Northern Ireland Electricity Networks

CLUSTER SUBSTATIONS UPDATE CONSULTATION

NIE Networks

23rd October 2024

CONTENTS

EXECUTIVE SUMMARY

In the previous decades, from the early 2000s, innovative thinking and industry collaboration enabled the high levels of renewable generation connected in Northern Ireland. This resulted in a major success with the early achievement of the 2020 40% target. The Cluster Methodology, introduced in 2012 for the connection of generation sites within a defined area to a 'cluster' substation, played a pivotal role in achieving the 40% renewables target, facilitating the connection of over a third of all renewable generation currently connected in Northern Ireland.

However, renewable statistics for Northern Ireland highlight that in the years since 2020, there has been little progress made in advancing the levels of electricity consumption from renewable sources. NIE Networks notes that for the 12 month period July 2023 to June 2024[1], this figure was 45.8%, worryingly only marginally above the 44% met in 2020.

The current figure leaves just over 5 years to find an additional 35% of electricity consumption from renewable generation to meet the 80% target set out in the Climate Change Act (NI) 2022. This signals that urgency is required and although operating the system with high levels of renewable generation creates separate challenges, it is necessary that high volumes of renewable generation connections are facilitated. This is particularly pertinent, considering that the new Renewable Energy Support Scheme Auction is expected by early 2026, which will likely require developers to have a grid connection offer to participate. It is clear that a different approach is required than that currently employed.

As increased levels of generation and demand are connected to the distribution network, the available capacity reduces. This leads to an increase in the likelihood that a connection will require significant network reinforcement, with associated costs. The timescales associated with delivering infrastructure and associated supply chains suggest that urgent approvals are required if infrastructure is to be in place in time for 2030 targets. The significant costs, even with a Renewable Energy Support Scheme, may act as a barrier for customers to connect renewable generation and LCTs, putting the commitments of renewable electricity generation covering 80% of electricity consumption in the Climate Change Act at risk.

The purpose of this consultation paper is to present proposals to amend NIE Networks' cluster connection charging methodology, as set out in NIE Networks' Statement of Charges for Connection to the Northern Ireland Electricity Networks distribution system[2] (the 'SoCC') Appendix 2. Ultimately it is NIE Networks' view, that the existing network and current charging arrangements do not provide the capability to connect the volume of renewables required to meet 2030 targets in time without a level of change or investment. While these consultation proposals alone will not enable the 2030 targets to be met, they aim to be a step towards addressing the stagnation that currently persists.

This consultation seeks views on whether NIE Networks' should:

1. Amend the charging arrangements for assets needed to increase cluster substation capacity (e.g. second transformer), to align with the charging arrangements in place for the original cost of the cluster substation. Currently the costs of the second transformer are wholly chargeable to the customer that triggers the need and this is limiting the further development of existing clusters.

2. For new cluster sites, expand the scope of the generation that can be considered when designating a cluster i.e. to include generation that is at early stage planning, with an appropriate weighting factor applied, and to look at including two transformers from designation stage.

3. At what stage NIE Networks should seek approval from the UR for costs associated with developing existing and new cluster substations.

[1] https://www.economy-ni.gov.uk/articles/electricity-consumption-and-renewable-generation-statistics

[2] Statement of Charges for Connection (nienetworks.co.uk) https://www.nienetworks.co.uk/documents/connections/statement-of-connection-charges-august-2024-v1-11.aspx

NEXT STEPS AND HOW TO RESPOND

Next Steps

NIE Networks is keen to ensure that all stakeholders have every possible opportunity to input into these proposed changes. The responses to this consultation will be analysed by NIE Networks. If proposals are deemed successful there will be a formal submission of an updated version of the SoCC to the Utility Regulator (UR) for approval.

Stakeholder Engagement Zoom Event

NIE Networks invites interested parties to attend a Zoom event where a short presentation will take place, followed by the opportunity to ask questions.

This Zoom event will take place on the 11th of November 2024 at 11:30am. If you wish to attend, please mail connectiondesign@nienetworks.co.uk for joining details. Participants are encouraged to submit questions ahead of the event by sending them to connectiondesign@nienetworks.co.uk.

How to Respond

NIE Networks invites interested parties to respond to this consultation. Responses should be sent electronically to connectiondesign@nienetworks.co.uk by 5pm on Friday 6th December 2024.

NIE Networks will handle all information in accordance with the NIE Networks Privacy Statement (http://www.nienetworks.co.uk/privacy).

Please note that it is intended to publish all responses to this paper on the NIE Networks website (www.nienetworks.co.uk). Respondents who wish that their response remains confidential should highlight this when submitting their response.

NIE Networks may share responses with UR. Respondents should be aware that as UR is a public body and non-ministerial government department, the UR is required to comply with the Freedom of Information Act (FOIA)[3].

[3] The effect of FOIA may be that information contained in consultation responses that is shared with UR is required to be put into the public domain. Hence it is possible that all responses made to this consultation that may be shared with UR will be discoverable under FOIA, even if respondents ask for the responses to be treated as confidential. It is therefore important that respondents take account of this when submitting their response.

1. INTRODUCTION

1.1 Purpose and Scope

The purpose of this paper is to present analysis and proposals aimed at creating significant additional distribution network capacity prior to the 2030 renewable energy Climate Change Act target. There is a specific focus on addressing the stagnation of renewable generation progress, the challenges associated with the level of saturation on the network, and the challenges in creating increased network capacity.

The paper will include background on the existing cluster substations and the methodology to connect to them. There will be proposals made to update the cluster methodology designation process and review charging arrangements for cluster transformers beyond the first transformer.

1.2 Background

The NIE Networks' Statement of Charges[4] for Connection to the Northern Ireland Electricity Networks distribution system (the 'SoCC') sets out a methodology, in Appendix 2, for the connection of sites within a defined area to a cluster substation (the 'Cluster methodology'). The Cluster methodology has been a major success in enabling the high levels of renewable generation connected to and committed to connect in Northern Ireland, and a major contributor towards the early achievement of the 2020 40% renewables target.

The original purpose of the Cluster methodology was to improve access to the network for remote renewable generation, by extending the 110 kV transmission system, in the form of a 110/33 kV substation (referred to as a cluster substation), to a point more central to these groups of renewable generation projects. This enabled a more efficient connection arrangement with a reduced environmental impact by decreasing the aggregated length of the overhead network required.

Six clusters were commissioned between 2012 and 2021, enabling over a third of all renewables connected in Northern Ireland to be energised. There are a further two clusters in development, which will enable 180MVA of renewable generation capacity to connect. The cluster methodology has provided significant capacity, with additional technical and environmental benefits for the connection of renewable generation in Northern Ireland.

In the light of future targets, such as those included in the new Northern Ireland Energy Strategy – The Path to Net Zero Energy and the Climate Change Act, plus the existing commitment for the UK to bring all greenhouse gas emissions to net zero by 2050, it is appropriate that methods of connecting large scale renewable generation are reviewed so that assets are utilised efficiently to facilitate the delivery of these targets.

The Northern Ireland Energy Strategy "Path to Net Zero Energy" was published in December 2021 setting a new renewable energy target of 70%, which has subsequently been reviewed and increased to 80% by the year 2030 as part of the Climate Change Act. In parallel, NIE Networks and System Operator for Northern Ireland (SONI) collaborated to develop the Shaping our Energy Future (SOEF)[5] renewable generation forecast to reflect the 80% target. The SOEF forecast outlines an additional 2.23 GW of renewable generation required to connect by 2030, of which 77MW is micro-generation, 300MW is small-scale generation and 1,850MW is large-scale generation, to fulfil the renewable generation capacity required to meet 80% renewables.

Of the future onshore, distribution-connected generation, a significant portion is forecasted to be connected through cluster substations.

[4] https://www.nienetworks.co.uk/statementofcharges

[5] https://www.soni.ltd.uk/the-grid/shaping-our-electricity-f/

1.3 Current Generator and Cluster Charging Methodology

According to the SoCC, NIE Networks has adopted two different approaches for connecting Authorised Generators to the distribution system:

1. Connection of the generator(s) on an individual basis – The costs of the Connection Assets[6] (inclusive of new assets and Reinforcement at the Point of Connection (POC) voltage or one voltage level above) are fully chargeable to the customer. With these connections being commercial connections, they do not receive any rebates in the event a future customer utilises the Connection Assets for their connection. Generators connecting at 33kV, outside of Cluster substations, rarely result in chargeable reinforcement costs at the voltage level above (110kV) due to the "ignoring all other flows" rule, that comes from the definition of Connection Asset within NIE Networks' SoCC, which states the following: "In the case of a customer connecting at 33kV, those assets required to reinforce the Transmission System at 110kV which are installed to enable the transfer of the customer's Maximum Export Capacity or Maximum Import Capacity, disregarding electricity flows caused by any other customer". However in the cases where there is no capacity available at 110kV, the customer is likely to be refused connection, unless there are approved projects to increase capacity.

