

Alternative Connection Application and Offer Process Proposal

Consultation Paper

4 March 2016



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1. Executive Summary

The context for connecting renewable generation to the grid has changed significantly following Utility Regulator Determination (DET-572). This concluded that NIE Networks was not entitled to require grant of planning permission as a pre-requisite for applying for a generation connection to the Distribution System.

As a result NIE Networks changed its generation connection application policy on 12 August 2015 for distribution connection applications. The pre-requisite of planning permission remains for transmission connection applications to SONI.

Following this change in policy NIE Networks received a very large number of applications for generation connections to the Distribution System in a very short period of time amounting to around 870 MW. This presents significant challenges for both the Transmission and Distribution Systems where the level of connected (876 MW) and committed (720 MW) renewable generation already exceeds the capacity of the Transmission System and some areas of the Distribution System. In fact, before even taking account of the recent tranche of applications, on a per customer basis the level of renewables connected in NI is one of the highest in the UK.

Given this context, it is clear that the current process for assessing connections, which adopts an incremental approach for assessing impact to the grid, is not appropriate. An alternative must be implemented which addresses, in particular, the extent of transmission analysis required in order to avoid time consuming re-working of offers. With this in mind, the Utility Regulator chaired a workshop on the 16 December 2015, at which NIE Networks and SONI outlined the significant grid analysis required to assess the impact of these applications on both the Transmission System and Distribution System and an alternative approach as to how offers might be issued.

At the workshop SONI highlighted that detailed transmission analysis is required to determine both the chargeable transmission connection works and non-chargeable Transmission System works. Applying the current sequential process could require several years to work through the recent applications.

In addition to grid capacity issues, the penetration of renewable generation, both controllable and uncontrollable, presents significant operational challenges. Visibility and controllability of generation connecting to the system is increasingly important.

SONI and NIE Networks believe that an alternative connection application and offer process is required. A proposed alternative, the “Batch Process”, was outlined at the above workshop. The aim is to treat those in the Batch as a group of simultaneous applications; assess the transmission and distribution works and costs associated with these applications and then make offers simultaneously to the generators in the Batch.

This would improve efficiency and reduce overall time to complete the analysis and issue connection offers.

At a high level, the proposed Batch Process will process valid connection applications received over a pre-defined period of time. The connection applications will be divided into Groups and each Group will be assigned a transmission node. The nodal assignment will be carried out in two stages. The first stage will be an initial nodal assignment after which customers will be given the opportunity to withdraw from the process. Stage two will be final nodal assignment after which the transmission nodes to which generators connect will be locked.

SONI and NIE Networks, as appropriate, will carry out detailed system analysis to determine the impact of the connections on the Distribution and Transmission Systems and establish individual connection methods. All connection offers to customers within the Batch are issued at the same time in order to coordinate any subsequent offer rejections and minimise reworking of connection offers. In addition to the analysis required to determine connection methods, SONI will need to assess firm access and any associated transmission reinforcements and optimise these transmission network reinforcements.

The objective of the consultation is to provide further information on the proposed Batch Process, outline a number of related challenges and potential solutions and; to seek industry views on a number of important decision areas highlighted in this document.

In order to develop solutions that are transparent and do not unduly discriminate between customers seeking generation connections SONI and NIE Networks would strongly encourage stakeholders to participate in this consultation process.

2. Introduction

2.1 Purpose of this Paper

This is a consultation on the connection application and offer process in Northern Ireland and is being carried out jointly by NIE Networks and SONI in response to the recent change in the generation connections environment. This change resulted from a Utility Regulator (UR) Determination (DET-572) which concluded that NIE Networks was not entitled to insist on the grant of planning permission as a pre-requisite for applying for a generation connection to the Distribution System.

Consequently, NIE Networks changed its generation connection application policy on 12 August 2015 to align with DET-572. This led to an unprecedented number of applications being received by NIE Networks for generation connections to the Distribution System over a relatively short period of time. For the avoidance of doubt, the pre-requisite of grant of planning permission remains in place for transmission connection applications to SONI.

The new generation connection applications received since the 12 August total around 870 MW. They include applications for Large Scale Generation (LSG) projects and Small Scale Generation (SSG) projects. The majority of these applications were submitted within two weeks of the removal of planning permission as a pre-requisite to application for distribution generation connection. This influx of applications over a very short period of time represents a significant step change in the connections environment. It presents significant challenges for both the Transmission and Distribution System where the level of connected and committed generation already exceeds the capacity of the transmission system and some areas of the Distribution System. Given this context, it is clear that the current process for assessing connections, which adopts an incremental approach for assessing impact to the grid, is not appropriate.

NIE Networks and SONI have been engaging to discuss and assess, at a high level, the impact of the influx of applications on the Distribution System, the Transmission System and the connection application and offer process. It is apparent to NIE Networks and SONI that assessing the impact that generation connecting to the Distribution System has on the Transmission System is important and necessary.

Following this interaction, an industry engagement workshop was held by UR, NIE Networks and SONI on 16 December 2015. At this workshop, NIE Networks and SONI explained the significant network analysis required to assess the impact that this level of generation applications would have on the Distribution System, their effects on the Transmission System and the resultant delay in the ability to issue connection offers if the existing connection application and offer process was applied to deal with the influx

of applications. An alternative proposed connection application and offer process, a “Batch Process”, was also outlined and proposed at the workshop.¹

NIE Networks and SONI have considered the feedback received at the workshop and have further developed the proposed “Batch Process” in this consultation document.

The purpose of this consultation is to:

- Detail the limitations of the existing connection application and offer process and explain why the existing process is not practical for processing the influx of generation connection applications;
- Present further detail on the proposed “Batch Process”; and
- Seek views and suggestions from stakeholders on the proposed “Batch Process” and proposed changes required to implement the “Batch Process”.

2.2 Structure of Paper

This consultation paper is set out as follows.

Section 3 explains the roles and responsibilities of NIE Networks and SONI and how they interact in the context of generation connection applications.

Section 4 provides an update on the status of renewable generation connections in Northern Ireland.

Section 5 provides an update on the status of the capability of the Transmission System and the Distribution System and any planned grid developments to facilitate existing connected and committed renewable generation.

Section 6 explains how the existing connection application and offer process is not a workable solution to process the influx of applications.

Sections 7 and 8 describe how NIE Networks and SONI believe the proposed “Batch Process” would work.

Section 9 summarises the consultation questions and Section 10 sets out the next steps for NIE Networks and SONI.

¹ Workshop presentation can be found at <http://www.nienetworks.co.uk/documents/Generation/151216-Industry-Workshop-on-processing-application.aspx>

2.3 Request for Comment

NIE Networks and SONI invite interested parties to respond to the consultation. We welcome any comments or suggestions on the proposed “Batch Process”.

Questions and decision areas are highlighted within this document and then summarised again in Section 9. SONI and NIE Networks are seeking to develop solutions that are transparent and do not unduly discriminate between customers seeking generation connections. SONI and NIE Networks strongly encourage stakeholders to participate in this consultation process.

Responses should be sent electronically to connections@soni.ltd.uk by 5pm 30 March 2016. Please note that SONI and NIE Networks intend to publish all responses to this paper on their websites (www.soni.ltd.uk and www.nienetworks.co.uk) and may share them with UR. Respondents who wish that their response remain confidential should highlight this when submitting the response.

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). 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 and in particular, if asking that the responses are treated as confidential, should specify why they consider the information in question should be treated as such.

The UR, SONI and NIE Networks will be holding a consultation workshop on 23 March 2016. The objective of this workshop is to provide an opportunity for interested parties to discuss the information contained within this consultation paper with the UR, SONI and NIE Networks. The workshop will be held in Belfast and the venue will be advised shortly.

3. Roles and Responsibilities

3.1 NIE Networks

NIE Networks is the asset owner of both the Transmission and Distribution Systems in Northern Ireland and is regulated by means of a transmission licence and a distribution licence. NIE Networks therefore acts as a Distribution Network Operator (DNO) and a Transmission Owner (TO). The licences require NIE Networks to:

- plan, develop, maintain and operate the Distribution System; and
- maintain the Transmission System.

In their role as DNO, NIE Networks is subject to a statutory duty to connect (with some specific exceptions) and is required to offer terms to customers for new connections, or for modification of existing connections, to the Distribution System in accordance with their distribution licence.

The DNO is responsible for defining the connection arrangements and identifying any reinforcement works on the Distribution System required to facilitate connection to the Distribution System.

The DNO also:

- specifies the terms under which new or modified connections to the Distribution System are to be constructed in a connection offer letter;
- monitors compliance of customers' equipment connected to, or to be connected to, the Distribution System with the Distribution Code and the Electricity Safety, Quality and Continuity Regulation (Northern Ireland) 2012; and
- informs SONI of the requirement for a transmission assessment to facilitate connections to the Distribution System in line with obligations under the Transmission Interface Arrangements (TIA).

3.2 SONI

SONI is the Transmission System Operator (TSO) in Northern Ireland and is regulated by means of a transmission licence. The licence requires SONI to plan, operate and co-ordinate/direct the flow of electricity onto and over the Transmission System.

In accordance with their licence, the TSO is required to offer terms to customers for new connections, or for modification of existing connections, to the Transmission System.

The TSO is responsible for defining the connection arrangements, including any reinforcement works on the Transmission System required to facilitate connection to the Transmission System and Distribution System.

The TSO is also responsible for:

- ensuring that new or modified connections to the Transmission System are constructed in accordance with the terms set out in the accepted connection offer letter;
- ensuring that customers' equipment connected to, or to be connected to, the Transmission System and Distribution System complies with the Grid Code; and
- planning, designing and obtaining consents for any reinforcement works on the Transmission System required to facilitate connections to the Distribution System.

3.3 Transmission Interface Arrangements

The arrangements between SONI and NIE Networks in its role as TO, with respect to the co-ordination of their respective licence obligations, are set out in the Transmission Interface Arrangements (TIA). The TIA also sets out obligations on NIE Networks in its role as DNO relating to distribution connections requiring works to be carried out on the Transmission System.

These arrangements have been in place since the start of the Single Electricity Market (SEM) in 2007 and have been updated to reflect the transfer of the transmission planning function from NIE Networks in their role as TO to SONI on 1 May 2014.

In addition SONI and NIE Networks are required under Article 12 of The Electricity (Northern Ireland) Order 1992 to develop and maintain efficient, co-ordinated and economical electricity Transmission and Distribution Systems.

Therefore the TSO and the DNO must ensure that any modifications or expansions to the Transmission and Distribution Systems are efficient, co-ordinated and economical and this includes grid development to facilitate new generation connections.

4. Renewable Generation Connections Status

Northern Ireland has already seen significant growth in the level of renewable generation connections which currently accounts for approximately 24% of all electricity consumption in Northern Ireland. As of 31 December 2015 around 1,570 MW of renewable generation was either already connected or in the process of being connected. This is against a maximum system load in Northern Ireland of around 1,800 MW and a minimum system load of around 500 MW.

Figure 1 shows the growth of renewable connections in Northern Ireland since 2012 and the breakdown of connection types.

