

# ECP-2.3 Constraints Analysis Area Results Webinar

Q&A Document

14/02/2024



The Oval, 160 Shelbourne Road, Ballsbridge, Dublin D04 FW28  
Telephone: +353 1 677 1700 | [www.eirgrid.ie](http://www.eirgrid.ie)

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# 1 Area Results Webinar - Q&A-

## 1.1 Can you explain surplus; given we won't have 95% SNSP for some time, how can there be surplus?

The reduction of available renewable generation for surplus reasons is necessary when the total available generation exceeds system demand plus interconnector export flows. In the ECP-2.3 Constraints Analysis, generation reduction for surplus is applied prior to curtailment and constraints. System Non-Synchronous Penetration (SNSP) is an operational limit and is therefore classified as curtailment - thus applied after surplus. More detail on surplus, curtailment and constraint can be found in Section 1.3 in the ECP-2.3 Assumptions and Methodology Report.

## 1.2 Is curtailment applied before constraint in the NCC today?

The application of curtailment or constraint in the NCC (National Control Centre) and in the ECP methodology can differ at times due to the nature of managing real time operations. In the NCC consideration of curtailment and constraint is applied on a case-by-case basis. The ECP-2.3 Constraint Analysis methodology is consistent with the previous iterations (ECP-1, ECP-2.1 & ECP-2.2 Constraints Analysis) and applies curtailment before constraint. A flow chart outlining the study methodology is given in the ECP-2.3 Constraints Analysis Assumptions Document<sup>1</sup> (page 15). This methodology involves a surplus study run first to balance the demand with available renewable energy, followed by a curtailment study to apply system level operational limits and finally a constraint study to apply network limits and N-1 security checks.

## 1.3 Can you expand on the definitions of negative reserve, operating reserve, and min gen. Are they all the same thing which effect constraints?

Negative Reserve: Negative ramping reserve from conventional generation is no longer required in Ireland and therefore has not been modelled within the analysis, further details can be found on the Weekly Operational Constraints Update found on the SEMO website<sup>2</sup>. Currently, in Northern Ireland there is a requirement of 50 MW of negative reserve, however, this has not been modelled in the analysis as this is no longer expected to be required by 2026. This decision was made after discussion with SME's within SONI.

Operating Reserve: Operating reserve refers to the amount of spare capacity on the system to manage any system disturbance. There are numerous forms of reserve; POR (Primary Operating Reserve), SOR (Secondary Operating Reserve), TOR1 (Tertiary Operating Reserve 1) and TOR2 (Tertiary Operating Reserve 2). The various categories of reserve have several delivery and duration requirements, details of these can be found within the Weekly Operational Constraints Update<sup>3</sup>.

Min. Gen: The minimum generation constraint was introduced to ensure enough large synchronous units are operating to preserve the voltage control capability and maintain a minimum level of system inertia. This has been modelled within our analysis.

Reserve and min. gen. sets are system wide operational constraints/limits and are applied during the curtailment study. The application of these limits will cause renewable generation to be dispatched down and conventional generation or batteries to be brought online to satisfy these operational requirements.

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<sup>1</sup> <https://cms.eirgrid.ie/sites/default/files/publications/ECP-2.3%20Assumptions%20Document%20November%202023.pdf>

<sup>2&3</sup> [https://www.sem-o.com/documents/general-publications/Wk06\\_2024\\_Weekly\\_Operational\\_Constraints\\_Update\\_Rev2.pdf](https://www.sem-o.com/documents/general-publications/Wk06_2024_Weekly_Operational_Constraints_Update_Rev2.pdf)

**1.4 I would expect that battery generation is not included during the dispatch down modelling- is this correct?**

Yes, this is correct, generally batteries don't dispatch/generate when renewable generation is high. Analysis of the ECP-2.3 Constraints Analysis model has showed that 95% of all battery arbitrage output occurs during periods where the wind generation is 65% or less and 50% of all battery arbitrage output occurs when wind generation is 22% or less.

