

**Consultation on Changes to
Over-Install Policy for Single Technology &
Hybrid Co-Located Technology.**



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1 Introduction

To achieve renewable policy targets, such as those set out in the Climate Change Act (Northern Ireland) 2022¹, in the most economical and efficient manner, the SOs understand the need to make best use of existing assets on the system today. A significant number of stakeholders are keen to make use of existing or planned connection assets by augmenting the capacity factor of their generation sites by installing additional generation behind the same connection point without increasing their Maximum Export Capacity (“MEC”). This is referred to as an over-install project, that allows for projects to over-install generation capacity, but where a self-imposed cap is applied to the output, so that the contracted MEC at the point of connection is not exceeded. Currently, the over-install policy has a limit of 120% and is set out in the Alternative Connection Application and Offer Process (“ACAOP”) Decision Paper of May 2016². Given the evolving nature of technology combinations in Northern Ireland, the SOs believe it is timely to conduct a review of the current policy, to examine the potential to remove the limit for both Single and Hybrid Co-Located technology sites.

2 Purpose of this consultation

The purpose of this consultation is for SONI and the NIE Networks to gain holistic stakeholders’ perspectives and opinions on proposals to remove the existing 120% over install limit at a single connection point.

3 Existing Over Installation Policy

3.1 Northern Ireland – Application Process

The ACAOP Decision Paper of May 2016 outlined that SONI and NIE Networks would accept applications for 120% over-install projects and hybrid projects.

The ACAOP Decision Paper sets out the following application process:

- Submit a connection application or modification application to NIE Networks or SONI as appropriate, including the appropriate connection application fee.
- Provide all technical information required by NIE Networks and SONI to assess the impact of the project on the system.
- Provide all information required by NIE Networks and SONI to manage the project operationally.
- Not exceed a total installed generation capacity of more than 120% of the MEC. For example, a 10 MW MEC can have up to 12 MW of generation installed; and
- Ensure that the MEC is not exceeded, and install an appropriate export limiting control system, with suitable backup G59³ Reverse Power protection.

¹ <https://www.legislation.gov.uk/nia/2022/31/contents/enacted>

² [https://www.nienetworks.co.uk/documents/generation/alternative-connection-application-and-offer-p-\(1\).aspx](https://www.nienetworks.co.uk/documents/generation/alternative-connection-application-and-offer-p-(1).aspx)

³ Standard has been updated and the new relevant standard is G100/NI

- In all cases, applications for over-install will be considered a “material” change and the whole installation will be subject to the latest Grid Code and Distribution Code for the over-installation⁴.

NIE Networks applies the rule in the following way:

- Total Installed Capacity can be no greater than 120% of MEC.
- The Total Installed Capacity (“TIC”) is the name plate rating of a generator (or sum of generators) that can be simultaneously connected in parallel with the electricity network.
- If the generator has undergone “hard derating” i.e., physical changes have been made to the generator to reduce the capacity, the reduced rating shall be taken as the TIC.
- If a generator is limiting output through software or control mechanisms and no physical change has been made to the generator i.e., “soft derating”, the name plate rating remains as the TIC.
- A single physical generator cannot split its capacity between export and non-export elements of a connection.
- The over-install rule is applied in the same way for both Hybrid sites and Single technology sites connecting to the distribution network.

To date there has not been transmission connected over install projects in Northern Ireland under the current over-install policy.

4 Over-Installation Technical Assessment

To identify the potential benefits and implications of removing the Over-Install (“OI”) limit, the TSOs in Northern Ireland and Ireland conducted a set of all-Island technical studies. The study years for this analysis were 2024, 2026 and 2030. In total four main scenarios were selected, which align with the predicted generation build out rate to 2030. The main area of focus in the studies was the evaluation of Total Dispatch Down (“TDD”) which refers to the total reduction in available solar and wind generation i.e., the sum of over-supply⁵, curtailment and constraint. It should be noted that assumptions have been made for these scenarios and as such the outcomes of the studies may be impacted in the future, depending on the level of generation, demand, interconnection, network build out, market rules and other system operational limits. A high-level description of the four study scenarios included within the analysis is presented below.