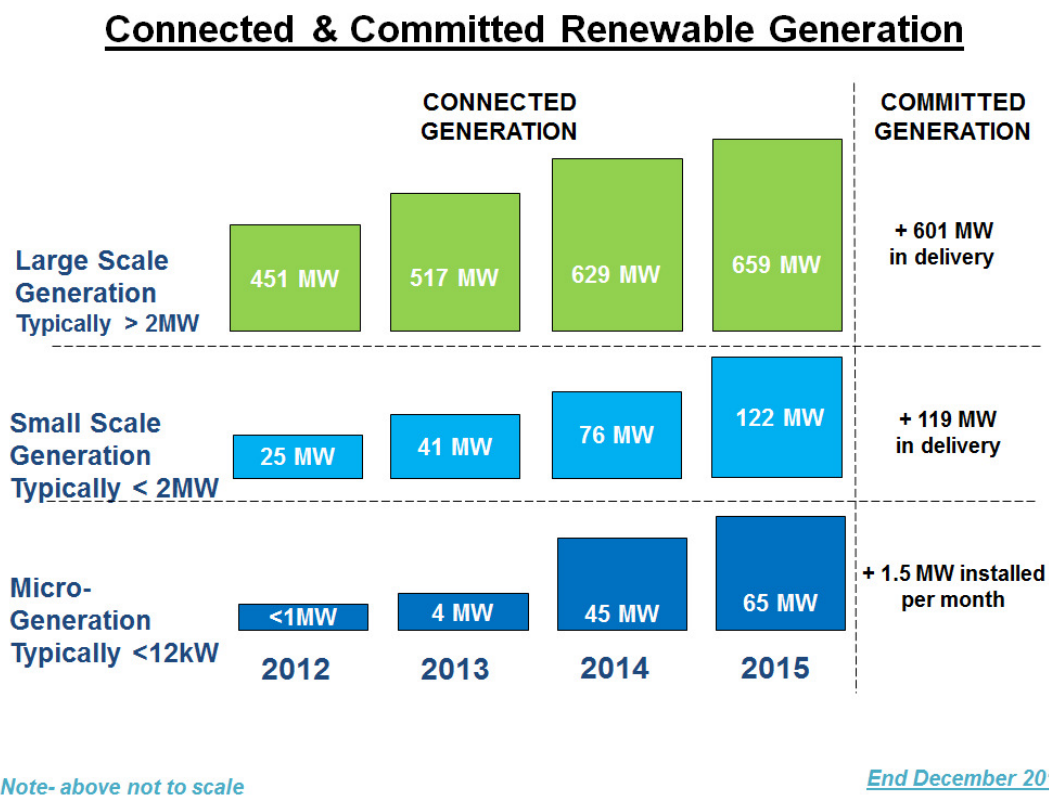


Figure 1: Growth and status of renewable generation connections

The Strategic Energy Framework², which is currently under review, states a target of 40% of electricity consumption in Northern Ireland from renewable resources by 2020. As previously stated, in December 2015, Northern Ireland renewable generation is providing approximately 24% of electricity consumption in Northern Ireland which

² The Strategic Energy Framework can be found at www.detini.gov.uk/strategic_energy_framework_sef_2010.pdf

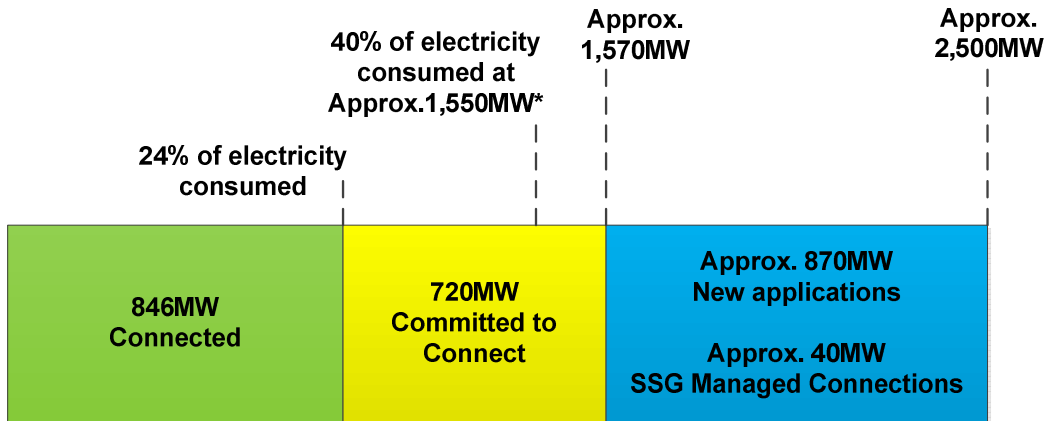
exceeds the Northern Ireland Executive’s Programme for Government target for 20% of electricity consumption to be from renewable sources by 2015.

Following NIE Networks’ statement on 12 August 2015 implementing the removal of the planning permission pre-requisite for distribution applications, an unprecedented volume of new applications has been received. This includes around 50 new LSG and around 300 new SSG applications.

The recent applications total around 870 MW of additional new generation capacity (LSG and SSG).

The geographic spread of these recent applications is province wide and the provision of access to the grid will impact all areas of the Transmission and Distribution Systems. Hence to facilitate these generation connections grid reinforcements will be required on both the Transmission and Distribution Systems, potentially leading to significant grid investment costs.

These recent applications are still awaiting connection offers, but together with the connected and committed generation detailed in Figure 1, the total generation to be accommodated by the grid is around 2,500 MW. Figure 2 shows how the renewable generation relates to the renewable generation targets.



Figures as of end December 2015

*1,250 MW of wind generation plus around 300 MW of other renewable generation based on Total Energy Requirements as per the Generation Capacity Statement 2016-2025
Not to scale

Figure 2: Renewable generation totals including the recent influx of applications

5. Network Capacity and Operational Capability

5.1. Distribution System Capacity

The Distribution System in Northern Ireland comprises of 33 kV, 11 kV, 6.6 kV and low voltage circuits and substations. It is the DNO's responsibility to plan and develop the Distribution System to facilitate connection of generation and demand growth in accordance with System Security and Planning Standards.

While the Distribution System serves 'demand' customers well, it is inherently less receptive to dispersed in-feeds of renewable generation. LSG is usually connected at 33 kV with power flowing to the 33 kV Distribution System and on to the Transmission System.

That said, NIE Networks has successfully connected some 846 MW of large and small scale renewable generation with a further 720 MW committed to connect. This level of penetration of renewables is at the upper end when compared to Great Britain (GB) DNOs and represents a considerable achievement.

When incentives for generation were introduced the nature of the distribution network changed significantly. Whereas historically power flowed from large centrally located power stations through the Transmission System to the Distribution System to supply electricity to customers; there are now large numbers of small generators scattered across the network resulting in dynamic bidirectional, and often variable power flows, with downward flows supplying load customers and upward flows from embedded generation.

When small scale embedded generation is operating, which is typically connected at low voltage from the 11 kV network, the generation output of the embedded SSG supplies local load customers first. Any excess generation flows back to the 33 kV Distribution System and potentially to the Transmission System.

In comparison to GB, the population in Northern Ireland is very dispersed, particularly in rural areas, and a balanced investment approach was adopted to serve these relatively low rural load densities through the use of lighter overhead line construction and greater use of single phase versus three phase lines. This has resulted in a network with longer line lengths per customer and lighter construction. This means that a higher proportion of generation will flow back towards the 33/11 kV primary substations leading to voltage management challenges.

When the output of a number of generators is flowing back towards the primary substation on a given circuit, thermal overloads may arise on equipment at the primary substation and on the 33 kV network at times of low load. This means that many circuits

on the Distribution System (usually of light construction as above), would need to be reinforced to avoid any excessive voltage rise or thermal overloads.

While moderate levels of SSG, where aggregated generation output is below minimum load at the local primary substation, can be accommodated on the Distribution System; the risk of continuity of supply and power quality issues increases substantially as the level of generation connected increases.

Also given that the majority of embedded generation is currently “uncontrollable”, the DNO must assume that all connected and committed uncontrollable generation can operate at the same time and must assess the impact that this aggregated generation has both at local circuit level and at the 33/11 kV primary substation. To do otherwise, without an ability to control generation below 5 MW output, would risk overloading the network, particularly during periods of low load and high generation output.

This important assumption therefore limits the aggregated amount of uncontrollable generation that can be accommodated safely on any distribution circuit, and at the associated 33/11 kV primary substation. However targeted traditional network investment can, in some cases, increase the ability of the network to cater for potential reverse power flows at the primary substations and thereby increase the amount of renewable generation that can connect.

NIE Networks successfully put in place arrangements with the Utility Regulator which provided for lower order Distribution System reinforcements totalling £4.3m at 76 primary substations throughout Northern Ireland enabling increased reverse power flows. 40 of these have been completed with the remainder to be completed by October 2016. An order of around 200 or more generation projects has been released as a result of this investment.

However in many cases higher order traditional network investments would be required to resolve capacity matters. As a result, NIE Networks has been investigating the feasibility of an alternative “managed connection” approach. This “managed connection” approach, if introduced, would optimise any remaining capacity on the Distribution System by managing the reverse power flows at primary substations.

As mentioned above, whilst the NIE Network Distribution System faces many challenges outlined above there has already been very significant achievement in terms of the high level of renewable generation either connected or committed to connect which are contributing to Northern Ireland’s renewable energy targets as explained in Section 4.

To put this achievement in context, the level of connected and committed renewable generation (around 1,570 MW) is close to the peak electricity load of Northern Ireland (around 1,800 MW) and is very high in terms of the MW of renewables installed per customer compared to other GB DNOs.

5.2. Transmission System Capacity

The transmission system in Northern Ireland comprises of 275 kV and 110 kV circuits and substations. It is the TSO's responsibility to plan and develop the Transmission System to facilitate connection of generation and demand growth in accordance with the Northern Ireland Transmission System Security and Planning Standards.

In Northern Ireland there is very limited capacity available on the Transmission System for the connection of generation both at distribution and transmission voltages. The TSO has already identified that the 110 kV transmission corridors shown in Figure 3 need to be strengthened to facilitate the generation already committed to connect. Table 1 shows the transmission projects that are required to strengthen these transmission corridors. Some of these projects are complete or in the process of being delivered, but some of the projects are not yet at the delivery stage. This means that even when the transmission projects that are in the process of being delivered are completed, the level of generation already committed to connect is still in excess of the firm³ capacity available on the Transmission System. For the avoidance of doubt Table 1 does not include investments necessary to facilitate the connection of any generation in the recent influx of applications.

