

**9<sup>th</sup> January 2018**  
**Renewables Grid Liaison Group**  
**Minutes of Meeting No23**

<b>Attendees</b>	
<b>Utility Regulator</b>	Tanya Hedley (TH) Ciaren MacCann (CMcC) Jody O'Boyle (JO'B)
<b>NIRIG</b>	Andy McCrea (AMcC) Meabh Cormacain (MC)
<b>NIE Networks</b>	Ian Craig (IC) Brian Moorhead (BM) David McDonald (DMcD) Amy Hamilton (AH)
<b>SONI</b>	Helen Gallagher (HG) Raymond Smyth (RS) Karen O'Doherty (KOD) Louis Fisher (LF) Conor O'Doherty (COD)
<b>Department for the Economy - Energy Renewables Division</b>	Kelly McKenna (KMck)
<b>NISTA</b>	No attendee
<b>Offshore Representative</b>	No attendee
<b>Ulster Farmers Union</b>	Chris Osborne (CO)
<b>Energy Storage Representative</b>	No attendee
<b>Energia</b>	Ciaran Donnelly (CiD)
<b>Apologies</b>	Neil O'Brien Gary Hawkes

No	Item	Action
1	<b>Apologies</b>	
2	<p><b>Minutes/Updates from last meeting</b></p> <p>TH answered queries raised by KMCK regarding the minutes from the previous meeting. Minutes agreed for publication.</p> <p><b>Actions from previous meeting</b></p> <p><b><u>Action 1</u></b> NIE Networks to send link for Renewable Capacity Update to all attendees.</p> <p>BM confirmed that this had been completed in the days following the meeting held on 24<sup>th</sup> October 2017. BM stated that a new Renewable Capacity Update would be produced based on the end of year figures and that a link to this would be circulated to all those on the RGLG mailing list once it was published.</p> <p><i>Complete</i></p> <p><b><u>Action 2</u></b> SONI to forward FAQ Update and ATR document for end of November.</p> <p>HG stated that originally this was to be presented at the RGLG meeting in December which was cancelled. TH enquired if a document had been created. HG responded that slides had been produced which could be turned into a report if desired. HG stated that SONI was seeking feedback on whether this was a sufficient level of information to publish.</p> <p><i>Complete</i></p> <p><b><u>Action 3</u></b> SONI and NIE Networks to produce written documentation on next steps for constraint/curtailment issues prior to next RGLG meeting.</p> <p>HG stated that KOD would be stepping through this process during the meeting.</p> <p><i>Complete</i></p> <p><b><u>Action 4</u></b> Write to Large Scale Generation applicants to ask for their permission to share their details.</p> <p>BM stated that all applicants wishing to connect to Kells Cluster had been contacted to give their permission to share their details and subsequently publish the queue for capacity at Kells Cluster. BM stated that thus far only four out of nine applicants have given their permission and no responses have been received from the</p>	<p><b>NIEN</b></p> <p><b>SONI</b></p> <p><b>SONI/NIEN</b></p>