1. The first OI scenario is the Base Case ‘120% wind and solar’ over installation - this is reflective of the current OI policy in place and allows wind and solar units to over-install by 20% above their MEC. For this scenario the over installation was located at the lowest dispatched down network areas for wind and solar units on the island.
2. The second OI scenario focusses on Single technology ‘150% wind and 170% solar’ over installation – this scenario studies over installation of wind units by 150% and solar units

⁴ https://www.soni.ltd.uk/media/d_Application-of-Connection-Network-Codes-to-existing-Users_SONI.pdf

⁵ The reduction of available renewable generation for over-supply reasons is necessary when the total available generation exceeds system demand plus interconnector export flows.

by 170% of their MEC. This scenario also assumes the over installed generation is located at the lowest total dispatch down wind and solar units.

3. The third scenario is a geographically Hybrid Co-Located scenario – this scenario consists of 25% of existing wind and solar plants adding co-located batteries. These batteries are located at the highest dispatch down wind and solar plants and are sized at 100% of the respective wind/solar unit. In this scenario the batteries can only be charged from the co-located wind/solar unit. This scenario also includes 20% of existing wind adding co-located solar generation located at the lowest dispatch-down wind plants and sized at 100% of the respective wind plant.
4. The fourth scenario is the geographically Hybrid Co-Located Grid scenario – this scenario is the same as the previous hybrid scenario, however, the co-located batteries can be charged from the grid as well as the co-located renewable generation.
5. Two additional studies were also conducted in 2030, examining the impact of locating over-install projects in area of high and low dispatch down.

Based on the outcomes of the technical assessment, the SOs are of the view that removing the existing 120% limit will increase the current forecast levels of TDD in the case of Single technology over installing. However, the expected increase is minimal in comparison to current forecast levels. In the case of Hybrid Co-Located Grid scenarios, the level of TDD forecast was found to reduce slightly when compared to the current forecast levels in every study year. This is to be expected due to the negative correlation of the technology combinations.

In all study scenarios, there was a positive impact on the total RES-E on the system. It is the view of the SOs that removing the limitation for Single and Hybrid Co-Located technologies may benefit the Transmission and Distribution systems by maximising the efficient use of existing assets, assuming strict adherence to contracted MEC in the connection agreements at the connection point and under no circumstances shall contracted MEC be exceeded.

However, stakeholders should note that, while the SOs support removing the existing limit of 120%, there is currently a limitation of what is possible due to market and contractual factors. As a result, in order to move forward with the removal of the limit, the SOs have developed a proposal for Single technology and Hybrid Co-Located technology sites.

It should also be noted that the interactions of the proposal to remove the 120% over install limit and the SEMC decision, SEM-22-009⁶ on Dispatch, Redispatch and Compensation Pursuant to Regulation (EU) 2019/943 and the implementation of this decision, which will involve an update to SEM-11-062⁷ to reflect the new requirements introduced by the Regulation (EU) 2019/943 in relation to priority dispatch, have not been considered as part of this process. It will also involve

⁶ <https://www.semcommittee.com/publications/sem-22-009-decision-paper-dispatch-redispatch-and-compensation-pursuant-regulation-eu>

⁷ <https://www.semcommittee.com/publication/sem-11-062-principles-dispatch-and-design-market-schedule-trading-and-settlement-code>

an update to SEM-13-010⁸ regarding compensation for curtailment to reflect the new requirements introduced by the Regulation. As a decision is yet to be made in respect of compensation in relation to supports under Article 13 (7) of the Clean Energy Package, the potential impact of this future decision on costs to consumers has not been considered. Neither has any potential interactions between removing the 120% over install limit and other future renewable energy support schemes been considered. Additionally, any proposal or recommendation as part of this consultation paper is made with the assumption that any interactions between the future outcomes of the above mentioned regulatory and policy decisions and the removal of the over install limit will not have any material negative impact on consumers.