2. Connection of the generator(s) through a 110kV/33kV Cluster Substation – The charge for a generator to connect to a Cluster Substation is based on the proportion of the cost of the Cluster (based on Required Capacity) plus the full cost of their unique Connection Assets. Any future connections to the Cluster will also be charged a proportion of the cost of the Shared Assets up to the capacity of the designated cluster, beyond this the customer who causes the rating of any infrastructure to be breached pays the full cost of the reinforcement works to facilitate their connection. The "ignoring all other flows" rule outlined above does not apply to cluster substations.

At present a threshold of 56 MVA is used as the minimum combined weighted Maximum Export Capacity (MEC) needed to justify a cluster. In cluster designation, weighting factors are applied to the generator MEC based on which stage of the planning process it is in. These weightings can be found in appendix 2 of the SoCC, and are displayed in Section 4 of this paper.

As above, Appendix 2 of the SoCC sets out the cluster charging methodology whereby the costs associated with the construction of a new cluster substation are in effect socialised initially and then recouped as the capacity of the designated cluster (i.e. normally the rating of the first 110/33kV transformer) is utilised through new customers connecting into it, until the full cost has been recovered. In the case of adding a further 110/33kV transformer or additional transmission infrastructure at an existing cluster, the customer that triggers the additional transmission works i.e. the need for a second transformer, is responsible for the full cost under the current cluster methodology and therefore this cost would not currently be socialised. To date, NIE Networks has seen several connection offers not accepted due to the customer deeming the project unviable due to the cost of the second transformer along with the long lead times to connect.

The method of connecting generators using the cluster methodology nonetheless highlights the precedent and benefit of investing ahead of need for elements of connection costs. More recently, in work with DfE through various working groups and in the engagement regarding the proposed Contracts for Difference (CfD) mechanism, NIE Networks have been looking at potential methods to invest in the electricity network now to facilitate the expected levels of renewable generation. There are two key aspects to this:

1. Designation of Clusters: Amending existing cluster designation weightings to take account of projects earlier (i.e. in pre planning) and consider two transformers from the outset

2. Funding Existing Cluster Extension works: Amending wording within the SoCC to allow for further cluster transformers to be funded differently

This is explored further in the following sections.

[6] Connection Asset is defined by NIE Networks as those assets required to connect the customer's assets to the Distribution System, including, as appropriate, civil works, electrical lines, electrical plant, meters, telemetry and data processing equipment; those assets required to reinforce the Distribution System which are at the connection voltage level and one voltage level above; and in the case of a customer connecting at 33kV, those assets required to reinforce the Transmission System at 110kV which are installed to enable the transfer of the customer's Maximum Export Capacity or Maximum Import Capacity, disregarding electricity flows caused by any other customer.

2. JUSTIFICATION

This section sets out the reasoning for the proposals.

2.1 Timelines

The current developer-led approach was effective in enabling NI to meet the 2020 RES-E targets. However, at that time the availability of network capacity was not so scarce, and lead times for equipment were not as extensive. With much of the residual network capacity used to reach 2020 targets, it is becoming more expensive for generators to connect as they drive the need for costly network reinforcement. Therefore, the need for network reinforcement (and thus the connection cost) is becoming both more prominent and prohibitive.

While the development of clusters takes a pragmatic approach to developing distribution and transmission infrastructure ahead of definite need, the expansion of this methodology should be considered in the context of the need for timely grid connection and reinforcement. With just over 5 years remaining to connect 1.85GW of large-scale renewables there is a need for more extensive future plans e.g. planning cluster substations at distribution or transmission level. Section 3 of this paper makes proposals towards this plan, though does so in the context of needing wider consideration.

1,850MW of large-scale generation needs to be connected in order to fulfil the renewable generation capacity required to meet 80% renewables. From NIE Networks' current system analysis, coupled with recent experiences in renewable connections, it is clear the existing network would not have the capacity to connect this volume of renewables without investment. As outlined in Section 1.3, investment in the distribution network for renewable connections is currently mainly driven by applicants themselves, through either the current cluster methodology or through direct connection to the distribution network.

The introduction of the Renewable Energy Support Scheme[7] (RESS) is also an important factor to consider as we move towards 2030. The scheme is designed to encourage renewable electricity developers to invest in Northern Ireland and will mean increased renewable generation sites applying to connect here, again reinforcing the requirement to develop additional network capacity to enable their connection. The current high level design of the scheme published in April 2024 outlines some key dates, summarised below:

- First auction year ~2025/26, delivery year ~2027, volume 500MW
- Second auction year ~2027, delivery year ~2029, volume 1250MW
- Proposed long stop date of auctions 1 year after delivery year.

This translates to a requirement to facilitate and connect 500MW of renewable generation by 2028 and connect a further 1250MW of renewable generation by 2030.

The urgency is exacerbated given the context of developing new network infrastructure in the world today. Lead times for materials, intricacies of gathering access rights, and lengthy planning timelines for the construction of new greenfield infrastructure mean that timelines for the build of a new cluster designated now could extend beyond 2030. For instance, lead times for 110/33kV transformers currently sit at 3 years. Therefore, proposals made in Section 3 focus on developing existing network infrastructure, since they do not require the same level of access rights, planning or new materials that a full newly built substation would require.

Timeline analysis, outlined below, illustrates that the creation of additional capacity at cluster substations, in line with 2030 targets and the associated route-to-market scheme, can only be facilitated through an accelerated approach.

With these dates and timelines in mind, the following figures (figures 1 - 2) aim to illustrate the tight timelines against which the context of this consultation document is set. The figures explore two outcomes:

1. Do Nothing scenario – status quo remains and the proposals made in this consultation are rejected. Under this scenario, there is no new cluster designation under existing rules based on NIE Networks' analysis of generation planning data. There will be a period of 'dead' time required for sufficient levels of generation to trigger the current cluster designation rules, resulting in the establishment of new cluster substations being well beyond the 2030 time horizon. There is also time required to complete Section S applications, which are processes required between NIE Networks and SONI as set out in the Transmission Interface Arrangements (TIA)[8], and the subsequent UR approval process for both pre-construction and construction. Time is also required for new cluster planning, in this scenario it is assumed that there is no further development at existing cluster substations due to insufficient economic basis for individual generators to pay for the totality of the additional infrastructure required (i.e. second transformer). This scenario results in a reduced likelihood of connecting large-scale renewable generation to the distribution network.

[7] https://www.economy-ni.gov.uk/publications/design-considerations-renewable-electricity-support-scheme-northern-ireland-response

[8] Transmission Interface Arrangements (soni.ltd.uk)