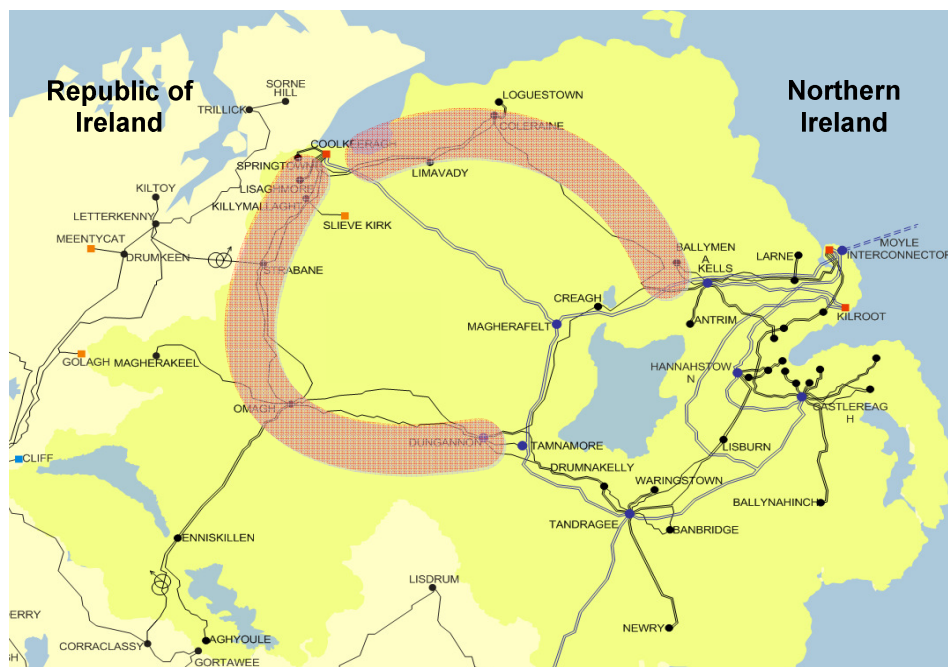


Figure 3: Northern Ireland Transmission System showing corridors that need to be reinforced for connected and committed generation (for illustrative purposes only)

³ Firm access is a measure of the transmission capacity available to generators connecting to either the Transmission System or the Distribution System. It is permissible to connect a certain level of generation in excess of firm capacity so long as it is possible to constrain its output to avoid overload or an impact on voltage performance. See Section 5.3 for more details.

Table 1: Status of transmission reinforcement projects to facilitate generation connected and committed to connect

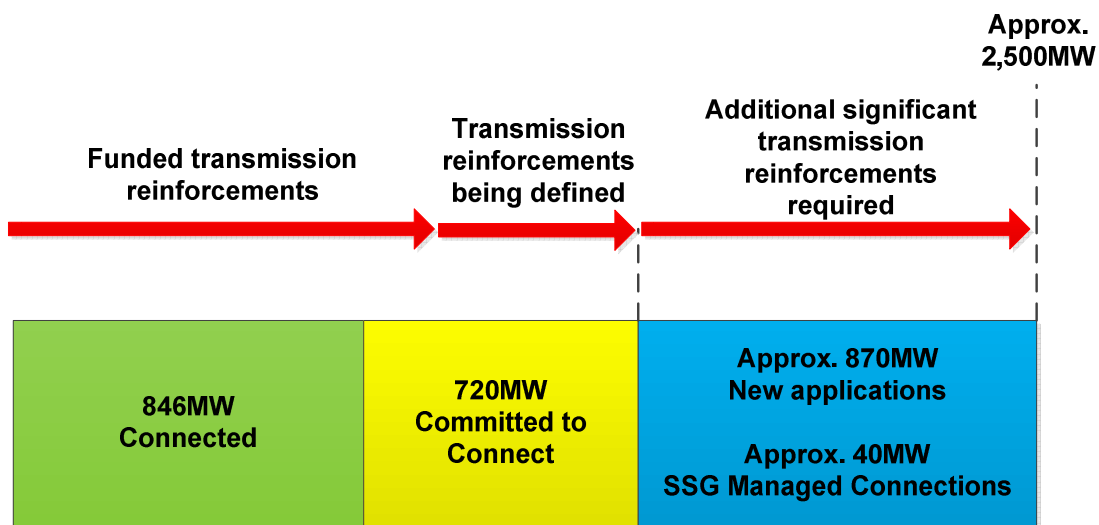
Project/Plan	Stage of Delivery	Estimated Times for Completion
Increase the capacity of the 110 kV circuit from Omagh to Dungannon	Complete	N/A
Increase the capacity of the Tamnamore 275/110 kV substation and the reconfiguration of 110 kV circuits at Tamnamore substation	Complete	N/A
Increase the capacity of the 110 kV circuit from Coleraine to Kells	In progress	2016
New 110 kV circuit from Omagh to Tamnamore	In progress	2016/2017
North – South 400 kV Interconnector from Turleenan to Woodland	In progress	Q4 2019
Voltage support at Coleraine, Omagh/Omagh South and Tamnamore	Project definition	To be determined
Increase in the capacity of 110 kV western network	Project definition	To be determined

An initial high level assessment of the ability of the Transmission System to accommodate the 870 MW influx of generation connection applications has indicated that significant additional reinforcement of the Transmission System would be required beyond what has been identified in Table 1.

It is anticipated that facilitating this level of generation, in addition to the generation already connected and committed to connect, would drive significant 275 kV reinforcements, further 110 kV reinforcements and the need for additional voltage support equipment. The move to 275 kV reinforcement could represent significant challenges in terms of the ability to deliver infrastructure at this voltage level resulting in

long lead times for delivery as well as a step change in the cost of transmission investments.

In summary the recent influx of generation applications will significantly increase pressure on the Transmission System and Distribution System capacity, which is already heavily congested from connected and committed generation. As explained in the Generation Capacity Statement 2016-2025⁴ demand growth in Northern Ireland is not expected to significantly increase in the upcoming years. Increasing levels of micro generation and developments in energy efficiency adds to the pressure placed on Transmission and Distribution System capacity. Figure 4 shows the status of the Transmission System developments in relation to the generation connected, committed to connect and awaiting a connection offer.



Figures as of end December 2015
Not to scale

Figure 4: Comparing renewable generation totals against transmission reinforcement requirements

5.3. Firm Access

Firm access is a market concept in the Single Electricity Market (SEM) and only applies to generation connections with a Maximum Export Capacity (MEC) of 5 MW and above.⁵ Firm access is a measure of the transmission capacity available to generators connecting to either the Transmission System or the Distribution System. Firm access

⁴ The Generation Capacity Statement 2015-2024 can be found at: http://www.soni.ltd.uk/media/documents/Operations/CapacityStatements/Generation_Capacity_Statement_2_0162025.PDF

⁵ The current market arrangements are that generators with MEC less than 5MW are granted full firm access without assessment. Note that the concept of firm access will change with the introduction of I-SEM market arrangements.

rights are only granted when the necessary associated reinforcements to the Transmission System are complete.

The level of firm financial access available on the Transmission System for a generator is known as that generator's Firm Access Quantity (FAQ). A generator is said to have full firm access to the Transmission System if their FAQ is equal to Maximum Export Capacity (MEC).

Under current market arrangements in the SEM⁶, generators with firm access may receive compensation up to the generator's FAQ in the event that its output is reduced from its available level of output.

To calculate a generator's FAQ, the TSO carries out detailed studies to determine the point at which the generator causes any issues (i.e. the Transmission System is not compliant with the planning standards) during likely outages on the Transmission System. The output of the generator at the point that the issue is caused becomes that generator's FAQ.

If a generator causes issues on the Transmission System, the TSO will identify how the Transmission System should be strengthened to mitigate any breach in planning standards. These reinforcements, known as Associated Transmission Reinforcements (ATRs), will then be included in the studies with an estimated lead time for delivery which will in turn release firm access to generators in the queue. Presently, each generator is given a list of ATRs and the FAQ that is released by the delivery of these ATRs. When all the ATRs are complete the generator will have full firm access i.e. the generator's FAQ will equal its MEC.

Firm access is currently calculated and granted in the order of the valid connection application date. See Section 8.11 which discusses options for changes required to entry into the FAQ list.

As indicated in Figure 4, transmission reinforcements are currently underway to facilitate connected generation and a small portion of the committed renewable generation, with additional reinforcements proposed to facilitate the remainder of the committed generation. Firm access for generation committed to connect is therefore already severely limited until these additional proposed reinforcements are funded and implemented.

⁶ More information on SEM rules can be found in the Trading and Settlement Code at <http://www.sem-o.com/MarketDevelopment/Pages/MarketRules.aspx>

5.4. Operational Challenges

In addition to ensuring that the capacity available on the Transmission System and Distribution System is sufficient to accommodate the generation seeking to connect, consideration must also be given to how the Transmission and Distribution Systems can be managed operationally.

There are technical challenges associated with operating the system with increasing levels of renewable generation for both NIE Networks and SONI. These need to be overcome to better manage the system with the renewable generation already connected, committed to connect and seeking to connect.

This section explores some of the operational challenges that the TSO and DNO are currently experiencing.

5.4.1. Variability of Renewable Generation

With a general increase in the uncertainty of generation and demand the ability to “control” a significant proportion of the system is imperative. Policy initiatives, including support for renewables and heat incentives, have led to an increase of weather dependent generation technologies. These are more variable in their output than classic generation and are building at lower unit sizes. The challenges associated with this output variability should not be underestimated.

In that regard SONI, along with EirGrid, the TSO in Ireland, has developed the “Delivering a Secure Sustainable Power System” (DS3) programme, and are working in conjunction with NIE Networks and ESB Networks, to address these challenges and other issues associated with the large scale deployment of renewable generation.

5.4.2. Visibility and Control of Generation

The TSO currently has the right and has developed the procedures to control the active power output of wind farms of 5 MW and above and the active power output of synchronous generating units of 10 MW and above connected to the Transmission System or the Distribution System as set out in the Grid Code.⁷ Generators in these categories are referred to as “controllable” generation in this paper.

The TSO currently does not have control of the active power output of wind farms less than 5 MW nor the active power output of synchronous generating units of less than 10 MW. Generators in these categories are referred to as “uncontrollable” generation in this paper.

⁷ Note that SONI are currently consulting on Grid Code changes to include requirements for Power Park Modules. These will be based on the existing requirements for wind farms and will be applicable for solar farms and any other generation technology that is connected to the system non-synchronously or through power electronics. The current SONI Grid Code can be found at <http://www.soni.ltd.uk/Operations/GridCodes/>

As the level of uncontrollable generation connected to the system grows there will be increasing challenges to maintain security of supply.

The two primary challenges for the TSO and DNO in relation to the increasing levels of small scale uncontrollable generation from a real time system operations perspective is visibility and control.

The TSO has the responsibility to balance generation and demand on the system and is required by licence to balance generation that is subject to central dispatch in the SEM and the demand forecast taking into account “electricity delivered to the All-island Network from generation sets not subject to central dispatch”. Therefore in order to adequately forecast system demand the TSO must have visibility of the generation that is not subject to central dispatch i.e. the uncontrollable generation that is connected.

The lack of visibility impacts on the TSOs ability to forecast system demand which in turn has implications for the TSO in adequately and efficiently scheduling SEM generation. In other words, additional generation will need to be scheduled which may subsequently need to be reduced or ‘curtailed’ to manage system demand if uncontrollable generation is also exporting. This will increase dispatch balancing costs and ultimately costs to the end user customer.