5 Proposal for future Policy

5.1 Single Technology

In the case of Single technology sites, the SOs are proposing to remove the current 120% over-install limit associated with a single unit of the same technology. This will allow for developers/projects to determine the appropriate level of over-install depending on site specifics. If the proposal in this consultation is accepted and the SOs issue a decision paper to remove the existing 120% over-install limit (for applications received from a date to be set in the future):

- For Single technology sites seeking to connect to the Transmission System, the current 120% limit for over-install would be removed once any remaining areas requiring possible change are adequately addressed (See Appendix 1). SONI would then follow the relevant offer process.
- For Single technology sites seeking to connect to the Distribution System, the current 120% limit for over-install would be removed and NIE Networks would follow the relevant offer process. This is not dependent on the outcome of any other consultation or change process.

Modifications to Single technology sites are expected to only require minor modifications to metering and signalling on the customer premises. Appendix 1 – Areas Requiring Possible Change gives a high-level overview of areas that may require potential change. Any new requirements will apply from the date they are approved.

5.2 Hybrid Co-Located Technology Sites

The SOs are proposing to remove the limitation for Hybrid Co-Located technology combinations to over-install above 120%. If the proposal in this consultation is accepted and the SOs issue a decision paper to remove the existing 120% over install limit (for applications received from a date to be set in the future):

- For Hybrid Co-Located sites seeking to connect to the Transmission System, the current 120% limit for over install would be removed once remaining areas requiring possible change are adequately addressed (See Appendix 1). SONI would then follow the relevant offer process. In addition to the items stated in Appendix 1, there are further obstacles that

⁸ <https://www.semcommittee.com/publication/sem-13-010-final-decision-treatment-curtailment-tie-break-situations>

need to be solved to allow for the uptake of grid scale Hybrid Co-Located sites as explained below.

- For Hybrid Co-Located sites seeking to connect to the Distribution System, the current 120% limit for over-install would be removed and NIE Networks would follow the relevant offer process. This is not dependent on the outcome of any other consultation or change process. However, as stated below, there are additional obstacles that need to be solved to allow for the uptake of grid scale Hybrid Co-Located sites.

It should be noted that there are challenges that need to be resolved to facilitate the uptake of grid scale Hybrid Co-Located sites. Currently, units registered in the SEM must specify an MEC for each unit type, and the individual units' MECs must summate to the overall MEC at the connection point. The sharing of MEC behind a single connection point cannot currently be facilitated in the market or TSO scheduling and dispatch systems. As such, generation units that wish to over-install with a different technology will not be able to register in the market without increasing the MEC at the connection point. To address this issue and allow for greater utilisation of MEC at the connection point for Hybrid Co-Located technology sites, the SOs will be undertaking a separate technical assessment of options for sharing of MEC behind a single connection point. Figure 1 below outlines what is currently possible within market systems for Hybrid sites seeking to over install, whereby MEC must be assigned at a unit level.