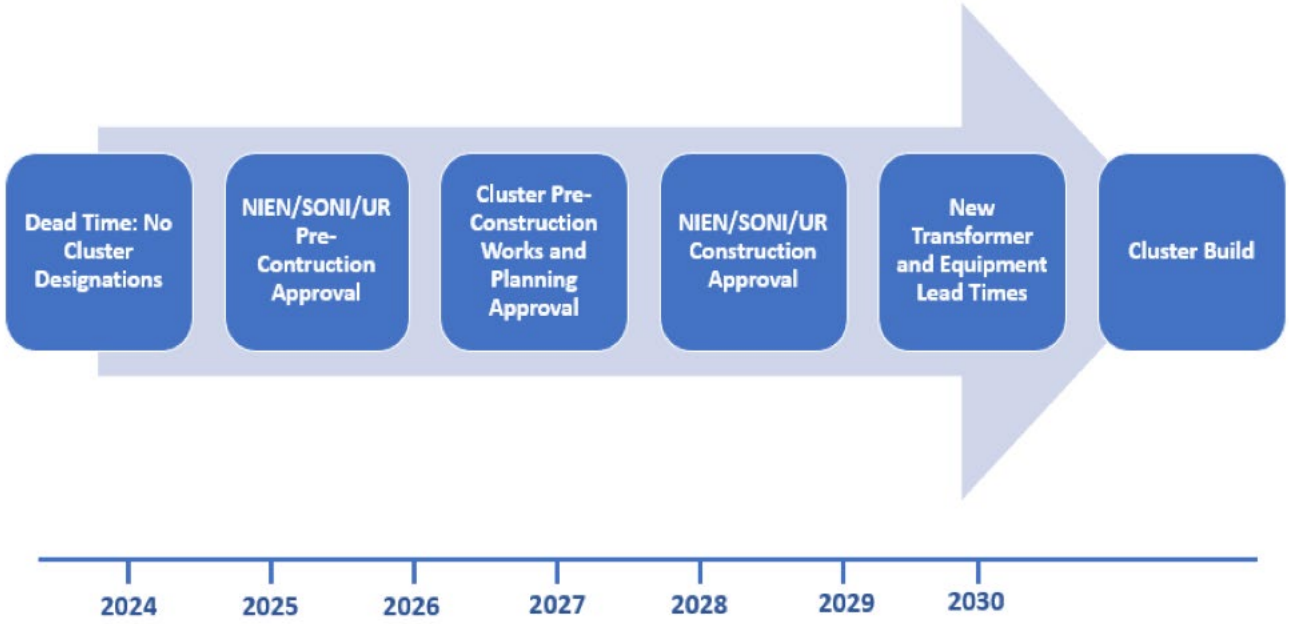


Figure 1: Do Nothing Scenario Timeline

2. Accepted Consultation scenario - Consultation on the proposals and the updates to the SoCC set out in this paper and subsequent development of a number of existing clusters are accepted. As in the previous scenario, time is required for Section S applications to SONI and the UR approvals for both pre-construction and construction. In this scenario it is assumed that there is development at existing cluster substations (i.e. second transformer). This scenario results in an increased likelihood of connecting large-scale renewable generation to the distribution network. In this scenario, it is expected that pre-construction timelines would be much shorter, and due to this NIE Networks would seek approval for long lead items as part of the pre-construction approval as the risk would be less than a new greenfield site. This scenario increases the prospects that the development of a number of existing cluster substations would be complete for the long stop date of the first CfD auction.

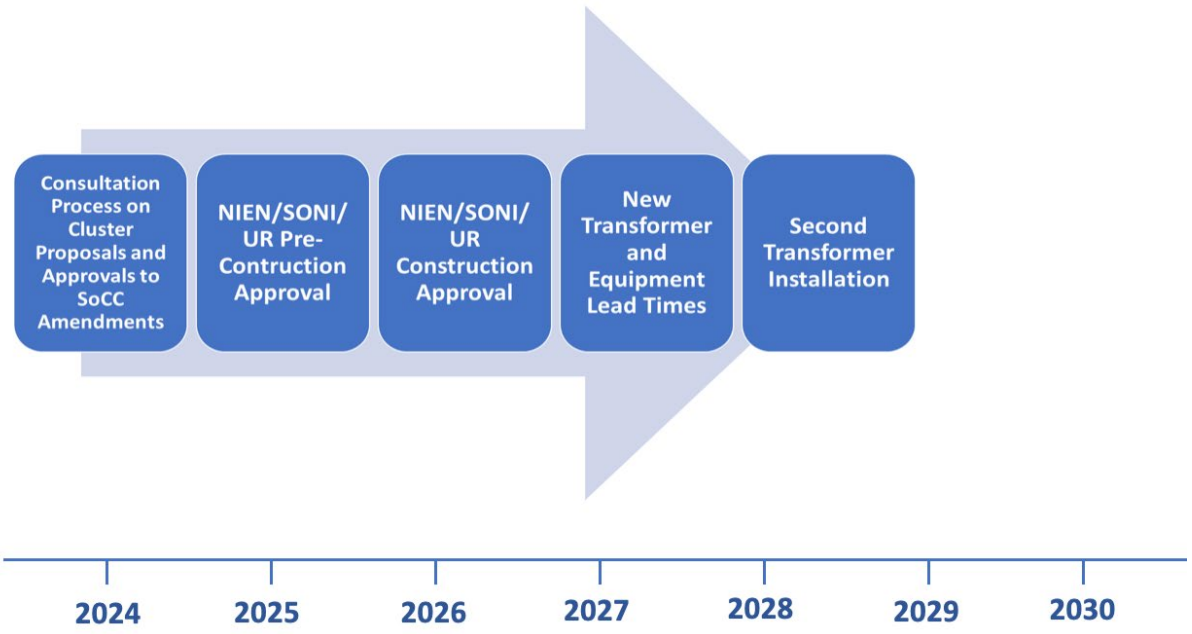


Figure 2: Accepted Consultation Scenario Timeline

2.2 Existing Clusters

With regards to the justification of the proposals within this consultation it is important to factor in the current state of affairs concerning existing clusters. There are currently six constructed clusters in Northern Ireland, with a further two in development (one in construction and one designated and in pre-construction). Of the eight clusters, five have no remaining capacity, with the remaining three clusters likely to reach the same point in the near future. The existing clusters, their current status, total capacity, and remaining capacity are shown below:

Table 1 - Existing Cluster Substations

Cluster	Status	Total Cluster Capacity (MVA)	Remaining Generation Capacity (MVA)	Demand Connection Capability	Current Arrangements
Magherakeel	Energised	138	0	110kV security of supply required	Two transformers. 110kV Capacity a limiting factor
Gort[9]	Energised	120	0	Yes	Two transformers. 110kV Capacity a limiting factor
Tremoge	Energised	90	0	Pending on proposals[10]	One transformer
Rasharkin	Energised	90	0	Pending on proposals[10]	One transformer
Drumquin	Energised	90	22.1	Not currently	One transformer. 110kV Capacity a limiting factor
Garvagh (Agivey)	Energise	137.3	0	110kV security of supply required	Two transformers. 110kV Capacity a limiting factor
Kells	In Construction	90	24.4	Pending on proposals[10]	One transformer
Cam	Pre Construction	90	8.3	Pending on proposals[10]	One transformer

Note - 110kV Capacity refers to the rated capacity of the cable or line being at or close to full. NIE Networks will only bring forward the second transformer where the 110kV line can accommodate the new capacity created by installing that transformer.

Table 1 highlights the extent to which existing clusters have been filled, and shows the success of investing in the network to deliver generation capacity. Of the 845MW of total capacity of cluster substations in Northern Ireland, just 52.8MW remains available for new connections. This equates to less than 7%. Considering the cost recovery mechanisms of clusters, the financial impact of developing clusters to date on the Northern Ireland customer base has been minimal and, going forward could become null if the remaining capacity is filled, which is likely based on the information in Table 1. It is NIE Networks' intention that over the long term this protection of the wider customer base continues to be the case, and the proposals made in this paper seek to honour this approach.

Under the current cluster charging methodology, and given the limited capacity remaining, the majority of generators wishing (or being technically feasible) to connect to these clusters would have to pay the full cost of any further transformer and/or transmission reinforcement required to be installed to connect them. NIE Networks have recently experienced connection offers to generators that have been offered connection under these terms (with a second transformer at cluster substation required) being rejected and abandoned due to the high costs.

In the interests of maximising the use of existing assets, the potential to further develop existing cluster infrastructure is massive.

[9] For Gort, while there are two transformers, transmission capacity has not been secured and is subject to a per connection basis.

[10] If proposals were accepted, including approvals granted by the UR. Demand connections would only be offered connection into Constructed Cluster Infrastructure when it is the Least Cost Technically Acceptable (LCTA) connection option. This would either include the cost of the second transformer (and be the least cost of any other connection options), or be post-energisation of the second transformer.

2.3 Planning Data

A key step in planning the requirements to connect renewable generation is to understand the volume, type and location of generation projects within the renewables pipeline. NIE Networks has completed significant work in understanding the generation planning and pre planning pipeline and developing proposals to invest in the distribution network to enable these connections.

This pipeline data included large-scale generation projects of all sizes, from the lower limit of 5MW to hundreds of MW scale offshore generation sites. For the purpose of analysis looking at the distribution network only, sites of a transmission relevant capacity (i.e. likely to be too large to connect to the distribution network) were excluded.

Regularly, an exercise takes place where generation sites in planning or consented are analysed by NIE Networks to calculate if the cluster designation threshold is met – 56MVA of generation within a ~15km radius with weightings based on the planning status of the site. This was completed recently and it was found that there was no area where a new cluster could currently be designated under existing rules, given current sites within the generation pipeline.

However, with over 60 sites within the planning pipeline (including in planning and in pre planning), it is clear new thinking is required, given the timelines to 2030. The level of renewable generation in pre-planning stages indicates a significant pipeline of new generation seeking to connect in the near future.