The TSO must also ensure, among other things, that there is adequate control of the system frequency. System frequency is maintained at 50 Hz across the island when there is a balance between customer demand and generation supply. When these are not in balance the frequency moves away from 50 Hz, potentially causing system security issues and damage to plant and customer equipment connected to the system.

For example an excess of generation will cause the system frequency to increase above 50 Hz. The SONI control centre can manage an over frequency event by reducing generation output through curtailment. If the only generation available for curtailment is in fact uncontrollable, the system frequency cannot be reduced. In addition there are often security constraints on the power system which require additional “must run” generation units to be scheduled that in turn increases the minimum amount of synchronous generation required at any given time.

Furthermore, the more uncontrollable generation that is connected then more curtailment of controllable generation will be required.

5.4.3. System Non-Synchronous Generation

A further consideration other than variability, visibility and controllability is the increasing level of non-synchronous generation connecting to the system. Through the DS3 programme it has been identified that with appropriate changes to policies, tools and performance of all generation plant on the system, it is possible to securely operate the power system with an instantaneous penetration of these non-synchronous technologies

of up to 75% of the system generation by 2020 (including exports/imports to Great Britain). This limit, known as System Non-Synchronous Penetration (SNSP), is currently at 50%⁸ and has implications for curtailment of these technologies going forward and is largely independent of the need for necessary network infrastructure to connect these assets.

While SONI is working with the industry and regulator to move this SNSP up to 75% by 2020 the TSOs need to curtail the output of controllable non-synchronous generation (wind, solar and HVDC technologies) at times to maintain this limit. As the level of these renewable non-synchronous technologies grows controllable wind, solar and HVDC technologies will need to be increasingly curtailed to maintain system security. This needs to be factored into consideration of connection policy.

5.4.4. Summary of Operational Challenges

To summarise, the operational challenges faced by the TSO and DNO in relation to managing the system in real time with increasing levels of renewable and uncontrollable generation are:

- Maintaining energy balance becomes progressively more difficult as the proportion of uncontrollable and weather dependent generation increases. Visibility and control of a greater proportion of the generation mix is a key mitigation measure. This is in line with the new ENTSO-E Network Code on the Requirements for Generators which states that visibility and controllability can be required for generators as low as 100 kW. The generator size from which generators should be controllable will therefore need to be reviewed.
- As the level of non-synchronous generation connecting to the system increases, the level of curtailment will increase. While SONI are working with the industry to increase SNSP the potential volume of these technologies is likely to require significant curtailment to maintain system security. This curtailment is largely independent of necessary network build to connect the assets.

⁸ Note that SNSP is currently set to 55% on a trial basis.

6. Need for an Alternative Connection Process

The existing connection application and offer process applied by NIE Networks and SONI is that each generation connection application is assessed on an individual basis, sequentially in application date order. Given the level of grid congestion, both distribution and transmission assessments are required to determine the impact of these generation applications on the grid.

The planning permission pre-requisite previously employed by NIE Networks resulted in a manageable programme of connection applications, rather than an inrush of applications, allowing for progressive design iteration. It also meant that generation projects were highly likely to proceed to delivery if connection methods were economically viable as planning permission was already secured. These benefits have now been removed resulting in a large volume of applications being received within a very short period of time, and less certainty in connection offers proceeding to construction.

In order to progress the influx of applications, a significant number of individual distribution connection designs and associated transmission assessments must be completed before it would be possible to determine wider network limitations and develop efficient and appropriate reinforcement of the wider network. If the current process of sequential assessment were to remain in place, the assessments of the current 870 MW could take years to complete. This timeline is clearly unsatisfactory for issuing connection offers.

The sequential processing also means that when one connection offer is rejected any other either 'live offer' or offer currently being processed would have to be reassessed. Hence when a large group of applications are received there is a significant risk of potential interactions between offers and therefore a high risk of continually reworking offers, adding further delay and uncertainty.

In addition, the current sequential approach to determine the impact on the transmission and distribution systems would also not allow NIE Networks and SONI to develop the overall Transmission and Distribution Systems in an efficient, co-ordinated and economical manner and could result in increased costs to the Northern Ireland customer base.

In conclusion, given the high volume of applications, it would not be sustainable to continue applying the existing connection offer process to this recent influx of generation applications given the high volume of applications already in the queue, as to do so would lead to:

- high levels of interaction between offers resulting in high levels of reworking of offers, as offers issued earlier are rejected or expire;

- delays in issuing connection offers for all applications and hence delays in connecting generation;
- high levels of uncertainty for generators;
- sub-optimal development of the Transmission and Distribution Systems;
- inefficient investment and potential increased costs for the Northern Ireland customer base; and
- inefficient use of TSO and DNO resources.

As explained at the workshop on 16 December 2015, NIE Networks and SONI believe that an alternative connection application and offer process is required. Further details on this can be found in Section 7.

Question 1: Do you have any additional suggestions for consideration in relation to continuing to apply the existing connection application and offer process given the recent influx of connection applications received?

7. Proposed Alternative Connection Process

7.1. High Level Principles

The underpinning principles of the proposed alternative connection application and offer process are as follows. The TSO and DNO aim to implement an alternative connection application and offer process that:

- aids more efficient and timely issue of connection offers;
- reduces interaction between connection offers;
- reduces rework of interacting offers when offers are rejected;
- allows for optimal development of the Transmission and Distribution Systems;
- allows for efficient network investment by the Northern Ireland customer base;
- allocates scarce network capacity efficiently;
- allows for equitable treatment of generation connection applications;
- provides clarity and transparency;
- maintains or improves system security; and
- makes efficient use of TSO and DNO resources.

In developing the proposed alternative connection application and offer process the processes employed in Ireland and GB have been considered by the TSO and DNO. Where possible and where appropriate the TSO and DNO have applied elements and/or principles of the processes in the neighbouring jurisdictions.

Question 2: Do you consider that the underpinning principles of the proposed connection application and offer process at a high level address the approach necessary to deal with the influx of connection applications? Can you suggest any further principles that should be considered?

7.2. Overview of Batch Processing

In order to effectively and efficiently process the influx of connection applications the TSO and DNO are proposing to process a pre-defined number of connection applications concurrently rather than treating each application on a sequential basis. The TSO and DNO's believe that the proposed "Batch" processing will align with the principles outlined in Section 7.1.

This section provides an overview of what the Batch Process is and how it will work. A high level process map of the Batch is contained in Appendix C.

The aim of the Batch Process is to treat those in the Batch as a group of simultaneous applications; assess the transmission and distribution works and costs associated with these applications, and; make connection offers simultaneously to the generators in the Batch.

The main features of the Batch Process and how it will work are described as follows.

- 7.2.1. There will be a defined period of time during which generation connection applications will be accepted by the TSO and DNO for inclusion in the Batch. This period started on 12 August 2015 and will end on the "Closure Date". This will result in a pre-defined number of connection applications that will be processed (the "Batch"). The Closure Date will be defined in the subsequent decision paper as part of this consultation process and it is proposed that it will not be a date in the past.
- 7.2.2. Valid Connection Applications in the Batch will be divided into Groups. Therefore rather than assessing the impact of each Valid Connection Application on the Transmission System individually, the impact on the Transmission System will be assessed for each Group of generators. The aim of processing applications as Groups is to reduce the time required to carry out transmission assessments.
- 7.2.3. A Group is defined as a subset of generators within the Batch connecting to the same transmission node (new or existing).
- 7.2.4. To establish a Group the TSO and DNO will:
 - a. consider the geographical location of generators in relation to the existing and planned Transmission and Distribution Systems;
 - b. determine the optimum connection voltage for the generator in line with statutory duties;
 - c. apply the Cluster methodology, if appropriate, as described in NIE Networks Statement of Charges;

- d. perform technical analysis to identify the Least Cost Technically Acceptable (LCTA) connection method from a transmission and distribution perspective as appropriate. As a minimum this includes assessment of the thermal capability of the network, voltage analysis and fault level analysis; and
 - e. consider feasibility of physical connection.
- 7.2.5. Where a Valid Connection Application is submitted to the TSO or DNO and the TSO and DNO determine that the connection voltage applied for is not the optimal connection voltage then the resultant connection offer will be issued from the appropriate system operator as determined by the DNO and TSO. For the avoidance of doubt, the earliest Valid Connection Application date will represent the generator's position in the generation queue. For example, if an application is submitted to the DNO and the connection voltage is transmission, the relevant application fee will apply as per the TSO Statement of Charges.
- 7.2.6. Within each Group of generators there may be Subgroups of generators or Clusters. A Subgroup of generators is a subset of generators within a Group that make use of common connection assets. A Cluster is as defined in the NIE Networks Statement of Charges.
- 7.2.7. Determining the transmission nodes to which the Groups will connect will be carried out in two stages:
- a. Initial nodal assignment: The first stage will be based on the TSO and DNO's best estimate of connection methods for each generator, Group or Subgroup where the transmission node is easily identified without carrying out detailed transmission assessment. Where the transmission node to which a Group is to be assigned is unclear without detailed transmission studies, then the initial nodal assignment will be an indication of the transmission connection nodes to which the Groups could connect. Following initial nodal assignment customers will be informed of the likely connection method or the connection options available and will have the opportunity to withdraw with partial refund of application fee paid. See Section 8.9 for further details.
 - b. Final nodal assignment: The second stage accounts for any applications that have been withdrawn and will involve detailed transmission and distribution analysis to determine the final nodal assignment for all generators.
- 7.2.8. Following final nodal assignment, the TSO and DNO, as appropriate, will carry out detailed individual connection designs for all generators.
- 7.2.9. The TSO will determine the optimal Transmission System developments required to facilitate the generation in the Batch.

- 7.2.10. The TSO will carry out analysis of the potential indicative levels of Generator Output Reduction (GOR). This analysis provides an indication of the potential levels of constraint and curtailment. See Section 8.13 for further details.
- 7.2.11. The TSO will also perform assessments to determine FAQs for each valid connection application and identify the ATRs for each Valid Connection Application. See Sections 8.11 and 8.12 for further details.
- 7.2.12. Overall charging principles will largely remain in line with current TSO and DNO Statements of Charges 9 i.e. generators will be charged based on LCTA methodology or Cluster methodology as appropriate.
- 7.2.13. Following completion of the Batch Process described above, the TSO or DNO, as appropriate, will issue each Valid Connection Application with a connection offer. Each offer will have a fixed validity period. All connection offers in the Batch will be issued together to co-ordinate offer acceptances and more importantly rejections. This should reduce the number of times that connection offers need to be reworked.
- 7.2.14. Following the expiry of the validity period and when the status of each offer is known (either accepted, rejected or expired) the TSO and DNO will rerun system studies of the proposed connection methods to ensure they are still optimal and should not result in stranded assets.
- 7.2.15. This exercise may result in a revision of accepted connection offers and a change in connection charge.

Note that this section provides an overview of the how the proposed Batch is intended to work but the details are subject to conclusion of the consultation process.

Question 3: Do you agree that the Batch Process is the most pragmatic alternative connection application and offer process to deal with the recent influx of applications? Do you have any other suggestions or specific comments on the proposed approach?