No	Item	Action
	<p>other five. BM stated that the queue would only be published if all applicants gave their permission. BM stated the list of nine includes two new applicants to Kells Cluster. MC enquired if the five other applicants have yet to respond to the request or because they had refused their permission to publish their details. BM stated that no applicants had refused their permission.</p> <p><i>Complete</i></p> <p><b>Action 5</b> Place a note on the UR website to announce the existence of the RGLG group and to invite interested parties to attend</p> <p>TH stated that the UR would publish a news item on their website after this meeting to announce the existence of the group. TH stated that anyone linked to the website would receive this news item as an email notification once it was published.</p> <p><i>Not Complete</i></p>	<p><b>NIEN</b></p> <p><b>UR</b></p>
3	<p><b>Phase 1 Closure &amp; Delivery Update</b></p> <p>SONI and NIE Networks gave a joint presentation accompanied by a slideshow. BM confirmed that these slides would be circulated after the meeting. BM summarised the content of the slideshow for Phase 1 Closure &amp; Current Applications.</p> <ul style="list-style-type: none"> <li>• Phase 1 is at an end</li> <li>• 185 connection offers issued (256 MW)</li> <li>• NIE Networks issued notices declaring their inability to connect 241 applicants (987MW) on 30<sup>th</sup> November 2017. This was primarily due to capacity issues</li> <li>• Currently 256MW worth of applications – some are on 90 day standard for a connection offer to be issued but the majority have been extended due to capacity being available (187MW queuing at Kells Cluster)</li> <li>• NIE Networks are waiting on the Section S offer for Kells Cluster from SONI.</li> <li>• NIE Networks expect to issue around 20 small scale generation (SSG) offers in the coming months</li> <li>• NIE Networks expect to issue up to around 10 large scale generation (LSG) offers by the end of April (the majority of these shall be for connection to Kells Cluster)</li> </ul> <p>BM summarised the content of the slideshow for Delivery of Connections.</p> <ul style="list-style-type: none"> <li>• Over 235 SSG connected in 2017</li> <li>• 63 additional sites are in construction (28 awaiting final customer installation works to energise)</li> <li>• 39 additional sites are in pre-construction (typically delayed by third party legal consents) but around 10 have the potential to be energised by the end of March 2018</li> <li>• 17 ‘major’ (greater than 2MW) LSG projects delivered in 2017</li> <li>• 7 further ‘major’ LSG projects to be energised by end of March</li> </ul>	

No	Item	Action
	<p data-bbox="357 241 427 271">2018</p> <p data-bbox="261 311 1222 376">BM summarised the content of the slideshow for the Drumquin Cluster and Dromore Switching Site Update</p> <ul data-bbox="309 383 1222 618" style="list-style-type: none"> <li data-bbox="309 383 1190 412">• Project is on schedule and completion is expected in June 2018</li> <li data-bbox="309 418 1222 483">• Civil works are complete at both sites and steel works are in the advanced stage</li> <li data-bbox="309 490 887 519">• Commissioning works have commenced</li> <li data-bbox="309 526 1166 555">• Approximately 20% of the 110kV overhead lines are complete</li> <li data-bbox="309 562 1054 591">• The majority of landowner issues have been resolved</li> <li data-bbox="309 598 1027 627">• This cluster is fully subscribed (all 90MW allocated)</li> </ul>	
4	<p data-bbox="261 629 639 658"><b>Renewables Status Update</b></p> <p data-bbox="261 674 767 703"><b>SCADA Issues for Small Scale Sites</b></p> <p data-bbox="261 719 1222 987">BM stated that under D Code, small scale sites greater than 200kW or those sharing a circuit with an AGU must have SCADA installed. BM stated that there are c600 sites which require SCADA to be fitted for D Code compliance. BM explained that SCADA is a telemetry system that communicates the status of generators to NIE Networks. NIE Networks have sent out over 300 letters to notify those that need to install SCADA at their sites and have received seven responses. Only one site so far has installed SCADA.</p> <p data-bbox="261 1048 1222 1249">Due to a lack of responses, NIE Networks have started a process issuing Enforcement Notices explaining that the generator is in breach of D Code. Enforcement notices give a grace period of a year before further action is taken. Further action could include termination of the connection contract. 25-30 enforcement notices were issued in 2017 with another 25 sent in early 2018 and no responses have been received.</p> <p data-bbox="261 1357 1222 1491">NIE Networks' SCADA team are keen to hold workshops and discuss this with generator owners but are concerned over the lack of engagement from industry. 2018 is to be used as a development year to ensure that all sites are compliant with their D Code obligations.</p> <p data-bbox="261 1552 1222 1921">DMcD informed the group that David Hill from NIE Networks had agreed to attend future RGLG meetings from an operational perspective. David Hill had passed on an update regarding RoCoF. DMcD stated that the group was sitting on 800MW out of 952MW. This is due for completion around the end of January and by the end of the week (14/01/2018) the figure could be around 900MW meaning the majority of sites are out of the RoCoF group. DMcD stated that generators have changed their settings and some have installed new relays or are out for tender for new relays. Those out for tender shall remain in the RoCoF group until they meet the requirements to leave it. NIE Networks has facilitated the testing of all these large scale sites.</p> <p data-bbox="261 1982 1222 2011">CO enquired if sites move out of the RoCoF group once they have</p>	