2.4 Justification Summary

The original Cluster methodology was intended to facilitate the connection of renewable generation into cluster sites. NIE Networks now considers that the current cluster policy regarding the designation of clusters and the charging arrangements for transformers beyond the first transformer is no longer suitable. This is due to several factors, including:

- the stagnation of progress toward energy strategy targets,
- the need to facilitate generation sites within the planning and pre planning pipeline,
- the upcoming introduction of the Renewable Energy Support Scheme driving further generation,
- the reduction in available network capacity,
- several projects not accepting offers or reaching the offer stage due to the cost of second transformers,
- the overall increase in network reinforcement costs,
- the increase in asset lead times, and;
- the limited timeframe towards 2030,

Consultation Question 1:

Do you agree that the current Cluster methodology needs to be revised to ensure substantial progress towards 80% renewables, as per the justification set out in Section 2 above? If not, please provide rationale.

3. HIGH-LEVEL PROPOSALS

To connect the volume of renewable capacity required to meet 2030 targets, policies need to facilitate the utilisation of existing networks better as well as build new networks. This section looks at proposals based on the justification set out above in Section 2, that can help enable 2030 targets.

3.1 Proposals to Existing Clusters

With the justification context in mind, NIE Networks seeks to make proposals to develop existing cluster substations that would both present connection options for generation within the planning pipeline but also reduce the likelihood of the scenario where future potential generation connection applications are abandoned due to the cost of paying for the second transformer.

The proposals are to install second transformers at existing cluster substations, initially funded by NIE Networks and added to NIE Networks Regulated Asset Base (RAB). As generators apply to NIE Networks for connection and are assigned to a cluster, they will pay the per MVA cost of the cluster asset based on the capacity they require. This continues until the additional capacity is fully utilised and the capacity is removed from NIE Networks' RAB and RAB payments.

As outlined in Section 2.1, designation, approval and construction of new cluster substations can be lengthy processes, with recent experience suggesting the process from designation to energisation can take over 6 years. Lead times for materials (lead times for 110/33kV transformers currently sit at 3 years), intricacies of gathering access rights, and lengthy planning timelines for the build of new greenfield infrastructure all contribute to these timeframes. By developing existing clusters, timeframes associated with access rights and planning for new clusters are avoided, since existing clusters will have already been through these processes. This means developing existing clusters is both an efficient use of network expenditure and time.

Existing clusters are located in areas of good wind resources, so are well placed to receive further generator capacity, including wind, which can be location sensitive. Clusters are also suitable for other technologies that are less location sensitive, such as solar PV, but still face the network scarcity issues that wind does.

A further benefit of developing existing clusters would mean a release of cluster capacity to demand connections, including low carbon technologies that can assist on the path to net zero like battery energy storage and electrolysers. Currently, low carbon demand technologies connecting to existing cluster sites with a single transformer (without derogation) are required to pay the full cost of the second transformer required to secure their supply against the minimum security of supply planning obligations as defined by Engineering Recommendation (EREC) P2 (NI) of the Distribution System Security and Planning Standards[11]. A full explanation of the benefits, reasoning and decisions around the connection of large scale customer and network demand into constructed cluster infrastructure is available on NIE Networks website[12]. While this is not within this consultation or set out to be changed, if the proposals are accepted then the majority of existing clusters will have two transformers in place.

It is important to point out that demand connections would only be offered connection into Constructed Cluster Infrastructure when it is the Least Cost Technically Acceptable (LCTA) connection option. For an offer to be considered technically acceptable, it has to provide a connection to network infrastructure which currently exists. Therefore the LCTA connection option for a demand customer into a cluster would either include the cost of the second transformer (and be the least cost of any other connection options), or be post-energisation of the second transformer.

NIE Networks advises that its existing cluster substations at Rasharkin, Tremoge, Cam and Kells could be suitable sites for second transformers, with an approximate cost of £3.5 – 5 M each. This is based on NIE Networks' high level analysis and will be subject to detailed design and deliverability consideration prior to them being brought forward for approval by the UR.

These sites have been selected as suitable based on the analysis of generation pipeline data. Based on this analysis, it is likely that the capacity created at these sites would be used by generation within the pipeline. This is presented below:

Rasharkin: c. 60MVA in generation pipeline including consented, pre-planning, in planning.

Tremoge: c.16MVA in generation pipeline including consented, pre-planning, in planning. Additional reasoning set out below.

Cam: c.144MVA in generation pipeline including consented, pre-planning, in planning.

Kells: c.100MVA in generation pipeline including consented, pre-planning, in planning.

[11] https://www.nienetworks.co.uk/distribution-coder

[12] https://www.nienetworks.co.uk/about-us/regulation/cluster-methodology-review

In addition to looking at pipeline data, proposals are based on the opportunity to develop generation capacity ahead of specific sites or need and are based on the following:

- These sites have been agreed with SONI as being suitable in terms of the transmission network's available capacity to export generation. For example at the Drumquin cluster there is no 110kV capacity available to accommodate a second transformer at present.
- With existing planning and landowner requirements in place to accommodate the second transformer, these sites offer an accelerated solution to creating gewneration capacity in Northern Ireland.
- Based on previous experience, available large-scale generation capacity is quickly filled in Northern Ireland. This is highlighted by the information provided in Table 1 on existing cluster capacity, and through NIE Networks' recent experience of Cam cluster. Since Cam cluster was designated the amount of renewable generation projects in the area has tripled, meaning there is now a proposal for a second transformer at Cam as highlighted above. This is evidence that renewable developers will rapidly locate in areas where there is available network capacity.

At this stage NIE Networks have not presented proposals to develop other cluster substations as some require an additional 110kV line or third transformers and these would likely require additional 110kV lines and potentially the need to upgrade the 33kV switchboard. This is set out in detail in Table 1. The cost and time to build this infrastructure would likely see connection dates post 2030. SONI, as Transmission System Operator (TSO), continue to review the needs for transmission infrastructure alongside NIE Networks.

These proposals are entirely reliant on the SoCC changes presented in Section 4. Bringing charging arrangements for second transformers at existing clusters in line with charging arrangements for first transformers would bring the associated protection for NI consumers where costs are recovered as generators connect and take up the available capacity (paying for their capacity allocation), and risks to the NI consumer base of clusters not being filled have been minimised by analysing existing generation pipeline information.

The proposals above total approximately £15.5 million, which would initially be recovered through NIE Networks RAB until the cost recovery mechanism of generators paying the per MVA cost of the cluster asset begins as generators connect. To quantify this, in the absolute worst case (and highly unlikely as presented in this paper) that no generators connect to the second transformers, the impact on customer bills each year is minimal (<0.1% increase). The highest impact on a domestic bill across the full 40 years in the scenario where no generators connect is an increase of c.15p on the annual bill for each transformer.

To minimise the risk of capacity created through second transformers not being filled, NIE Networks have analysed generation planning information to understand the pipeline of generation sites at various stages of development, including locational analysis of the pipeline. This analysis has been set out at a high level above.

Protections to the consumer are also in place through the current cost recovery mechanisms associated with assets added to the RAB. Cost recovery for assets on the RAB are made over the life of the asset, 40 years in the case of transformers. Therefore, any payments will be minimised for capacity taken up within a few years and payments made by subsequent generators will reduce the amount on the RAB. Also, connecting generators will pay the full cost per MVA of the transformer rather than the depreciated value.

Benefits of Developing Existing Clusters

NIE Networks believes that it is important to clarify at this point the benefits that developing existing cluster substations would provide to the NI customers, large demand customers and generators. These can be viewed below in Table 2.

