

# EPC 2.2 Constraints Forecast Report

## **Assumptions FAQ Document**

24<sup>th</sup> of August 2022



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## **ECP 2.2 Constraints Analysis FAQs**

The ECP 2.2 Constraints Analysis is carried out by the TSO (as mandated by CRU/20/060 decision on ECP 2) to forecast dispatch down levels for ECP 2.2 wind and solar projects. The purpose of the ECP 2.2 constraint forecast analysis is to provide ECP 2.2 applicants with information on potential constraints at their connection node. The constraints study has been designed to present best possible dispatch down information under various study scenarios in a transparent format. Hence, some relevant study assumptions within the constraints analysis are kept constant between the studies to have consistent, comparable results. The study results are not an assurance of future grid operations and are only valid for the assumptions included within the analysis.

As part of our industry engagement for the ECP 2.2 constraint forecast project we published a study assumptions document<sup>1</sup> on the 4th of July 2022. This approach was considered to be the most transparent way of communicating with industry on our initial assumptions which would also allow feedback from any interested parties. A total of 65 proposals/queries/comments were received to date as part of this process. The objective of this document is to publish a summary of our responses to the most frequently asked questions on the study assumptions.

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<sup>1</sup> <https://www.eirgridgroup.com/customer-and-industry/general-customer-information/ecp-2.2-constraints-repor/index.xml>

**Q1: Industry and customer engagement plans?**

EirGrid Response: EirGrid published an assumptions document in early July 2022 and allowed feedback over a two-week period. This provided an opportunity for all developers and industry representatives to give feedback and share their views. Previously as part of the ECP process, EirGrid held a small number of workshops at the request of industry groups. For the ECP 2.2 process it was considered to be more appropriate and transparent to seek comments from all of industry on the published assumptions document. EirGrid endeavours to publish the constraint forecast reports in October 2022. EirGrid is committed to compiling this feedback and publishing our responses, which are contained in this FAQ document.

**Q2: Is there a possibility of EirGrid publishing the reports in draft format first and allow a period for comments before being finalised?**

EirGrid Response: With the current timeline of the ECP 2.2 project, the request for a preview of draft reports would generate additional time pressure on the project based on the regulatory requirement for publication. However, EirGrid is open to investigating the best method of presenting draft results at system level prior to publishing reports and will endeavour to provide area-wide results before final publication for information purposes. A nodal level set of results will be published in Excel format on the ECP 2.2 webpage after publication of the constraint forecast report.

**Q3: What wind year is being used in ECP 2.2 constraint forecast studies? Can a recent wind year be used? Can an average wind year be used instead of high wind year?**

EirGrid Response: The ECP 2.2 project will utilise a recorded wind profile from the year 2020 for onshore wind. For offshore wind, a scaled onshore wind profile will be used, like the methodology utilised in ECP 2.1. The choice of using a high wind year is to capture the expected increase in efficiency due to improvements in wind turbine technology in the coming years. This assumption was established in previous ECP 1 and ECP 2.1 analysis.

**Q4: Can the wind, solar and demand profiles be aligned to the same calendar year?**

EirGrid Response: A 2020 wind profile has been selected for the ECP 2.2 constraints analysis, this profile was selected as 2020 was a high wind year and will best reflect the assumed efficiency improvements of future wind turbines. A 2020 solar profile has been selected to align with the 2020 wind profile. A 2020 demand profile was not selected as it was atypical due to the COVID-19 lockdowns, instead a 2019 demand profile will be used.

**Q5: How is grandfathering for article 12 considered? Can model results with and without grandfathering be included?**

EirGrid Response: After discussions with internal subject matter experts (SMEs) and the EirGrid constraints forecasting team, it has been decided to use the same approach used within ECP 2.1 as the implementation of Article 12<sup>2</sup> (EU regulation 2019/943) is yet to be finalised and will be determined through a separate workstream. The approach to be used within ECP 2.2 involves non-priority renewable generators (connected after 4th July 2019) being dispatched down ahead of priority generators for energy balancing reasons, during the oversupply dispatch down study. The distinction between non-priority and priority generators is not implemented in the curtailment and

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<sup>2</sup> <https://www.semcommittee.com/publications/sem-22-009-decision-paper-dispatch-redispatch-and-compensation-pursuant-regulation-eu>

constraint studies. In order to ensure consistent comparable results, the study assumptions on grandfathering are kept constant for all study scenarios and hence, the sensitivity requested is not included and considered out of scope for the project.

**Q6: Will Northern Ireland be included in the studies?**

EirGrid Response: EirGrid has produced this report for Ireland in response to a request from CRU<sup>3</sup>, we agree with stakeholder feedback that this could add value and SONI will endeavour to produce an NI report in early 2023.