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	<p>changed their settings. DMcD and KOD confirmed that this was the case. KOD stated that SONI receives weekly emails from NIE Networks to let them know what changes have been made and SONI uses this data to change real time modelling parameters. KOD stated that the lack of response from generators to these 300 letters is a concern for SONI and that a similar approach should not be used to implement RoCoF changes to avoid ending up in the same position. SONI believes that a robust process needs to be implemented to ensure that the changes are in place in a timely fashion to allow the operational RoCoF limit to move as soon as possible.</p> <p>CO highlighted that he has published two articles in the press on this topic and has been in close contact with NIE Networks. Many of those affected by these changes are not reading the articles or do not realise the gravity of the implications should they be deemed non-compliant with D Code. CO is considering releasing another article in the press with a wider distribution. BM stated that NIE Networks (particularly Stephen Hammond) have also been engaging with NIRIG.</p> <p><b>Renewables Connected</b></p> <p>This report was accompanied by slides from the joint NIE Networks and SONI presentation. HG asked for feedback on this style of presentation and whether anything was missing from the summary. Feedback on previous reports said that too much data had been included making the report bulky. BM summarised the content of the slides for the RGLG status report.</p> <ul style="list-style-type: none"> <li>• Over 1.4GW of generation has been connected in total</li> <li>• c1447MW of generation connected across all technologies</li> <li>• c1782MW of generation connected and committed across all technologies</li> <li>• Application queue has decreased from 1.2-1.4GW to 256MW which is a larger figure than expected</li> </ul> <p>MC asked if NIE Networks could produce a diagram showing Large Scale Generation broken down by technology type showing how many sites included multiple technologies. BM stated that he would produce this.</p> <p>MC asked if applications for renewable technologies were still being received post the circulation of refusal letters. BM stated that since the 30<sup>th</sup> November 2017, 2 new LSG and 10-20 SSG applications have been received. DMcD stated that there were very few instances of reapplication from those refused in November and this may be due to the workshops and industry engagement carried out by NIE Networks and SONI. BM stated that all applications received post November 2017 were new applications. DMcD clarified that some of these applications may have been from export generators previously refused, reapplying as zero export connections.</p>	