Table 2 - Benefits of Developing Existing Clusters

Benefits to the NI Customer	Efficient Use of Assets	Under the Electricity (NI) Order 1992, NIE Networks has an obligation to develop and maintain an efficient, coordinated and economical system of electricity distribution which has the long-term ability to meet reasonable demands for the distribution of electricity. It is therefore vital that NIE Networks continues to consider how assets can be used as efficiently as possible to deliver customer and network benefits. The potential to develop existing cluster infrastructure would make maximum use of infrastructure that is already in place, reducing the number of long lead times for materials, negating intricacies of gathering access rights, and lengthy planning timelines for build of new greenfield infrastructure.
	Environmental Conservation	NIE Networks' Environmental Statement states that it will aim to mitigate the impact of its activities on the environment. Accordingly, NIE Networks will always consider the impact of its activities on the environment. This was a key factor in the establishment of clusters, as the aggregated length of overhead lines has been greatly reduced by extending the 110 kV network, therefore shortening the 33 kV lines connecting the renewable generation to the network. The same concept can apply to developing existing clusters as an alternative to building new cluster infrastructure and associated network to connect that cluster, adding considerable overhead line lengths to the NI landscape.
	Facilitating Future Energy Targets	Progress towards meeting future energy targets has stagnated. Considering the increasing difficulties that infrastructure projects face regarding planning and legalities, building the necessary new infrastructure to achieve targets will be extremely challenging. Several recent primary substation upgrades have been subject to lengthy delays due to planning and legalities, with specific examples of work sanctioned in 2015 and 2018 still ongoing due to difficulties with landowner engagement. If accepted, developing existing clusters will reduce the infrastructure required and therefore increase the likelihood of achieving future targets and ensuring that the network doesn't become a blocker for the uptake of renewable generation.
Benefits to Large Demand Customers	Releases Additional Locations for Demand Connections	By installing second transformers at existing clusters, the requirement for demand customers to pay the full cost of the second transformer required to maintain EREC P2 standards would become irrelevant since the second transformer, and hence security of supply would already be in place. This would represent a release of previously unavailable capacity for low carbon technologies including batteries and electrolysers.
	Reduce Costs and Timescales of Projects	A demand customer seeking to connect to the network is offered the Least Cost Technically Acceptable (LCTA) connection. The possibility of connecting a large demand customer into a constructed cluster (where the second transformer has been energised or the cost of which is included within the LCTA) will provide alternative options for a network connection. This alternative may represent the most cost effective connection by potentially reducing the length of overhead line or underground cable routes, or by preventing the need for costly network reinforcement to facilitate the connection. In certain situations, the timescale for a demand customer to connect to the network could be reduced because of the ability of a nearby cluster to accept demand connections. By installing and developing existing cluster substations, it creates more cost effective connection options for these customers.
Benefits to Generators	Lower Cost Connections	Currently, a generation customer who triggers the need for an additional transformer is required to pay the full cost for that transformer. If these proposals are accepted, the generation customer would only be required to pay their MVA share of the transformer, resulting in an overall lower cost connection costs for the generation customer in the same example.
	Improved Connection Timeframes	Developing existing cluster substations would present the potential for reduced connection timeframes when compared with building of new greenfield infrastructure. By developing existing clusters, timeframes associated with access rights for the second transformer and planning are not applicable, since existing clusters have already attained both.
	Additional Generation Capacity	These proposals present a total additional 360MVA of generation capacity created.

Consultation Question 2:

Do you support the high level proposals set out as per Section 3, outlining the installation of a second transformer at existing cluster substations? If not, please provide rationale.

4. STATEMENT OF CONNECTION CHARGES AND FUNDING CONSIDERATIONS

The original Cluster methodology was extremely successful in facilitating the connection of renewable generation in Northern Ireland and in helping reach 2020 targets of 40% renewable consumption. However, NIE Networks now considers that the methodology needs to be reviewed if Northern Ireland is to meet 80% renewable consumption by 2030. This section outlines preparations to update the SoCC with respect to:

- updating designation arrangements for new cluster substations including weightings and considerations around the second transformer
- charging arrangements for transformers beyond the first transformer

4.1 New Cluster Substations

4.1.1 Updating Weightings for New Cluster Substations

As outlined in Section 1.3, at present a threshold of 56 MVA is used as the minimum combined weighted MEC needed to justify a cluster. In cluster designation, weighting factors are applied to the generator MEC based on which stage of the planning process it is in, shown below in Table 1. By updating weightings for cluster substations to take account of generation sites in pre planning, clusters could be designated sooner. This would mean generators will not have to wait until they apply for the full planning process to be weighted as part of achieving the weighted 56 MVA threshold.

As noted above, there are already significant time constraints in the process of developing a cluster and connecting generators before 2030, including transformer orders and other infrastructure requirements. Meeting the 80% target by 2030 is more likely to be achievable if these earlier stage generator projects are able to contribute to the 56MVA threshold.

Increasing the weighting of earlier stage generators may increase the likelihood that the new cluster would not be filled and the unused capacity in the cluster would remain on the NIE Networks' RAB for a longer period. The reasons why spare capacity is unlikely to remain unused are set out above in Section 2.

The current cluster designation weightings, as per Table 2 of Appendix 2 of the SoCC, are shown below:

Table 3 - Current Cluster Weighting Factors

Stage	Weighting Factor
Consented	1.0
Submitted to Planning or PAC	0.8
EIA Commenced	0.0
EIA Commenced with generator in an AONB or similar	0.0
Withdrawn from Planning	0.0
Early Stage	0.0

These weightings could be updated by upgrading some of the weighting factors currently listed as 0.0.

In terms of the new values that the weighting factors should be uplifted to, there are a number of items to consider. The appropriate value should balance the need for investment with the potential for sites to remain unfilled, which should incorporate analysis presented in Table 1 on existing clusters as an example.

The additional risk would be based on the amount of the 56MVA capacity threshold taken up by early stage/EIA generator proposals i.e. any sites that are in development stages prior to submitting a formal planning application. Given that the generators earlier in the development process have a higher risk of not proceeding, the weighting should be lower than for "Consented" or "In planning"

generators. This would increase the number of generators in these earlier stages which would be required to meet the 56MVA threshold. This increased volume of generators needed to contribute reduces the risk that sufficient generators would not complete the development process. It would allow for the risk of a number of the early stage proposals dropping out without preventing the cluster from meeting the 56MVA threshold.

Another factor to be considered is how NIE Networks receive information on developers who are in the early development stages ahead of submitting a formal planning application and how regularly this information is updated. The current information received on the renewables pipeline was shared with NIE Networks from Renewables NI and is only available periodically. Renewables NI is not compelled to supply this information to NIE Networks, and there may be developers not included in the data if they are not members of Renewables NI. NIE Networks welcomes any information from renewable developers that can assist with understanding this further, including how best to formalise the submission of information to NIE Networks of renewable developers in earlier stages of planning than having submitted to planning.

One additional factor to consider is that the cluster methodology was introduced in Northern Ireland to facilitate the connection of additional renewable generation and the basis for cluster substations has not changed. The opening of constructed clusters for demand connections from April 2023 was principally to better utilise existing infrastructure, rather than allowing demand connections to influence the location and approval of emerging infrastructure. Therefore, NIE Networks is not proposing to expand the scope of designation beyond the renewable generation it currently applies to.

In terms of the weighting to apply, NIE Networks' position is that these should be in the range of 0.3 to 0.5 for projects in early stage planning. This is based on analysis of the pipeline data. A weighting in this range would balance the need for investment with the potential of sites remaining unfilled.

Consultation Question 3:

NIE Networks proposes that a weighting is applied to generators who at earlier stages in the development pipeline and be included when calculating the threshold for designation of a cluster substation. Do you agree?

If so, what additional stages of planning or pre planning should be included, and would a weighting in the range of 0.3 - 0.5 be appropriate to apply to these stages?

Consultation Question 4:

If in agreement with Consultation Question 3, what process should be set up to allow NIE Networks to obtain accurate information of renewable generators who are in early stages of planning?

Please provide any other comments on updating weightings for designating new cluster substations.

4.1.2 Second Transformers from the Outset

With the growth of renewable capacities and advancing technology, a two transformer cluster from designation may be feasible in the future. Two transformer cluster sites would enable greater capacity created for the connection of renewable generation from the outset and circumvent the need for subsequent approval, delay and disruption associated with the future installation of a second transformer. At present a threshold of 56 MVA is used as the minimum combined weighted MEC needed to justify a cluster but this only results in a single transformer of 90MVA being installed. NIE Networks is proposing that if the combined weighted MEC is beyond a certain value then a second transformer be installed from the outset. There are a number of options here:

1. The second transformer is included from the outset regardless, i.e. When the combined weighted MEC of generation within the defined radius is greater than 56MVA then two transformers are installed at a cluster. This would mean generators are charged 180ths as opposed to 90ths. This does represent an increased financial risk approach as the cluster may not be filled: in a worst-case scenario the impact for a domestic customer is minimal (<0.1% increase). Conversely, this option builds in significant capacity from the outset and minimises further delays associated with the approval, planning, procurement and construction at existing cluster sites.