⁹ The Transmission Connection Charging Methodology Statement can be found on the SONI website at <http://www.soni.ltd.uk/media/documents/Archive/SONI%20Charging%20Methodology%20Statement%20December%202009%20-%20Approved%2022%20December%202010.pdf>

The Statement of Charges for distribution connections can be found on the NIE Networks website at <http://www.nienetworks.co.uk/documents/Connections/NIE-Distribution-Connection-Charging-Statement-ver.aspx>

8. Implementing “Batch” Processing

In order to implement Batch Processing there are a number of rulesets that need to be established. These issues are listed below and proposals for each issue are examined in detail in the following sections.

1. Valid Connection Applications;
2. Inclusion in the Batch Process;
3. Treatment of accepted, live and pending offers;
4. Generation “over-installed” and capped at MEC;
5. Treatment of Clusters that have been allocated access prior to the Closure Date;
6. Cluster weighting factors (as detailed in the NIE Networks Statement of Charges) for projects not submitted for planning and where subsequent connection offers have been rejected or have expired for such projects;
7. Order in which Groups are processed;
8. Phased approach to maximise use of remaining grid capacity;
9. Early opportunity to withdraw;
10. Charging for connection assets;
11. Entry to the FAQ list¹⁰;
12. Offers with or without firm access assessment;
13. Offers with or without Generator Output Reduction assessment;
14. Offer acceptance criteria; and
15. Post offer acceptance milestones.

8.1. Valid Connection Applications

A Valid Connection Application is one which contains all the information required for the TSO or DNO to issue a connection offer along with the application fee in accordance with the relevant Statement of Charges.

The information required for the TSO or DNO is contained within the respective connection application forms.

¹⁰ Currently only applicable for generators with an MEC of 5MW and above.

As previously stated NIE Networks changed its generation connection application policy on 12 August 2015 to align with the UR Determination (DET-572).

As SONI was not party to the dispute and the planning permission pre-requisite for transmission connection applications was consulted upon and agreed with industry in 2014, the following ruleset currently remains for transmission applications¹¹:

The required level of consent for onshore projects to progress a connection application acceptable to SONI is full Planning Permission.

The required level of consent to progress a connection application acceptable to SONI for a Compressed Air Energy Storage (CAES) plant that requires a Mineral Prospecting Licence is obtaining that licence.

The required level of consent for offshore projects to progress a connection application acceptable to SONI is an Exclusivity Agreement or an Agreement for Lease from The Crown Estate.

There is now an inconsistency whereby the requirement for transmission connection applications to enter the connection application queue does not align with the requirement for distribution connection applications.

In order to address this inconsistency and provide equitable treatment for transmission and distribution applications SONI is proposing that the current consenting requirements to progress a transmission connection application are removed. For the avoidance of doubt, until a decision is made on this matter, the consenting requirements for transmission applications remain unchanged.

Question 4: Do you agree with the proposal to remove all consenting requirements for transmission connection applications?

8.2. Inclusion in the Batch Process

The TSO and DNO propose that all Valid Connection Applications received by the TSO and DNO between 12 August 2015 and the proposed future Closure Date will be included in the Batch Process. This includes applications for new connections and applications for modification of existing connection offers or connection agreements as the potential impact of all generation on the Distribution and Transmission Systems must be assessed. It is proposed that the following application types will therefore be included in the Batch Process:

¹¹ Current consenting requirements for transmission applications are as per the October 2014 Decision Paper <http://www.soni.ltd.uk/media/documents/Consultations/OffshoreConsentingRequirements/SONI-NIE%20Decision%20Paper%20on%20consenting%20requirements%20for%20offshore%20generation.pdf>

- Application requests for an MEC;
- Applications for an increased MEC;
- Applications for zero export schemes;
- Applications to over-install generation and cap at MEC;
- Applications for a change in technology or additional technologies at an existing site;
- Applications for a change of transmission or distribution connection node; and
- Any applications with an MEC that materially affect other customers.

The proposed Closure Date will be defined in the subsequent decision paper as part of this consultation process and it is proposed that this will not be a date in the past. When determining the proposed Closure Date, there needs to be a balance in terms of allowing sufficient time for applications to be received, versus the resultant time delay in determining the Batch if the time period is too long. The current view of NIE Networks and SONI is that the Closure Date would be 4 weeks after the decision paper is issued.

The proposed move to Batch Processing of applications will mean that after the Closure Date for the Batch, no further applications of the types listed above would be processed. Subject to UR approval, it is proposed that Valid Connection Applications received after the Closure Date will be assigned a queue position but put on hold until further notice and no connection offers will be made by either the TSO or the DNO to these customers while the current Batch is being processed. Note that these applications could be on hold for a considerable period of time while the Batch is processed.

The Valid Connection Applications may form a future batch at a later date. However, the appropriateness of continuing with the Batch Process for applications received after the Closure Date will be reviewed by the TSO and DNO following conclusion of the Batch.

Question 5: Do you agree with the types of connection applications that are proposed to be included in the Batch? Please provide reasons for any views expressed.

Question 6: What do you believe would be an adequate length of time between a decision paper from this consultation process being issued and the proposed Closure Date? Do you agree that a 4 week period would be adequate? Please provide reasons for any preference.

8.3. Treatment of Accepted, Live and Pending offers

The TSO and DNO propose that any connection offers already accepted and connection offers already issued will not be affected by or included in the Batch Process and will progress as offered.

It is proposed that any customers with pending connection offers not already issued by the Closure Date will be processed as part of the Batch Process.

It is proposed that SSG applicants with Valid Connection Applications received prior to 12 August 2015 and are waiting on a potential 'managed connection' will be processed outside the Batch. They will be processed following conclusion of the managed connection consultation and resolution of the associated technical, commercial and regulatory issues.

8.4. Generation “Over-installed” and Capped at MEC

The TSO and DNO are aware that there is a lot of interest in the concept of optimising the capacity available on existing and planned connection assets. The concept is to over-install generation plant but apply a self-imposed cap to the output so that the contracted MEC is not breached. This may involve increasing the installed generation plant with the same technology type or different technology types.

The TSO and DNO agree that this concept would be in line with the high level principles outlined in Section 7.1 by helping to maximise access to the network and could allow for optimal and efficient network development. We note that this approach may be inconsistent with the wholesale market arrangements, and obligations on generators which underpin the trading arrangements¹², but this is outside of the scope of this paper.

However the TSO and DNO would require a connection application for modification of existing connections or for new connections where the installed capacity is greater than MEC but capped to MEC. The primary reason for this is that technical assessment of the connection application is dependent on the generation technology and the level of generation installed therefore the TSO and DNO need to know what plant is to be installed. This information is also required for system analyses. Any modification to a connection would mean that the whole installation would also need to be compliant with the latest version of Grid Code, Distribution Code and the System Security and Planning Standards.

In addition, the TSO and DNO have also identified a number of factors, outside of the connection application and offer process, which need consideration to facilitate “over-installation”:

¹² Both the SEM and I-SEM mandate participation in the balancing mechanism.

- clarification of definitions of Registered Capacity and MEC in the Grid Code, Distribution Code and the System Security and Planning Standards;
- introduction of Power Park Modules (solar farms and any other generation technology that is connected to the system non-synchronously or through power electronics) into Grid Code (which is currently under consultation) and Distribution Code;
- SEM Committee decision on inclusion of new priority dispatch generation in the priority dispatch hierarchy;
- The SEM Committee decisions on the design of the I-SEM, including mandatory participation in the balancing market; and
- TSO's ability to forecast generation from sites that have over-installed either using the same generation technology or a different generation technology.

In addition to the above, NIE Networks and SONI are currently considering the technical, operational and contractual implications of permitting over-installation at existing sites, including those connecting to Cluster substations, and reviewing the network planning assumptions used for the original connections.

The TSO and DNO would also like to point out that, depending on the arrangement behind the Connection Point, interested parties should consider whether a distribution licence may be required.

Therefore the TSO and DSO are proposing to accept new or modification applications for connections where the capacity of generation installed is greater than MEC but capped to MEC and process these as part of the Batch for controllable generation only. This proposal is limited to controllable generation due to the operational challenges outlined in Section 5.4 where it was explained how it is becoming increasingly important for the TSO to have visibility and control of a greater proportion of the generation mix.

The rationale behind processing this type of modification application as part of the Batch is that for example, fault level contribution from the generation site will change for this type of connection modification. Therefore the impact that this change may have on the Transmission and Distribution Systems must be assessed in the same way as any new connection application would be assessed. The TSO and DNO believe that they cannot be prioritised above other applications in the Batch as they may have a material effect on other customers seeking to connect. In addition, it is important to note that although this type of connection would not impact on MEC, it will have an impact on system demand which must also be accounted for.

Question 7: Is there any information you can provide to describe how it is proposed that the over-installed plant, particularly in the case where there is a mix of generation technologies, is capped to MEC safely and securely?

Question 8: Is there any information you can provide to describe how it is proposed to limit the availability declarations from the generation site to the SEM and the SONI control centre via SCADA?

Question 9: Please provide any information you feel could explain how, if there is more than one technology type on site, the generation behind the connection point will be reduced in the event of a system constraint or curtailment?

Question 10: Are there any further considerations for the TSO and DNO before this type of connection can be facilitated?

8.5. Treatment of Clusters with access allocated prior to the Closure Date

For Clusters where the capacity on the Transmission System has been allocated prior to the Closure Date but not yet assigned to a specific distribution connection, it is proposed that this unallocated capacity is assigned to distribution connected generators as a priority in Valid Connection Application date order. It is proposed that this capacity must be allocated to distribution connected generators to ensure that the Cluster charging methodology, which is based on a 'per MW' share of the shared Connection Assets, remains unchanged for applicants that have already been issued with a connection offer and also maximises the potential for the complete cost of the Cluster to be fully recovered.

The rationale for allocating capacity to distribution generators only is that if the capacity was allocated to a transmission connected generator, connecting directly at transmission voltage into the Cluster infrastructure rather than at distribution voltage, the DNO Statement of Charges could not be applied to the transmission connected generator. Even applying the TSO Statement of Charges where the transmission customer is charged a per MW share of any shared Connection Assets, there is a risk that the full cost of the Cluster is not recovered as the cost apportionment for the complete Cluster and the shared Connection Assets will not be aligned.

This means that where there is Cluster capacity available some distribution connected generators that have applied for connection since 12 August 2015 may receive connection offers outside of the Batch Process, as transmission assessment is already complete, provided there is no material change to the assumptions under which the transmission assessment was carried out.

It is proposed that any additional transmission capacity beyond that already assigned to a Cluster (i.e. capacity beyond 90MVA of the first transformer or beyond any other

allocated capacity level if applicable), will be dealt with in the Batch as described in Section 7.2.

For the avoidance of doubt, if the full MEC of a customer cannot be facilitated within the remaining capacity of the first 90MVA of a Cluster or other allocated capacity level if applicable, then it is proposed that a connection offer would be issued only for the capacity that can be facilitated, with the remainder retaining its queue position and being dealt with in the Batch as described in Section 7.2.