**Q7: Will ECP 2.2 constraint forecast studies include a sensitivity with and without second north south interconnector?**

EirGrid Response: The second north south interconnector is expected to be completed by the end of 2025. Hence the current assumption of not including it in 2025 but including it in 2027 is considered valid and would not warrant a sensitivity.

**Q8: Would the binding constraints, total number of hours and levels of overloading be provided with the report?**

EirGrid Response: EirGrid will endeavour to provide a line and contingency binding list in the report to provide the appropriate level of detail.

**Q9: Is EirGrid changing the methodology on oversupply, curtailment, constraint and their sequencing used in constraint forecast?**

EirGrid Response: The ECP 2.2 constraint forecast study methodology is consistent with the previous iterations of the constraint forecasts (ECP 1 and ECP 2.1). A flow chart outlining the study methodology is given in the Initial Assumptions Document<sup>4</sup> (page 11). This involves an oversupply 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.

**Q10: How are the size of constraint groups decided and why did the ECP 2.1 constraint groups differ from the constraint groups used in the control room?**

EirGrid Response: The subgrouping approach in the constraint study is used to prevent unfair allocation of constraints due to modelling limitations. The starting point for the subgroups broadly reflects those currently used by the control room. The subgroup is then evolved according to the binding contingencies seen in the study results and after discussion with the SME's. The reason we do not change the constraint groups over different study years is to allow us to make like for like comparisons across the years. The final constraint groups may not reflect those implemented in the control centre, as these will evolve over time as the network develops.

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<sup>3</sup> <https://www.cru.ie/wp-content/uploads/2020/06/CRU20060-ECP-2-Decision.pdf>

<sup>4</sup> <https://www.eirgridgroup.com/customer-and-industry/general-customer-information/ecp-2.2-constraints-repor/index.xml>

**Q11: Is there the possibility of using legacy maintenance schedules averaged over multiple time periods to give a realistic outage expectation for modelling the maintenance? Could a larger number of maintenance outages be included over a shorter period? Also is there an outage plan included for conventional generation plants?**

EirGrid Response: The list of representative maintenance outages is currently being considered within the outage planning team and a review of the previous methodology is being undertaken. Any possible improvement in the transmission maintenance representation will be included in the study. Conventional generation is modelled similar to the Shaping Our Electricity Future (SOEF) studies with a Forced Outage Probability (FOP) which is a 5-year average of forced outages for each generator and no further outages are considered for the conventional generation.

**Q12: Will the breakdown of the maintenance constraint be continued in ECP 2.2 as it was in previous ECPs? Can this be provided for all scenarios?**

EirGrid Response: This represents a time-intensive process in formulating, executing, and processing maintenance sensitivity studies for each of the study cases. Hence, like ECP 2.1, a representative set of studies will be accommodated.

**Q13: Will the new Shaping Our Electricity Future (SOEF) V1.1 reinforcements be included in the Future Grid scenarios? Could it possibly be added as an addendum to the reports once the next iteration of SOEF is known?**

EirGrid Response: The SOEF 1.1 assumptions are still evolving and will not be finalised within the timeline for the ECP 2.2 process. Therefore, the ECP 2.2 constraint forecast won't be able to capture the reinforcement assumptions of SOEF 1.1 and will instead utilize the SOEF 1 assumptions due to our data freeze dates. The SOEF 1.1 assumptions may be considered in the next iteration of the constraint forecast reports.

**Q14: Will Dynamic Line Rating (DLR) and Power Flow Controllers (PFC's) be included in the constraint studies? Can EirGrid clarify how they are being modelled?**

EirGrid Response: The PFC's and DLR projects are part of the SOEF roadmap<sup>5</sup> which feeds into the Future Grid studies. However, as a part of this project, the Plexos model includes DLR's not PFC's. The DLR's are modelled with respect to wind availability and provides a maximum additional 10% capacity over the rating and overload rating of the line. The rating varies with the wind speed. The PFC's are not considered because following additional investigation, it was determined that the process of modelling the PFC's in the Plexos software (DC power flow) environment has not been fully tested to reflect their technical performance.

**Q15: Will the assumed ratings of the new reinforcements be shared in the reports?**

EirGrid Response: EirGrid endeavour to provide transparency in the ECP 2.2 constraint analysis project. The list of these lines and their ratings are expected to be provided after the publication of the ECP 2.2 constraint area reports. The ratings of the existing lines are obtained from the data source that feeds into the control room. Any future line ratings are gathered from the Ten-Year Transmission Forecast Statement (TYTFS) and Transmission Development Plan (TDP).