2. The second transformer is included from the outset only when the combined weighted MEC of generation is greater than 90% of the first transformer capacity – 81MVA. This value was chosen as it is expected (and based on experience) that the majority of generation connecting to a cluster is large-scale and of SEM participation size, i.e. greater than 9.5MVA. This threshold would mean most large scale generation would trigger a second transformer at a cluster that is near to capacity.

   This 81MVA trigger would provide greater certainty that the full capacity of the two transformers would be filled. Again, this would mean generators are charged 180ths as opposed to 90ths. The second transformer would only be considered if the designated

cluster has not yet reached construction approval. If construction approval had been secured the second transformer would be charged in line with the proposals outlined in 4.2.

This option minimises the potential financial exposure to the Northern Ireland customer but could mean longer timeframes associated with the subsequent installation of the second transformer.

Consultation Question 5:

Should second transformers be included from the outset in Cluster Designation and if so would a value of 81MVA be appropriate to trigger the need for two transformers at newly designated cluster infrastructure?

4.2 Updating Charging Arrangements for Transformers Beyond the First Transformer

Under the current cluster Methodology, if the existing infrastructure does not have the available capacity to connect a customer and there is a requirement to add a further 110/33kV transformer or additional transmission infrastructure at an existing cluster, the customer that triggers the additional transmission works i.e. transformer is responsible for the full cost under the current cluster methodology and therefore this cost would not currently be added to NIE Networks' RAB.

The charging arrangements for second transformers are set out in the SoCC section 7.11, shown below:

> 7.11 In circumstances where an Authorised Generator makes an application for connection which has the effect of increasing the electrical capacity required from the Designated Cluster Infrastructure or Approved Cluster Infrastructure or Constructed Cluster Infrastructure above the capacity of the First Transformer and therefore necessitates the installation of a second transformer or a third transformer (where the capacity of a second transformer is exceeded by the connection application) or triggers the need for further transmission reinforcement then that Authorised Generator shall be required to pay for the full cost of the second transformer or the third transformer or further transmission reinforcement (as the case may be) and associated works notwithstanding that the transformer and / or further reinforcement may subsequently become a shared asset.

Through this consultation, NIE Networks is proposing that the cluster transformer beyond the first transformer, i.e. second transformer, if there is 110kV capacity available to connect that transformer, are charged in the same method as the first transformer where the applicant pays their 90MVA share of the cost to install the transformer, or in the case of two transformers required from the outset, 180MVA share.

Alternatively, a generator seeking capacity at an existing cluster sub-station, which triggers the need for a second transformer, is required to pay, prior to connection, the whole cost of the second transformer needed to connect their generation safely to the cluster sub-station.

This proposal would therefore require changes to the following sections of the SoCC:

- Section 7 including 7.8 and 7.11 and 7.15
- Definitions section
- Elements of Appendix 2
- Any other relevant sections

This text, and the sections mentioned above, would be subject to NIE Networks' full consideration and legal review in any updates proposed. Consideration would include full analysis of scenarios that may be presented under any proposals. An updated SoCC would then be issued as a submission to the UR for review and approval.

For the removal of doubt, NIE Networks is not proposing any changes to the methodology or charging of demand connecting into cluster infrastructure. Demand customers shall continue to be charged the full cost of the second transformer regardless of the capacity available at the first transformer, where a second transformer is not yet energised and the connection into a cluster is the LCTA. For Constructed Cluster Infrastructure, where the second transformer has been energised, the Demand customer would only pay for their unique connection assets. Also, NIE Networks is not proposing any amendments to charging arrangements for the first transformer, including no introduction of rebates.

Consultation Question 6:

Should charging arrangements for second transformers be updated to match the charging arrangements in place for first transformers, where generators pay their MVA share of the cost to connect to the second transformer?

4.2.1 Timing of the Second Transformer at Clusters

The timing for NIE Networks seeking an approval request for a second transformer at an existing cluster substation with one transformer is important to consider and may require the introduction of a trigger within the SoCC.

NIE Networks is proposing through this consultation that the four sites identified (Cam, Tremoge, Kells and Rasharkin) have a second transformer triggered now. How NIE Networks triggers second transformers at cluster substations with single transformers going forward also needs considered. If the four sites identified are deferred they would become subject to this criteria.

There are a number of options, set out below. All of these options assume there is 110kV capacity available to facilitate a second transformer at an existing cluster substation.

1. The trigger is when a generator applicant applies to connect and is offered a connection to a cluster substation, but the capacity requested is greater than the available capacity at a cluster. For example, a 90MVA cluster with one transformer has 10MVA remaining available. A developer with a site sized 20MVA wishes to connect. The second transformer is triggered as the remaining available capacity isn't enough to accommodate the new connection. This would mean a developer-led approach. This option minimises the risk of a second transformer being installed and not filled, but will lead to longer connection timeframes and potentially put the Climate Change Act targets at risk. This option is not NIE Networks' preferred option.

2. An automatic trigger when a cluster reaches a certain capacity threshold that is likely to mean subsequent generators would require a second transformer to connect. i.e. the transformer is 70% committed, or some other appropriate value. This would enable a more proactive investment approach and shorter connection timeframes, giving Northern Ireland the best chance to meet the Climate Change Act targets. It would mean an increased risk of second transformers not being filled, but as discussed in Section 3.1 this risk is reduced through strategic analysis of generation pipeline data.

3. An automatic trigger similar to above but one that also takes account of weighted projects within the planning pipeline i.e. the transformer is 70% capacity when including committed projects and projects in planning. This option would be triggered when a cluster reaches a certain capacity threshold but also takes into consideration projects within the planning pipeline. This would go further than option 2 and would therefore mean second transformers being triggered even sooner but also a higher risk of transformers not being filled.

NIE Networks acknowledges that with this update and the proposal to designate two transformer clusters from the outset, costs to connect to the second transformer may be different than they were for the first transformer and initial cluster build for existing cluster sites. With that in mind, NIE Networks proposes that if a second transformer is designated ahead of the first transformer construction approval, the cluster charge is based on the full cluster cost including the substation build and the two transformers (i.e. 180ths). If however the second transformer is designated post-construction approval of the first transformer, the cost of upgrading the second transformer will be shared on 90th's. For the avoidance of doubt, NIE Networks is not proposing any rebates to generators connected to the initial cluster infrastructure once the initial cluster infrastructure has passed construction approval.

Consultation Question 7:

What criteria should be applied for NIE Networks to be entitled to bring forward an approval request to UR for the cost recovery associated with a second transformer? For example:

a connection application that causes the capacity of the first transformer to be exceeded; or

where a cluster available capacity of the first transformer reaches a certain value.

4.2.2 Transformers Beyond the Second Transformer

It is important to point out here that there is a high degree of variance between costs and timelines associated with second transformers, versus costs and timelines associated with any further transformers (beyond the second transformer) and associated transmission reinforcement works. Therefore for the purpose of this consultation these have been split.

The concern with including subsequent transformers and or further transmission reinforcement with second transformers is that

there may be significant financial investment required and significant planning implications for subsequent transformers beyond the second transformer. This would mean that it is unlikely to deliver additional capacity by 2030; and significant costs mean that more careful consideration would be required regarding the cost recovery mechanism. The timeframes for transmission reinforcement could also become a blocker as there would be planning permission required for third transformers and additional 110kV circuits. Further consideration is given in the questions below regarding the recovery of costs associated with subsequent transformers and transmission infrastructure beyond the second transformers, which may be subject to separate arrangements than those proposed for second transformers.

Further thought is required as to the benefits of extending an existing cluster beyond two transformers as opposed to developing a new cluster when a cluster reaches the capacity of two transformers. While a second transformer can generally be accommodated within existing cluster infrastructure, a third transformer would likely trigger additional works including 110kV works and an additional 33kV switchboard with accompanying switch room. Because of the busbar current rating and fault levels, it is unrealistic to have more than two transformers connected to one switchboard at this voltage.

It is likely that a third transformer would also require additional planning and land rights as they would exceed existing cluster land. Additional 33kv circuits created by the third transformer may not be possible in the area due to limited access rights. In some cases the formation of a new cluster would be a more economical solution.

Based on the reasons outlined above NIE Networks is proposing that there is no change to the charging arrangements beyond the second transformer and new 110kV lines within this consultation but may be considered further in the future.