It is proposed that the DNO will issue interactive connection offers for any remaining Cluster capacity. This would mean that the remaining capacity at a Cluster is offered to all applicants in the queue that are expected to connect into that Cluster. Connection offers would be issued simultaneously and would identify the queue position in the offer based on Valid Connection Application date. If all generators with interacting offers accept, the capacity is assigned to the generator with the earliest Valid Connection Application date.

Question 11: Do you agree with the proposal for allocating any remaining Cluster capacity as a priority and issue these offers outside of the Batch Process? Can you suggest any alternatives for consideration?

8.6. Cluster weighting factors for Projects not submitted for Planning and where subsequent connection offers have been rejected or have expired for such Projects

When determining the anticipated extent of generation that could potentially connect to a Cluster substation, a range of “weightings” are applied in accordance with the DNO Statement of Charges for projects at various stages of development. In the past, there was a very high connection offer acceptance rate as projects already had planning consent prior to being issued a connection offer. It is anticipated that the connection offer acceptance rate could reduce considerably following the removal of planning permission as a pre-requisite to connection application due to increased uncertainty of project delivery at connection offer stage.

A weighting of 0.8 is currently assigned to projects that have submitted a grid application but have not submitted a planning application for the project. Whilst this rightly allows consideration of these projects in the designation of a Cluster substation, some consideration must now be given to establishing if the 0.8 weighting should remain for these projects following rejection or expiry of any connection offer issued for the project, or should the weighting be reduced or set to zero in such circumstances.

The rationale for changing the weighting following rejection or expiry of any connection offer is to prevent potentially speculative projects that have not applied for planning

permission from unduly inflating the extent of generation that could potentially connect to a Cluster substation as this could result in under-recovery of Cluster substation costs.

Whilst this matter may not be of immediate concern for establishing the Batch or processing connection applications within the Batch, NIE Networks and SONI would be keen to hear views on whether the weighting for such projects should be reduced or set to zero in any future revision to the DNO Statement of Charges.

Question 12: Do you agree that a change may be required to the weighting of projects connecting into Clusters that have not submitted for planning permission and subsequent connection offers have expired or been rejected? Would you consider a weighting of zero for such projects to be acceptable?

8.7. Order in which Groups are assessed

Once the TSO and DNO have determined the Groups as described in Section 7.2, the order in which the transmission assessments for the Groups are carried out needs to be established.

The TSO and DNO propose that Groups are ordered for transmission assessment based on the Group containing the earliest individual Valid Connection Application. An example of how this would work is shown in Figure 5.

In this example, the individual applications are plotted onto a map of the Transmission System. These applications are then grouped to the nearest existing or planned transmission node as shown with Group A connecting to transmission node 1, Group B connecting to transmission node 2 and Group C connecting to transmission node 3. To determine whether Group A, Group B or Group C is assessed first, it is proposed that as the earliest individual application (Application No.1) lies in Group B as shown, it will be assessed first. This principle is applied to the other Groups in the Batch with Group C assessed second and Group A assessed third.

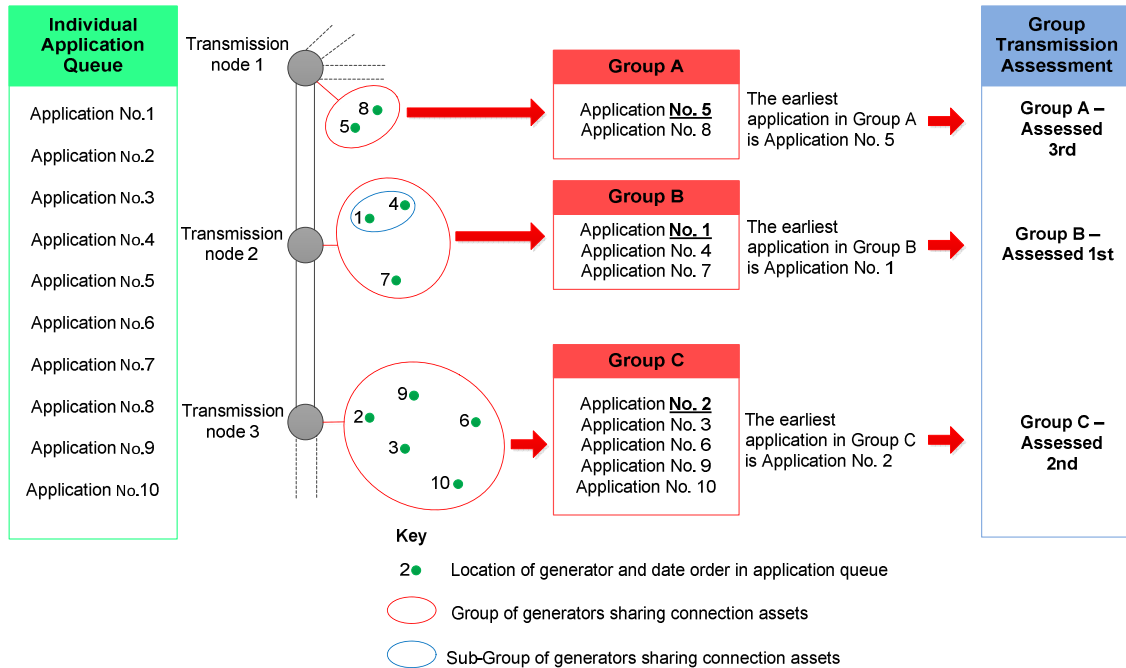


Figure 5: Example to explain how Groups of generators are ordered

Question 13: Do you agree that the proposal to order the transmission assessments of the Groups based on the Groups with the earliest individual Valid Connection Application is a practical approach? If not, can you suggest any alternatives?

8.8. Phased Approach to Maximise Use of Remaining Grid Capacity

As previously stated the level of generation committed to connect is in excess of the capacity available on the Transmission System and it can be concluded that Transmission System capacity is a limited resource.

That said there may be some limited capacity available on the Transmission System depending on geographical location and generation profile. High level transmission studies have been carried out and initial indications show that if there is any remaining capacity on the transmission system, it is likely to be limited.

Therefore, in line with the high level principles, the TSO and DNO believe that there may be value, to the extent that any capacity remains prioritising connection offers to customers where it is determined by the TSO that there is capacity available on the Transmission System, albeit such remaining capacity may be limited.

Further detailed system studies would be required to ascertain if indeed there is any capacity available on the Transmission System that could be used, taking into account connected and committed generation. Capacity available on the Distribution System would also need to be accounted for i.e. capacity on the Transmission System can only be offered to a generator whose connection voltage is at distribution, if there is also capacity on the Distribution System.

Therefore the TSO and DNO are proposing an option whereby the Batch could be split into two phases and processed sequentially.

Phase one would allow the TSO and DNO, as appropriate, to issue connection offers to customers at the nodes where it is determined that there may be capacity on the Transmission System, providing there is capacity on the Distribution System also. It is proposed that any remaining capacity identified would be allocated based on Valid Connection Application date order.

Phase two would include all remaining connection applications that require future reinforcement works to the Transmission System to connect.

The TSO and DNO acknowledge that splitting the Batch into two phases would mean that those customers that don't need wider transmission reinforcement works¹³ to connect receive their connection offers earlier than if the Batch is not split. However, it means that customers that do need wider transmission reinforcement works to connect would have to wait longer for their connection offers.

Therefore, for this proposal to work (assuming the TSO determines that there is capacity on the Transmission System), the system operators believe that phase one connection offers must be accepted or rejected within a short period of time. It is proposed that the normal 90 day offer validity period is substantially reduced. Any capacity released by rejected or expired offers will be released to the next generator in the queue in application date order and so on.

Question 14: Do you believe it would be a prudent approach in the first instance for the TSO to determine whether there is existing grid capacity and issue offers where there is capacity as a priority, accepting that other applicants not included in this phase 1 would need to wait longer for connection offers?

Question 15: In relation to connection offer validity periods, what length of time do you suggest would strike a balance between giving customers enough time to consider the connection offer and not unduly delay starting to process the remainder of the Batch?

¹³ Wider transmission reinforcement works in Section 8.8 refers to reinforcements to the deeper transmission system.

8.9. Early Opportunity to Withdraw

The TSO and DNO recognise that there is growing uncertainty within the connections industry particularly in relation to the continuation of renewable generation incentive schemes. We also acknowledge that making a connection application without having secured planning permission could mean that the ability to deliver a generation project through to construction is more uncertain at the time of connection application.

However, once the Batch processing has started the TSO and DNO would like to minimise rework of connection offers and facilitate the earliest possible conclusion of Group/Subgroup assessments in order to be in a position to issue connection offers as quickly as possible.

Given these particular circumstances it is proposed that in order to reduce the level of rework and potential delay, that there would be only two opportunities to withdraw an application and receive a full or partial refund of the connection application fee paid.

8.9.1. Opportunity for full refund

If a Valid Connection Application is withdrawn prior to the Closure Date this will assist in developing the defined Batch. Customers will receive a full refund of the application fee paid.

8.9.2. Opportunity for partial refund

When the TSO and DNO have completed the initial nodal assignment as described in Section 7.2 and have developed high level connection methods or connection options for each Group or Subgroup without undertaking detailed transmission and distribution analysis it is proposed that the TSO and DNO will provide information to the customer to explain the initial nodal assignment and estimated connection method. Customers will be informed of the likely connection method or the connection options available and will have the opportunity to withdraw with partial refund of the application fee paid. Note the level of refund will be assessed on an individual basis.

Note that without detailed analysis, the information provided to customers at this stage may be limited to the connection options for Groups where it is unclear as to which transmission node they would connect. It is important to note that any information on initial nodal assignment or connection method at this stage would not represent a connection offer and may be subject to change as the Batch Process is progressed.

It is proposed that customers will be have 10 business days from the date when the TSO or DNO, as appropriate, has provided information on initial nodal assignment to decide whether to withdraw early from the Batch Process.

If the customer does not respond, the TSO and DNO will assume that the application is to be processed and it will be included in the final nodal assignment. No refund of application fee will be made if the customer withdraws the application at a later stage.

Following the withdrawal period, the TSO and DNO will reassess the initial nodal assignments. This will establish the final nodal assignment for the Batch and the TSO and DNO, as appropriate, will notify customers of their assigned node.

Question 16: In order to reduce time, it is proposed to allow a period of 10 days from information on initial nodal assignment being provided for a decision to be made on whether to withdraw from an application from the process. Do you consider that the suggested 10 day period will provide an adequate balance between reducing delays and allowing high level decisions to be made by developers?

Question 17: Do you believe that high level information on estimated nodal assignment, connection method, potential charges and estimated timeframes for delivery would be of value and enable a decision to withdraw early to be made?

Question 18: Can you suggest any alternatives to ensure that customers are committed to their connection application?

8.10.Charging for Connection Assets

A generator is charged for the Connection Assets required to cater for installed capacity and deliver the generator's MEC to the Distribution and/or Transmission system in accordance with the charging rules specified in the TSO and DNO Statement of Charges. Connection Assets will comprise of unique or sole use Connection Assets and may also comprise of shared Connection Assets.

