2021 and can be sent to [info@eirgrid.com](mailto:info@eirgrid.com)

If you do not wish for your consultation response to be published post submission, please mark it as confidential. Please note that all responses will be shared with the CRU in any case.

## 8. Appendix – Acronyms

CRU	Commission for Regulation of Utilities
DSO	Distribution System Operator
MW	Megawatts
OPRC	Operation Policy Review Committee
PR5	Price Review 5
TCG	Transmission Constraint Group
TSO	Transmission System Operator