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	<p>AMcC enquired if these new applications were mostly PV farms. BM responded that most applications were for AD plants but there was a mixture of PV, AD and Wind. BM stated that many offgrid wind turbines still wish to be connected on-grid. They are accredited offgrid with their ROCs but they are having issues operating in an offgrid fashion and would rather export their electricity to the grid.</p> <p><b>FAQ/ATR</b></p> <p>This report was accompanied by slides from the joint NIE Networks and SONI presentation. LF summarised the content of these slides.</p> <ul style="list-style-type: none"> <li>• Firm Access Quantity (FAQ) relates to LSG (any generation over 5MW)</li> <li>• c1434MW committed and connected LSG</li> <li>• 667MW of LSG fully firm</li> <li>• 219MW of LSG to be fully firm once the Omagh – Tamnamore 110kV circuit is completed</li> <li>• 548MW of LSG requires further ATRs to become firm</li> </ul> <p>DMcD confirmed that the Omagh – Tamnamore circuit may be complete by 21/01/2018.</p> <ul style="list-style-type: none"> <li>• Omagh – Dromore (Omagh South) 110kV double circuit upgrade, the new North – South 400kV tie-line and the Coolkeeragh – Magherafelt 275kV asset replacement project are in pre-construction</li> <li>• Voltage support is being implemented at three different sites</li> <li>• The Ballylumford – Castlereagh 110kV double circuit upgrade project is in the feasibility stage. Work has been done in defining which conductors should be used and the best methods to string them along with tower and foundation assessments.</li> <li>• Kells – Rasharkin 2 (new 110kV line) is in outline design</li> </ul> <p>RS stated that the Kells – Rasharkin project is in a comparison consultation to consider the best route and methods of construction. The purpose of the circuit is to address an overload issue between Rasharkin and Kells but there is a deeper issue in the West where a large phase angle is opened up when the Coolkeeragh – Magherafelt double circuit line trips. This would prevent the double circuit line from being reclosed. If there is another fault during this period of time then the west of the province could lose power. This is one of the issues to be considered in the Ten Year Development Plan (TDP) being produced by SONI.</p> <p>HG asked if any other information should be added to future reports. MC responded that the inclusion of FAQ data was appreciated and enquired</p>	

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	<p>if indicative dates could be included in the ATR Overview slide to show key dates for projects. TH stated that the TDP would be available for public viewing once published and that a high level project plan for each ATR would be included. These high level project plans shall include indicative dates. MC stated that dates are given in the ATR Status Update for EirGrid. DMcD enquired if the current slide format was sufficient for the circulation of information or if a report should be written. TH confirmed that a report should be written but repetitive text from previous reports could be eliminated.</p>	
5	<p><b>Consultation Update</b></p> <p>This report was accompanied by slides from the joint NIE Networks and SONI presentation. BM summarised the content of these slides.</p> <ul style="list-style-type: none"> <li>• 17 responses to the Call for Evidence, the majority of which were from a renewables background</li> <li>• Almost all respondents mentioned that planning permission should be a pre-requisite for application</li> <li>• NIE Networks proposed milestones and respondents agreed that this could work as an interim measure where planning permission is installed as a pre-requisite for the long term to discourage capacity hoarding</li> <li>• Prioritisation of connections for DS3 System Services</li> <li>• Respondents were keen for innovative connection techniques to be investigated e.g. Active Network Management (ANM), Dynamic Line Rating (DLR) and Hybrid over-installs</li> <li>• Great support was given for the Hybrid Working Group with requests that it should be adequately resourced and given relevant powers to make necessary changes</li> <li>• The consultation paper is due for publication next week (15<sup>th</sup> – 21<sup>st</sup> January)</li> <li>• There shall be a section on immediate process changes such as the lack of NIRO deadlines. Developers have been telling NIE Networks that they desire to hold projects until the government brings in new incentives</li> <li>• This could lead to capacity hoarding for years</li> </ul> <p>AMcC enquired if there was money available to carry out innovative connection techniques. BM responded that issues such as calculating how much capacity these techniques would release were the primary concern. AMcC stated for small scale applications, the management techniques in workshops were very good but that costs were highlighted as an important problem. DMcD stated that cost issues differ from small scale to large scale projects and therefore certain innovative connection techniques may only be feasible for large scale projects.</p> <p>MC stated that in general developers do not want to hoard capacity and that planning permission is only live for four or five years. Therefore if planning permission was introduced as a pre-requisite for application then a limit on how long the developer has to complete their project is introduced automatically. BM informed the group that there is no system wide generation queue and the normal process is for all applicants to be dealt with in the 90 day standard. There are issues regarding length of</p>	