As described previously, the Batch Process proposes to assess all generation applications as a pre-defined number of connection applications to ensure optimal Transmission System and Distribution System development with the transmission assessments to be carried out for Groups of customers. It is therefore proposed that the shared Connection Assets at transmission and distribution, as defined by the TSO and DNO, are shared equitably between the customers within the Group or Subgroup. These customers may be connected directly to the Transmission System or to the Distribution System and will be charged a per MW share of the cost of the shared Connection Assets rather than the "first mover" paying initial high costs. Note that the charges applicable will be calculated in line with the Statement of Charges and according to voltage level.

This cost sharing proposal should reduce analysis time and allow offers to be issued in a more efficient manner.

Hence, it is proposed that in the connection offers to individual customers, the relevant system operator will include the per MW share charge for the shared Connection Assets. The per MW share cost assumes that all customers in the Group or Subgroup proceed. Therefore, in addition to the per MW share charge, it is proposed that the complete cost of the shared Connection Assets are also included in the offers. The purpose of this is to provide information on the maximum charge of the shared Connection Assets that could be applied in the event that customers in the Group or Subgroup do not accept. Note that without the assurance of an accepted offer there is a risk of losing the per MW share from a customer in the Group or Subgroup because the offer is rejected or expires and there is no mechanism to recover any lost per MW share.

The charging regime must ensure that charges are allocated correctly to each generator and are 100% recovered from the connecting generator(s) as there is no mechanism for uncovered connection charges to be recovered. Therefore it is proposed that the TSO and DNO as appropriate will request a Connection Charges Bond equal to the cost of the MW share of the shared Connection Assets. The bond would be required with acceptance of terms and will be required to be increased if another customer making use of the shared connection does not accept their offer. This is to ensure other generators that are making use of the same shared Connection Assets can still progress their projects to completion even if another customer were to drop out.

Note that this charging regime is already included in the TSO Statement of Charges and may need to be reflected in the DNO Statement of Charges which will be subject to UR approval.

Question 19: Do you agree with the proposal to share the costs of common connection assets between applicants on a per MW basis as described?

8.11. Entry to the FAQ List

Following a joint consultation SONI and NIE Networks issued a Decision Paper¹⁴ in July 2013 which determined the ruleset by which Controllable generators could enter the FAQ list. The ruleset set out in the decision paper for entry into the FAQ list was based on connection application date if prior planning permission has already been secured at the time of application.

The requirements to make a connection application and enter into the FAQ list both previously included the need to secure prior planning permission. This resulted in the connection application queue dates and the FAQ entry list dates being one and the same for generators of 5MW and above.

¹⁴ Entry into the FAQ list remains as per the July 2013 Decision Paper which can be found at the following link.

<http://www.soni.ltd.uk/media/documents/Generator%20Connection%20Process%20Decision%20Paper%20-%20July%202013.pdf>

Since the requirement to have secured planning permission prior to making a connection application to the DNO was removed, the connection application queue dates and the FAQ entry list dates are no longer linked. There is currently no mechanism to assign connection applications which do not have prior planning permission a position on the FAQ list, hence those generators without planning permission cannot be assessed for firm access.

Therefore the TSO and DNO are proposing to amend the ruleset for entry into the FAQ list. There are two options proposed below.

8.11.1. Proposal A – Planning Permission

Proposal A suggests that the date for entry into the FAQ list is as follows:

- If prior planning permission has already been secured at the time of application, the date for entry to the FAQ list is the Valid Connection Application date;
- If prior planning permission has not been secured at the time of application, the date for entry to the FAQ list is the date that SONI is formally notified that the project which the application relates to has secured planning permission; or
- If connection application was made after the NIE Networks planning permission policy change on 12 August 2015 and planning permission has been secured between Valid Connection Application date and the Closure Date of the Batch, the date for entry to the FAQ list is the date that planning permission was secured. SONI need to be informed of this prior to the Closure Date.

This proposal would mean that a generator that has applied without planning permission is issued with a connection offer that would provide all the information regarding the connection method, relevant connection charges and estimated timescale for delivery of the connection. However, the connection offer would state that the FAQ for the generator would be zero and there would be no indication of any ATRs that would be required to make the generator fully firm. Therefore the generator would need to accept an offer for zero firm access with no indication of when the generator would be made firm until such time as FAQ was assessed. This concept is explored in Section 8.12.

For these customers, FAQ can only be calculated and ATRs assessed based on the date that they notify the TSO of receipt of planning permission.

If SONI is not formally notified that planning permission has been received, the generator will not enter the FAQ list and its FAQ and ATRs are not assessed. This would mean that the generator would not be eligible for any market related payments resulting from generator output reduction.

Note that if proposal A were adopted, this would result in connection offers within the Batch being delivered quicker than if proposal B, as described below, is adopted as the number of connection offers requiring FAQ analysis by the TSO would be significantly reduced. It would also mean that applicants believe they would be in a position to accept connection offers without any firm access assessment being carried out.

8.11.2. Proposal B – Valid Connection Application Date Order

Proposal B suggests that date for entry into the FAQ list is Valid Connection Application date, regardless of planning permission status.

This proposal would mean that all controllable generators that have applied for connection are automatically entered into the FAQ list based on their Valid Connection Application date. The connection application queue dates and the FAQ entry list dates would be identical. Note that if more than one application is received on the same day, the time of Valid Connection Application as well as the date will determine the FAQ entry list position.

Note that adopting this proposal would mean that transmission customers who are not currently able to apply for connection without prior planning permission will also only enter the FAQ list on their Valid Connection Application date and as such may be disadvantaged.

Note that, as detailed in Section 8.1, it is proposed to remove all consenting requirements for transmission applications as part of this consultation.

Question 20: Do you think Proposal A or Proposal B is preferable for entry into the FAQ list? Do you have any other suggestions for entry into the FAQ list?

8.12. Offers with and without Firm Access Assessment

The TSO is open to the possibility of issuing connection offers for generators of 5MW and above without having completed firm access (FAQ) assessments. This approach could save considerable time and mean connection offers are issued sooner, particularly if Option B in Section 8.11 is concluded to be the preferred option for entry into the FAQ list. In addition, it would mean less reworking of FAQ analysis. If FAQ is calculated prior to issuing offers then this will ultimately result in an exercise to reallocate FAQ if generators do not accept offers.

The proposal is that a generator is issued with a connection offer that would provide all the information regarding the connection method, relevant connection charges and estimated timescale for delivery of the connection. However, the connection offer would state that the FAQ for the generator would be zero and there would be no indication of any ATRs that would be required to make the generator fully firm. Therefore the generator would need to be able to accept an offer for zero firm access with no indication

of when the generator would be made firm until such time as FAQ was assessed. This would mean that the generator would not be eligible for any market related payments resulting from generator output reduction.

As explained previously in Section 5.2 it is likely that significant further reinforcement of the Transmission System will be required to provide firm access for all of the additional generation connection applications received since 12 August 2015.

It should be noted that if the proposal for offers without firm access assessment is supported, it would apply to all connection offers.

Note also that if Option A in Section 8.11 is applied, any application without planning at offer stage will not be eligible for entry into the FAQ list and will automatically not get FAQ or ATR information in any connection offer issued.

Question 21: Would a connection offer for generators of 5MW and above without firm access assessment provide sufficient information for that offer to be accepted or for high level decisions on project viability to be made?

8.13. Offers with and without Generator Output Reduction Assessment

The TSO normally issues FAQ information along with Generator Output Reduction (GOR) information. The GOR analysis provides the customer with an indication of the potential levels of constraint and curtailment¹⁵. There are two points at which the GOR analysis could be carried out.

- The TSO could assess GOR for all generation in the Batch and provide this information along with connection offers or:
- The TSO could assess GOR only for generation that accept connection offers.

If GOR assessment is required, SONI may require an additional fee to be paid by applicants.

Question 22: Would a connection offer which does not contain GOR information provide sufficient information for that offer to be accepted or high level decisions on project viability to be made?

Question 23: Is it essential for GOR information to be issued along with FAQ and ATR information or is GOR information alone sufficient information for an offer to be accepted?

¹⁵ SONI are currently updating the report to provide indications of potential constraint and curtailment levels for connected and committed generation. The latest GOR report can be found at the following link.
http://www.soni.ltd.uk/media/documents/Operations/Generators/Northern%20Ireland%20Generator%20Output%20Reductions_2014-2020_v2%201.pdf

8.14. Offer Acceptance Criteria

The TSO and DNO believe it is important that acceptance criteria for both transmission and distribution connections are the same. To accept a connection offer, the acceptance criteria will be as set out in the connection offer.

Some changes relating to the offer acceptance criteria in the Statement of Charges may be required as a result of issues discussed in this consultation paper and any subsequent decision paper that may be issued as part of this consultation process. Any changes to the Statements of Charges will require UR review and approval and may be subject to further separate consultation. In general, the main proposals are listed below for clarity:

- relevant deposit;
- application of a Connection Charge Bond as detailed in Section 8.10;
- application of an MEC Bond to ensure that access granted is used and not hoarded; and
- introduction of per MW sharing for Distribution Connections.

All acceptance criteria must all be met within the connection offer validity period, as stated in the connection offer, in order for the offer acceptance to be deemed valid.

Question 24: Do you agree that the offer acceptance criteria outlined above strikes the right balance between ensuring that applicants are committed to their projects, without being too onerous that applicants will not be in a position to accept their offer?

8.15. Post Offer Acceptance Milestones

Following acceptance of an offer, certain project milestones and payments will be required to be met by the customer and these will be set out in the connection offer by the relevant system operator.

As the planning permission pre-requisite has been removed for distribution applications, and is proposed to be removed for transmission applications (subject to conclusion of this consultation process), there will be a requirement to include further project milestones in connection offers for projects that do not have planning consent.

The primary reason for introducing a project milestone relating specifically to securing planning permission for the project is to ensure that network capacity is allocated fairly and used efficiently. Hence any capacity that has been allocated to a project following offer acceptance should either be used or reallocated to other applicants. This will help

ensure that capacity is not allocated to and hoarded by projects which are either very slow moving or that have stalled.

Therefore it is proposed that a number of project milestones are introduced:

- planning permission application initiated e.g. within 2 months of offer acceptance;
- Environmental Impact Assessment (if required) initiated e.g. within 2 months of offer acceptance;
- planning permission obtained e.g. within 12 months of offer acceptance.

Ofgem and Energy Networks Association (ENA) are currently consulting on this matter in GB. It is proposed that, where possible, similar milestones and timelines for these milestones could be used in Northern Ireland, but this may be subject to further consultation.

Whilst not of immediate concern for determining the initial stages of Batch Processing, NIE Networks and SONI would appreciate any feedback from the industry and relevant stakeholders on this issue in order to determine the content of any subsequent connection offers.

Question 25: Do you agree that project milestones relating specifically to securing planning permission are required now that the planning permission pre-requisite has been removed for applications to the Distribution System? What do you believe to be an adequate length of time to secure planning permission after a connection offer has been accepted?

Question 26: Do you believe that the outcome of the Ofgem milestone consultation in GB should be applied in Northern Ireland without further consultation?