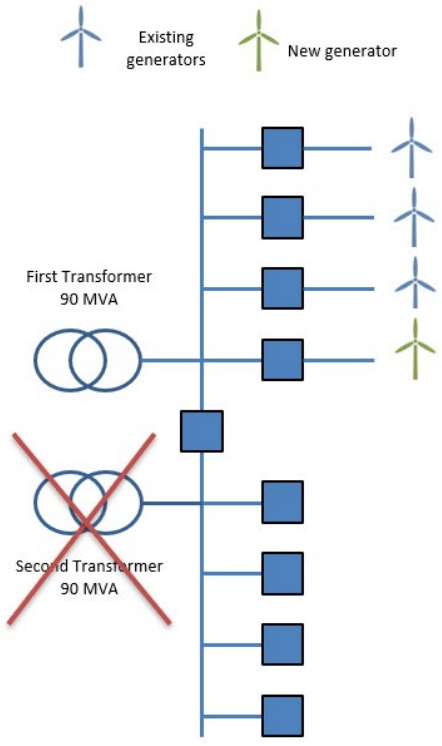
4.3 Cluster Scenarios

At this point, NIE Networks wishes to set out a number of scenarios. Each of these scenarios assumes that proposals set out for the charging of second transformers within this paper are accepted as presented.

4.3.1 Cluster Scenario 1

The following scenarios seek to describe how these charges would be applied in practice. The first three scenarios consider an existing cluster substation with a single 90 MVA transformer and 110 kV transmission circuit, with 65 MVA of generation already connected. The scenarios are set out in the Figures below.

In the first scenario, a 15MVA generator seeks to connect. There is capacity available at the existing cluster, and a second transformer is not required.



Connection Size (MVA)	Remaining Cluster Generation Capacity (MVA)	Remaining Cluster Demand Firm Capacity (MVA)	Note
25	65	0	
20	45	0	
20	25	0	
15	10	0	New customer - requesting 15MVA. 25MVA remaining at first transformer. Pays 15/90MVA of first transformer. No second transformer required

Order of Connection

Figure 3 - Cluster Scenario 1

4.3.2 Cluster Scenario 2

In the second scenario, a 40MVA generator seeks to connect. Since there is 25MVA remaining at the first transformer, the customer pays 25/90th's, which then becomes fully subscribed.

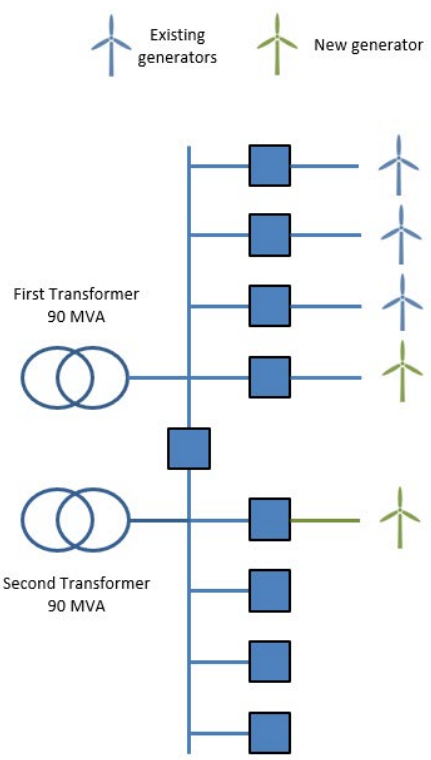
The customer still requires 15MVA of capacity and so there is a requirement for a second transformer. Rather than pay the full cost of the second transformer as would be the case under the existing methodology, the customer pays 15/90th's towards the second transformer. The customer will therefore be charged:

Their unique connection costs required to connect them to the cluster

25/90th's of the cost of the first transformer

15/90th's of the cost of the second transformer

Any subsequent generators connecting to this (now) double transformer cluster will be required to pay their MVA share of the 90MVA created until the cost for the additional cluster infrastructure (second transformer) is fully recovered. Any demand connecting to this double transformer cluster (post energisation of the second transformer) will not contribute towards the transformer cost, as per the existing SoCC.



Connection Size (MVA)	Remaining Cluster Generation Capacity (MVA)	Remaining Cluster Demand Firm Capacity (MVA)	Note
25	65	0	
20	45	0	
20	25	0	
40	75	90	New customer - requesting 40MVA. 25MVA remaining at first transformer. Pays 25/90MVA of first transformer, plus 15/90MVA of second transformer
15	75	90	Overspill from 40MVA connection

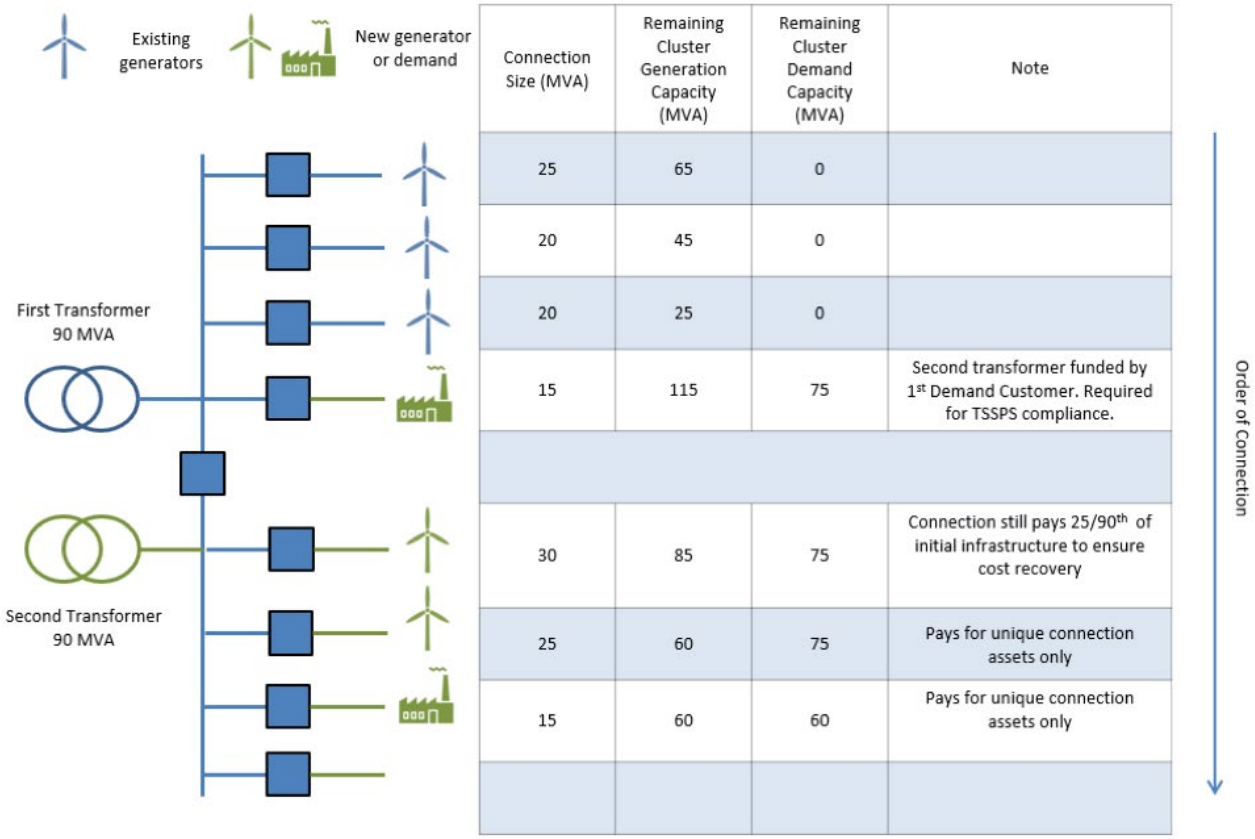
Order of Connection

Figure 4 - Cluster Scenario 2

4.3.3 Cluster Scenario 3

In the third scenario, a 15MVA demand customer seeks to connect. They do not derogate away from the security of supply standards and are required to pay the full cost of the second transformer, as well as their unique connection costs.

Since there is 25MVA remaining at the first transformer, in order to ensure the cost of the cluster is fully recovered, the next generator to connect is still charged according to the cluster charging methodology. Once this cost is fully recovered (90/90th now recovered), any subsequent generator or demand wishing to connect will only be charged for their unique connection assets since the cost of the second transformer has already been recovered.