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<sup>5</sup> <https://www.eirgridgroup.com/site-files/library/EirGrid/Full-Technical-Report-on-Shaping-Our-Electricity-Future.pdf>

**Q16: Will various scenarios for offshore be considered?**

EirGrid Response: The core scenarios in the ECP 2.2 constraint forecast are formulated within the scope of the studies keeping in line with the previous constraint forecast studies. Additional sensitivities are included with respect to the offshore scenarios which are adhering to the suggestions from the EirGrid offshore team and the CRU. We believe the scenarios that are set out in the initial assumptions document (published online) cover a reasonable number of offshore sensitivities.

**Q17: What will be included in terms of longer duration energy storage?**

EirGrid Response: The details on storage (including long duration storage) considered in the study will be included in the report along with the associated modelling and operational approach. This battery data has been obtained from the Customer and Connections team and incorporates the ECP 2.1 and 2.2 battery projects. However, the scope of this project does not include reporting on the detail of dispatching of storage in each study.

**Q18: Will the operational constraint rules for each study be made clear and stated within the reports?**

EirGrid Response: This is included in the initial assumptions document published at the beginning of July 2022. A more detailed section on the operational constraints used in the analysis will be included in the final area reports.

**Q19: What sources are being used to gather demand information?**

EirGrid Response: The Total Energy Requirement (TER) is obtained from the 2022 - 2031 Generation Capacity Statement (GCS). The nodal load distribution uses demand forecast from the 2021 Ten-Year Transmission Forecast Statement (TYTFS).

**Q20: Will the controllability status of generators be reviewed for ECP 2.2?**

EirGrid Response: The ECP 2.2 constraint forecast uses information provided by the Customer and Connections team to model generators. The information on generator controllability is gathered as part of this process.

**Q21: Will lapsed offers for new generators be removed from the source data?**

EirGrid Response: This list of generators is supplied by the Customer and Connections team and any updates up to the data freeze date will be captured.

**Q22: Will the assigned priority level (Article 12) for individual generators be reviewed for ECP 2.2?**

EirGrid Response: This has been reviewed by the appropriate team within EirGrid based on the connection date as the priority generators are connected prior to 4<sup>th</sup> July 2019. This information will be reflected in the model inputs.

**Q23: Will the modelling of batteries be reviewed? In particular, if the battery is only providing frequency support services?**

EirGrid Response: The modelling of batteries has been reviewed and is currently being finalised, the assumptions will be fully published in the ECP 2.2 constraints analysis area reports. We are currently

planning on using shorter storage duration batteries to provide reserve (POR, SOR, TOR1 and TOR2) and the longer storage duration batteries will be used for energy arbitrage. We have limited the batteries to 1 cycle per day and have assumed a round trip efficiency of 80%.

**Q24: Could CO2 emissions linked to dispatch down be included in the constraint analysis?**

EirGrid Response: This proposal is beyond the scope of the ECP 2.2 constraint forecast's objective.

**Q25: Where is the data for Overload Capacity allowed as emergency rating being pulled from?**

EirGrid Response: The overload capacities of the line are collected from information used in the National Control Centre (NCC). The ratings of a line are dependent on the line and connecting components together, hence, at times the limiting component may not be the line itself and may not have overload capabilities.

**Q26: Which generators are included in the offshore scenario? Will EirGrid be engaging with Phase One Projects on the Offshore Wind Profiles?**

EirGrid Response: The offshore scenario is built on the 5 GW target for 2030<sup>6</sup> and guided by the Phase 1 offshore project applications. The updated government offshore target is not currently considered but a final decision will be made after discussing with the relevant SME's. EirGrid have openly asked for feedback from the Phase 1 offshore projects on the offshore wind profiles. We received limited responses, which were not permitted to be used to model wind profiles for the project. Therefore, we are moving forward with our current assumption on this, which is similar to ECP 2.1.

**Q27: How are offshore wind profiles determined in ECP 2.2?**

EirGrid Response: The offshore wind profiles are currently being modelled and tested. The constraint forecast area reports will outline the process involved. EirGrid intends to publish all the input renewable profiles after the publication of the area reports.

**Q28: How are Site Related Connection Equipment (SRCE) based generators considered? How is the timeframe for it determined? Can any change in the SRCE completion date be changed by customers?**

EirGrid Response: The shallow works/SRCE's based generation list is provided by the relevant team in EirGrid and is usually communicated to the respective customer. If any change in expected completion date is proposed, the customer needs to update the SRCE team in EirGrid, so this may be included in the constraint forecast project.

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<sup>6</sup> Note that this was recently increased by 2 GW and is associated with 2 GW of green hydrogen production. This is after the data freeze and is therefore outside of the scope of the ECP 2.2 study