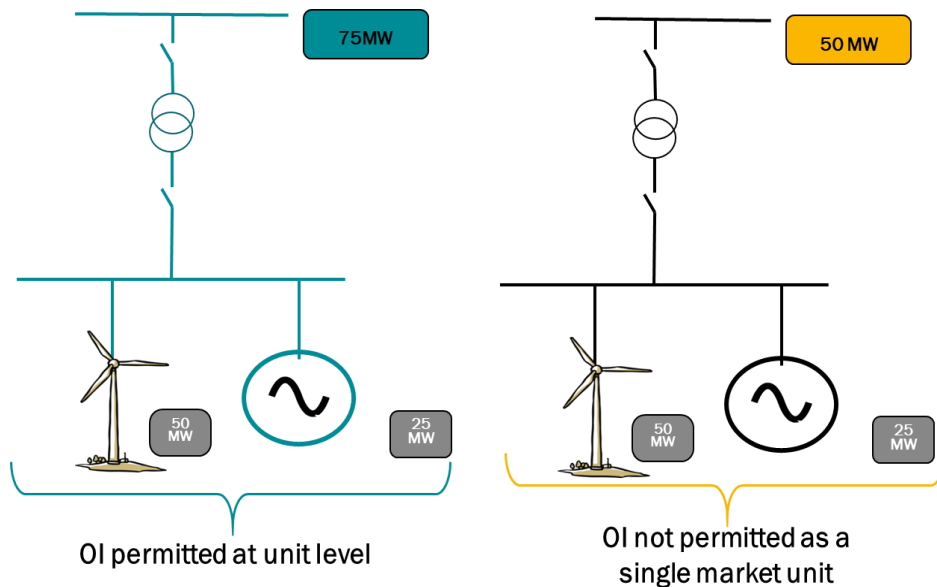


Figure 1 – Diagram to show what is currently possible within market system for Hybrid Co-located Sites seeking to Over-Install

6 Consultation Questions

On evaluation of the policy review and outcomes of the technical assessment, the SOs are proposing to remove the current 120% limit for over-install projects, noting that outstanding issues with Hybrid sites Co-Located that are required to register in the SEM remain.

6.1 Stakeholder Questions

Question 1: Do you believe that the above proposal, to remove the current 120% over-install limit, is a suitable approach relating to:

- Single Technology Sites,
- Non- SEM registered Hybrid Co-Located Sites,
- Market registered Hybrid Co-Located Sites.

Question 2: Do you have any additional suggestions for the SOs to consider prior to removal of the over-install limit?

Question 3: Where stakeholders disagree with any of the above approaches, we ask that you provide reasons and an alternative approach for consideration.

7 Consultation Feedback

We welcome feedback on the questions posed within this paper. Responses should be submitted to connectiondesign@nienetworks.co.uk and via the SONI [consultation portal](#) before the 5pm Friday the 21st of July 2023. Respondents to the consultation are asked to only respond regarding perspectives on the proposal to remove the 120% over-install limit, as set out in the ACAOP. Other commercial, regulatory and market factors relating to Hybrid Co-Located technology integration will be considered in due course. Where possible, answers to the questions should include justification and explanation. It would be helpful if responses are not confidential. If you require your response to remain confidential, you should clearly state this in your response.

Appendix 1 – Areas Requiring Possible Change

The below items highlight areas that may need to be addressed by SONI to ensure future requirements are adequate to facilitate over-install connections at grid scale. For NIE networks, the completion of the below items will not be a prerequisite for issuing terms to connect to the Distribution system for over-install sites.

Requirement	Areas requiring possible change
Grid Code	A review of the Grid Code by the TSO will be undertaken. Should modification be required, this will be subject to the standard Grid Code modification process separate to this consultation. Any modification would be subject to UR approval.
Limiting the Output	In order to ensure the output of the plant does not breach the MEC at the connection point, engagement with industry on the options for limiting the output may be needed. This may require the installation of a reverse power relay, or tripping of the generator if MEC is breached at the connection point.
Reactive Power Contribution	An increase in the installed capacity of a site will result in a larger internal collector network. In scenarios of zero wind/solar at night this may lead to exacerbating high voltages. Engagement with industry to define reactive power contribution from OI sites will be required to ensure system security is not impacted.
Signal Requirement & Output Monitoring	For over-install projects, there may be a need to introduce new signal requirements that allow for monitoring the output to ensure MEC at the connection point is not exceeded.
Metering	Depending on the project configuration, the meter export arrangements and subsidy schemes in place, metering of the units may need modification
Scheduling & Dispatch	A review of data feeds will be required to ensure the data is referencing MEC and not registered capacity, and units cannot over declare above contract MEC.
Trading and Settlement Code	The TSC does not reference over-install projects specifically, however, a review of defined terms is required to ensure the changes are compliant. This will also be subject to SEMC approval.