9. Summary of Consultation Questions

Question 1: Do you have any additional suggestions for consideration in relation to continuing to apply the existing connection application and offer process given the recent influx of connection applications received?

Question 2: Do you consider that the underpinning principles of the proposed connection application and offer process at a high level address the approach necessary to deal with the influx of connection applications? Can you suggest any further principles that should be considered?

Question 3: Do you agree that the Batch Process is the most pragmatic alternative connection application and offer process to deal with the recent influx of applications? Do you have any other suggestions or specific comments on the proposed approach?

Question 4: Do you agree with the proposal to remove all consenting requirements for transmission connection applications?

Question 5: Do you agree with the types of connection applications that are proposed to be included in the Batch? Please provide reasons for any views expressed.

Question 6: What do you believe would be an adequate length of time between a decision paper from this consultation process being issued and the proposed Closure Date? Do you agree that a 4 week period would be adequate? Please provide reasons for any preference.

Question 7: Is there any information you can provide to describe how it is proposed that the over-installed plant, particularly in the case where there is a mix of generation technologies, is capped to MEC safely and securely?

Question 8: Is there any information you can provide to describe how it is proposed to limit the availability declarations from the generation site to the SEM and the SONI control centre via SCADA?

Question 9: Please provide any information you feel could explain how, if there is more than one technology type on site, the generation behind the connection point will be reduced in the event of a system constraint or curtailment?

Question 10: Are there any further considerations for the TSO and DNO before this type of connection can be facilitated?

Question 11: Do you agree with the proposal for allocating any remaining Cluster capacity as a priority and issue these offers outside of the Batch Process? Can you suggest any alternatives for consideration?

Question 12: Do you agree that a change may be required to the weighting of projects connecting into Clusters that have not submitted for planning permission and subsequent connection offers have expired or been rejected? Would you consider a weighting of zero for such projects to be acceptable?

Question 13: Do you agree that the proposal to order the transmission assessments of the Groups based on the Groups with the earliest individual Valid Connection Application is a practical approach? If not, can you suggest any alternatives?

Question 14: Do you believe it would be a prudent approach in the first instance for the TSO to determine whether there is existing grid capacity and issue offers where there is capacity as a priority, accepting that other applicants not included in this phase 1 would need to wait longer for connection offers?

Question 15: In relation to connection offer validity periods, what length of time do you suggest would strike a balance between giving customers enough time to consider the connection offer and not unduly delay starting to process the remainder of the Batch?

Question 16: In order to reduce time, it is proposed to allow a period of 10 days from information on initial nodal assignment being provided for a decision to be made on whether to withdraw from an application from the process. Do you consider that the suggested 10 day period will provide an adequate balance between reducing delays and allowing high level decisions to be made by developers?

Question 17: Do you believe that high level information on estimated nodal assignment, connection method, potential charges and estimated timeframes for delivery would be of value and enable a decision to withdraw early to be made?

Question 18: Can you suggest any alternatives to ensure that customers are committed to their connection application?

Question 19: Do you agree with the proposal to share the costs of common connection assets between applicants on a per MW basis as described?

Question 20: Do you think Proposal A or Proposal B is preferable for entry into the FAQ list? Do you have any other suggestions for entry into the FAQ list?

Question 21: Would a connection offer for generators of 5MW and above without firm access assessment provide sufficient information for that offer to be accepted or for high level decisions on project viability to be made?

Question 22: Would a connection offer which does not contain GOR information provide sufficient information for that offer to be accepted or high level decisions on project viability to be made?

Question 23: Is it essential for GOR information to be issued along with FAQ and ATR information or is GOR information alone sufficient information for an offer to be accepted?

Question 24: Do you agree that the offer acceptance criteria outlined above strikes the right balance between ensuring that applicants are committed to their projects, without being too onerous that applicants will not be in a position to accept their offer?

Question 25: Do you agree that project milestones relating specifically to securing planning permission are required now that the planning permission pre-requisite has been removed for applications to the Distribution System? What do you believe to be an

adequate length of time to secure planning permission after a connection offer has been accepted?

Question 26: Do you believe that the outcome of the Ofgem milestone consultation in GB should be applied in Northern Ireland without further consultation?

10. Next Steps

The next steps for the TSO and DNO in dealing with the influx of applications that have been received and the other challenges associated with this are:

- Hold a consultation workshop on the proposed Batch process on 23 March 2016;
- Following close of the consultation on 1 April 2016 the TSO and DNO will review all responses received and come to a decision; and
- A decision paper is expected to be issued April/May.

It is difficult at this stage to provide timelines for processing the applications in the Batch as the final rulesets to implement the proposed Batch Process have not yet been decided, nor is the full extent of the proposed Batch known. Any timeline is dependent on decisions taken as part of this consultation process.

Therefore, a more detailed timeline for further engagement with applicants as proposed in Section 8.9, together with an estimation of when connection offers are likely to be issued will be detailed in the decision paper.

11. Appendix

Appendix A: Definitions

Batch	Has the meaning given to it in Section 7.2.
Batch Process	The proposed process for assessment of the Batch as described in Section 7.2.
Closure Date	The date on which generation connection applications will cease to be considered for the Batch.
Cluster	<p>As per the NIE Networks Statement of Charges means one or more existing or proposed Authorised Generators which are or may be connected to a Designated Generation Cluster Infrastructure or an Approved Generation Cluster Infrastructure or a Constructed Generation Cluster Infrastructure and which are subject to charges in accordance with the principles set out in section 7 of the Statement of Charges. Such Authorised Generators are required to pay for sole use assets and to pay a contribution for assets shared with others (subject to paragraph 7.11 of the Statement of Charges).</p>
Cluster Infrastructure	<p>Transmission and distribution assets that are shared by all parties connecting to a Cluster i.e. the Cluster transmission infrastructure from the Point of Connection to the Transmission System to the 33 kV switchboard in the Cluster substation.</p> <p>means:</p> <ol style="list-style-type: none">1. 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;2. those assets required to reinforce the Distribution System which are at the connection voltage level and one voltage level above; and3. 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
Connection Assets as set out in NIE Networks Statement of Charges	

electricity flows caused by any other customer

Connection Assets as set out in SONI Statement of Charges	those assets which are installed to enable the transfer of the Maximum Export Capacity (MEC) or the Maximum Import Capacity (MIC) of the User(s) located at the Connection Point, to or from, as appropriate, the All-Island Transmission Networks, subject to sub-paragraph 4.2 of the Statement of Charges; and those assets which are installed as a result of the User's effect on fault current levels on the Transmission System, but does not include any assets installed at any location other than the transmission node to which the User connects.
Connection Point	A point at which a customer's equipment connects to the Distribution System or the Transmission System, as appropriate.
Customer	Means, as appropriate, an applicant for a new connection or a party who has accepted a connection offer.
Distribution Code	The Code of that name prepared pursuant to Condition 27 of the NIE Networks licence.
Distribution System	The electric lines within the authorised area, owned by NIE Networks (but not, for the avoidance of doubt, any lines forming part of the Transmission System) and any other electric lines which the Northern Ireland Authority for Utility Regulation may specify as forming part of the Distribution System, including (in each case) any electrical plant and/or meters used in connection with distribution.
Grid Code	The Code of that name prepared pursuant to Condition 16 of the SONI licence.
Group	A subset of generators within the Batch connecting to the same transmission node (new or existing) as determined in accordance with Section 7.2.
Large Scale Generation (LSG)	Generation that is typically > 2 MW
Least Cost Technically	The Least Cost Technically Acceptable connection is the connection which:

Acceptable (LCTA)	<ul style="list-style-type: none"> • complies with the Transmission and Distribution System Security and Planning Standards; and • complies with any other applicable standard, regulation and code; and • takes into account committed developments on • the Transmission System; and • is the least overall cost;
Maximum Export Capacity (MEC)	means the maximum permissible amount of electricity to be exported to the Distribution System as set out in the Connection Agreement;
Microgeneration	Generation that is typically < 12 kW
Registered Capacity	The normal full Load capacity of a Generating Unit in MW measured as at the Connection Point and in relation to a Wind Farm Power Station, the normal full Load capacity of the collection of one or more wind turbines, each being a Generating Unit, in MW measured as at the Connection Point of the Wind Farm Power Station.
Small Scale Generation (SSG)	Generation that is typically < 2 MW
Statement of Charges (SoC)	The statement produced in accordance with either Licence Condition 32 of the NIE Networks Distribution Licence or Licence Condition 30 of the SONI Transmission Licence.
Subgroup	A subset of generators within a Group that make use of common Connection Assets.
Transmission System	The system of electric lines owned by NIE Networks and comprising high voltage lines and electrical plant and meters used for conveying electricity from a generating station to a substation, from one generating station to another, and from one substation to another within the authorised area (including such part of the North/South Circuits as is owned by the NIE Networks) (except any such lines which the Northern Ireland Authority for

Utility Regulation may approve as being part of NIE Networks' Distribution System) and any other electric lines which the Northern Ireland Authority for Utility Regulation may specify as forming part of the Transmission System, but shall not include any Interconnector.

Valid Connection Application Has the meaning given to it in Section 8.1.

Appendix B: Explanation of Subgroup

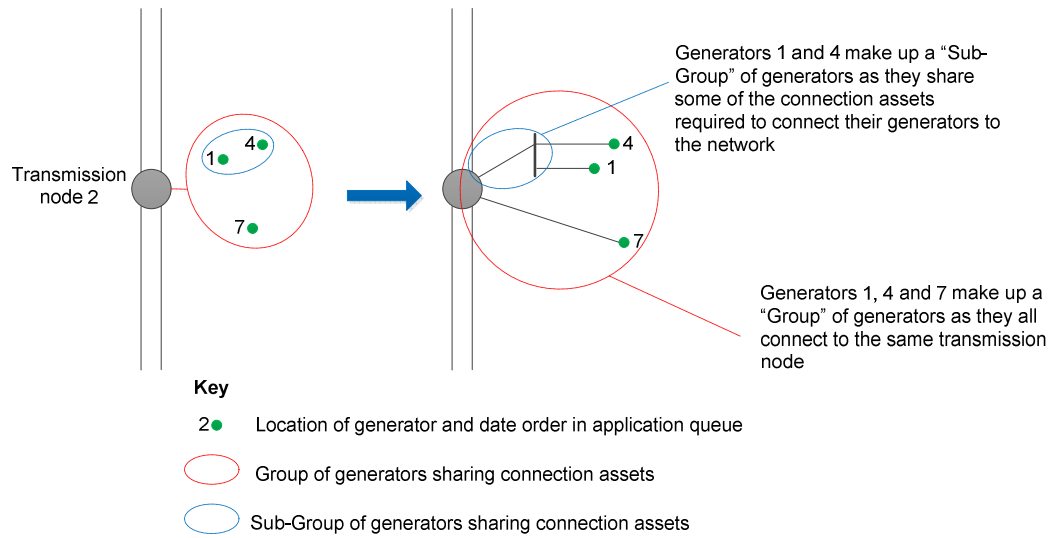


Figure 6: Example to explain how Sub-groups of generators are ordered

Appendix C: High Level Flow Chart of Proposed Batch Process