**1.5 It's potentially optimistic to be assuming that both LirIC and the 2<sup>nd</sup> Ireland to France interconnector will be in place by 2030. As a result, would it be possible to provide a sensitivity scenario where these two potential future interconnectors are removed?**

The Future Grid scenario includes the network and operational constraint assumptions to align with SOEF 1.1 Roadmap and reflects the network and operational conditions at a point in time circa 2030. Further ECP-2.3 sensitivities are not possible at this stage; however, this sensitivity may be considered for the ECP-2.4 Constraint Analysis.

**1.6 Interconnector assumptions have a significant impact on dispatch down estimates. Hence could EirGrid please provide interconnector and dispatch down data in hourly resolution?**

We are currently reviewing this request and will aim to provide this data for a selection of scenarios on a reasonable endeavour's basis.

**1.7 Given that:**

- a) it is unclear if grandfathered constraints can be implemented in reality, and
- b) it is not possible to compare ECP 2.3 constraints results to previous ECP constraints results,

**can EirGrid please provide some sensitivity scenarios with pro-rata constraints?**

The published ECP-2.3 area reports follow the policy in place at the time of publication, which calls for the implementation of grandfathering of constraints<sup>3</sup>. We understand that the CRU has received requests from industry in relation to this matter, however, currently the CRU policy remains unchanged, and we have reflected this in our analysis. We have engaged with the CRU on this matter and will continue to do so should any changes on the current policy arise.

**1.8 We are seeing some staggering dispatch down estimates which are already taking account of SOEF v1.1 reinforcements. Are the results of these reports being fed back to the SOEF team?**

Yes - these results have been fed back and discussed with the SOEF team and several other teams within EirGrid. It's important to note that there are differences in the assumptions used for both studies, given their different objectives and purposes.

**1.9 How were DLRs modelled?**

Dynamic Line Ratings (DLR) have been applied to certain transmission lines throughout the network. DLR is an operational tool aimed at maximising electric power transmission when environmental conditions allow it. Within PLEXOS the DLR's are modelled with respect to wind availability within an area and can provide an increase of the line rating and overload rating at times of high wind.

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<sup>3</sup> <https://www.semcommittee.com/publications/sem-22-009-decision-paper-dispatch-redispatch-and-compensation-pursuant-regulation-eu>

### 1.10 How are Power Flow Controllers modelled?

Power Flow Controllers (PFC's) were not considered because following additional investigation, it was determined that the process of modelling PFC's in the PLEXOS software (DC power flow) environment has not been fully validated to reflect their technical performance.

### 1.11 Is there a risk with the PLEXOS software that it is not allocating curtailment to the PD wind units and instead its allocating it to constraint for the non-PD wind units - the results seem like the constraint for non-PD wind is carrying some of the dispatch quantities for the PD units? How would we check this assumption?

Curtailment is applied before constraints within the study sequence. Curtailment is applied pro-rata across both the priority and non-priority units. Following this the constraint study is run, this study has a post processing step and ensures that the constraint is applied first to the non-priority units within a subgroup/area. Then if the constraint is still not satisfied the priority units will also be dispatched down within the subgroup/area affected. There is also a post processing check to ensure that the constraints have been applied correctly. A flow chart outlining the study methodology is given in the ECP-2.3 Constraints Analysis Assumptions Document<sup>4</sup> (page 15).

### 1.12 Is resistance accounted for in the model?

Yes, seasonal ratings (summer, autumn & winter), resistance and reactance are all included within the PLEXOS model.

### 1.13 Do you keep the same random number seed in all runs of the model?

Yes, this is kept the same to ensure consistency for each model run.

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<sup>4</sup> <https://cms.eirgrid.ie/sites/default/files/publications/ECP-2.3%20Assumptions%20Document%20November%202023.pdf>