Connection Size (MVA)	Remaining Cluster Generation Capacity (MVA)	Remaining Cluster Demand Capacity (MVA)	Note
25	65	0	
20	45	0	
20	25	0	
15	115	75	Second transformer funded by 1st Demand Customer. Required for TSSPS compliance.
30	85	75	Connection still pays 25/90th of initial infrastructure to ensure cost recovery
25	60	75	Pays for unique connection assets only
15	60	60	Pays for unique connection assets only

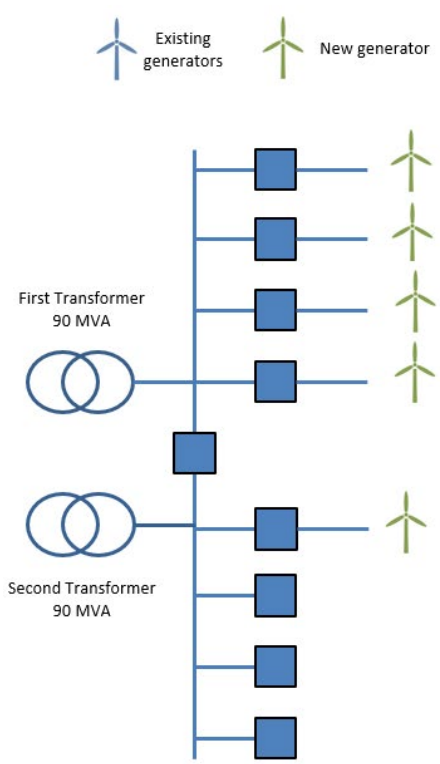
Figure 5 - Cluster Scenario 3

4.3.4 Cluster Scenario 4

In the fourth scenario, a new cluster has been designated. It has not reached construction stage yet and is at pre construction approval stage. There is enough generation in the planning pipeline (the inclusion of early stage weightings depends on the outcome of this paper) to justify the need for two transformers from the outset.

Each connection pays their MVA share of the full capacity of the cluster which is 180MVA plus their unique connection cost. The cost of the initial cluster infrastructure now includes two transformers plus the associated cluster build cost.

Generators connect and pay 180ths of their share of the total capacity until this cost is fully recovered (180/180MVA now recovered). Demand customers will only be charged for their unique connection assets since the cost of the second transformer will be recovered from generation connections. Demand connections would only receive an offer into the cluster following energisation of the second transformer as the Least Cost Technically Acceptable (LCTA) connection requires a connection to existing infrastructure.



Connection Size (MVA)	Remaining Cluster Generation Capacity (MVA)	Remaining Cluster Demand Firm Capacity (MVA)	Note
25	155	90	New customer, pays 25/180 MVA
20	135	90	New customer, pays 20/180 MVA
20	115	90	New customer, pays 20/180 MVA
40	75	90	New customer, pays 40/180 MVA
30	45	90	New customer, pays 30/180 MVA

Order of Connection

Figure 6 - Cluster Scenario 4

5. CONCLUSIONS

The findings and proposals presented in this consultation paper emphasise the urgent need for strategic action to develop Northern Ireland's distribution network in alignment with the renewable energy targets set out in the Climate Change Act. Key conclusions are as follows:

1. Current Renewable Energy Progress: The renewable energy share in Northern Ireland's electricity consumption has stagnated, with the latest figures showing that for the 12 month period July 2023 to June 2024, this figure was 45.8%, worryingly only marginally above the 44% that was met in 2020. This decline highlights a critical shortfall in the progress required to meet the 80% target by 2030.

2. Capacity and Connection Challenges: The current distribution network capacity is increasingly constrained as more generation and demand are connected. This constraint leads to, customers more commonly being provided with connection offers which include costs for network reinforcements where costs may deter further customers from connecting.

3. Strategic Investment and Planning: To meet 2030 renewable targets, it is essential to invest in the network now. This approach would facilitate the connection of large volumes of renewable generation.

4. Proposed Updates to Cluster Infrastructure: Several proposals aim to develop existing cluster substations creating network capacity and connection options. Specific proposals include the installation of second transformers at Rasharkin, Tremoge, Cam, and Kells clusters.

5. Need for Policy and Methodology Updates: The existing cluster designation and charging methodologies need revision to better accommodate renewable connections. Proposed changes include updating weighting factors for new cluster designation to consider projects at earlier planning stages, consideration of second transformers from the outset for new cluster sites, and revising the funding arrangements for second transformers.

6. Collaborative Efforts and Future Planning: Collaboration with key stakeholders, including the UR, SONI, and governmental bodies is crucial. Joint efforts in planning and developing future transmission and distribution clusters are necessary to address the required increase in renewable generation capacity.

Stakeholders are encouraged to consider the proposals outlined in this paper, which include expanding weighting factors for cluster designation, updating charging arrangements for cluster second transformers and recognising the immediate need for cluster investment. These steps are vital for ensuring that Northern Ireland can meet future renewable energy demands. NIE Networks acknowledges the UR and DfE's joint call for evidence on connection policy reform and the responses that highlighted the need for the cluster methodology to be reviewed.

NIE Networks should continue engaging with key stakeholders including SONI on the generation pipeline and development of Section S applications for proposed sites outlined in Section 3 ahead of SoCC updates.

In conclusion, the path to achieving 80% renewable electricity consumption by 2030 requires immediate and decisive action. By implementing the proposed infrastructure enhancements and policy updates, Northern Ireland can overcome existing challenges and make significant strides toward a sustainable energy future.

6. CONSULTATION QUESTIONS SUMMARY

NIE Networks welcomes views on this consultation document, particularly in relation to the questions listed below:

Consultation Question 1:

Do you agree that the current Cluster methodology needs to be revised to ensure substantial progress towards 80% renewables, as per the justification set out in Section 2 above? If not, please provide rationale.

Consultation Question 2:

Do you support the high level proposals set out as per Section 3, outlining the installation of a second transformer at existing cluster substations? If not, please provide rationale.

Consultation Question 3:

NIE Networks proposes that a weighting is applied to generators who are at earlier stages in the development pipeline and be included when calculating the threshold for designation of a cluster substation. Do you agree?

If so, what additional stages of planning or pre planning should be included, and would a weighting in the range of 0.3 - 0.5 be appropriate to apply to these stages?

Consultation Question 4:

If in agreement with Consultation Question 3, what process should be set up to allow NIE Networks to obtain accurate information of renewable generators who are in early stages of planning?

Please provide any other comments on updating weightings for designating new cluster substations.

Consultation Question 5:

Should second transformers be included from the outset in Cluster Designation and if so would a value of 81MVA be appropriate to trigger the need for two transformers at newly designated cluster infrastructure?

Consultation Question 6:

Should charging arrangements for second transformers be updated to match the charging arrangements in place for first transformers, where generators pay their MVA share of the cost to connect to the second transformer?

Consultation Question 7:

What criteria should be applied for NIE Networks to be entitled to bring forward an approval request to UR for the cost recovery associated with a second transformer? For example:

a connection application that causes the capacity of the first transformer to be exceeded; or

where a cluster available capacity of the first transformer reaches a certain value

7. NEXT STEPS AND HOW TO RESPOND

Next Steps

NIE Networks is keen to ensure that all stakeholders have every possible opportunity to input into these proposed changes. The responses to this consultation will be analysed by NIE Networks. If proposals are deemed successful there will be a formal submission of an updated version of the SoCC to the Utility Regulator (UR) for approval.

Stakeholder Engagement Zoom Event

NIE Networks invites interested parties to attend a Zoom event where a short presentation will take place, followed by the opportunity to ask questions.

This Zoom event will take place on the 11th of November 2024 at 11:30am. If you wish to attend, please mail connectiondesign@nienetworks.co.uk for joining details. Participants are encouraged to submit questions ahead of the event by sending them to connectiondesign@nienetworks.co.uk.

How to Respond

NIE Networks invites interested parties to respond to this consultation. Responses should be sent electronically to connectiondesign@nienetworks.co.uk by 5pm on Friday 6th December 2024.

NIE Networks will handle all information in accordance with the NIE Networks Privacy Statement (http://www.nienetworks.co.uk/privacy).

Please note that it is intended to publish all responses to this paper on the NIE Networks website (www.nienetworks.co.uk). Respondents who wish that their response remains confidential should highlight this when submitting their response.

NIE Networks may share responses with UR. Respondents should be aware that as UR is a public body and non-ministerial government department, the UR is required to comply with the Freedom of Information Act (FOIA)[13].

[13] The effect of FOIA may be that information contained in consultation responses that is shared with UR is required to be put into the public domain. Hence it is possible that all responses made to this consultation that may be shared with UR will be discoverable under FOIA, even if respondents ask for the responses to be treated as confidential. It is therefore important that respondents take account of this when submitting their response.

nienetworks.co.uk