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	<p>time required to carry out transmission assessments within the 90 day deadline, the volume of applications and that offers shall be issued to generators without planning permission.</p> <p>BM stated that the Phase 1 Closure Report shall be included in the consultation document. HG stated that this is a summary of the transmission assessments undertaken throughout the Phase 1 process. HG informed the group that a consultation paper by the Commission for Regulation of Utilities (CRU) is currently out in the Republic of Ireland and investigations are being carried out to see if some of the suggestions in that paper can be mirrored in Northern Ireland.</p> <p>BM stated that an Innovative Connections Solutions Working Group is being considered to discuss constraint management, technical options and commercial viability.</p> <p>LF stated that attempting to obtain more capacity from the existing network without transmission reinforcement will have knock on effects on those already connected, with constraint and curtailment levels rising. At some point there will be a limit where connecting additional generation is not economic for all players. CiD enquired how existing connections will be affected by increased constraints. DMcD responded that constraints shall be stacked, transformer and line ratings affect constraint levels at a local level but system wide constraints shall affect all those connected to the network.</p> <p>CiD asked if new applicants connecting onto a heavily subscribed node would receive non-firm offers. BM stated that this would only affect constraints at a local level. CiD stated that your constraint level should be directly associated with the shallow works on the distribution and transmission system associated with a project. TH responded that constraint was not defined this way. RS said that constraints also depend on the deeper transmission network.</p> <p>CiD enquired if all of the constraints that could apply to a generator at any given time are considered in constraint studies. DMcD confirmed that this was the case. CiD stated that many generators finance their projects on the basis of not being in certain constraint groups, therefore placing additional constraints on connected generators can cause financial issues. BM stated that differing network topologies (Clusters and Bulk Supply Points) and connection capacities bring different constraints with them.</p> <p>CiD said that projects can cope with 5-6% level constraint but that higher levels are not economically viable. TH enquired how constrained generators were being paid. LF responded that constraints for non-firm generation would continue not to be compensated until a generator's full FAQ is confirmed. Curtailment payments are due to end in February this year.</p> <p>BM stated that the current intention is to set up a working group to look in detail at innovative solutions and the constraints/curtailment that might be involved- due to the complexities, it would be very difficult to deal with this solely through a consultation paper. MC said that this is the fourth</p>	

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	<p>consultation to be issued on this topic and it should be started as quickly as possible. A meeting should be set up to define the parameters of which options should be explored further and which options do not have the potential to release capacity. DMcD stated that this would be considered and the problem needs to be examined in a wider context to avoid creating bespoke solutions.</p> <p>RS stated that special protection schemes on the transmission network are SONI's responsibility. SONI consulted on special protection schemes in the TSSPS two years ago and proposed that such schemes were acceptable on radial systems but they can overlap when used on the backbone network and cause problems. CiD suggested that nodes are not always using their full capacity despite being fully subscribed due to differing wind levels and other factors. CiD enquired if case studies could be carried out at fully subscribed nodes to investigate the constraint levels that would be implemented if another generator were to connect.</p> <p>BM responded that you can look at the power flows of a single node against a transformer limitation but you may not know how this matches against constraints on the wider network. RS stated that reinforcement works do not necessarily fix all network issues. There are binding constraints that if reinforced, shall be released to the next constraint, which then becomes the binding constraint. DMcD stated that consideration was being given to the possibility of installing different technologies at over subscribed nodes using ANM. TH stated that a working group should be the next step in this process.</p> <p>AMcC enquired if there had been any update on the North - South interconnector. RS responded that SONI was awaiting a recommendation from the Department of Infrastructure and that a decision should be imminent. BM asked what the recommendation was. RS responded that it has not been made public.</p>	
6	<p><b>DfE General Update</b></p> <p>KMcK stated that in the absence of a Minister, a new Energy Strategy cannot be progressed. The priorities for the Department include the UK exit from the EU and the EU Clean Energy Package. The EU Energy Council met on the 18<sup>th</sup> December 2017 and adopted a general approach to the Renewable Energy Directive and the Governance Regulation. During the previous meeting, Trevor McBriar had informed the group that the renewables target for the EU is set at 27% for 2030 and the Governance Regulation has set an indicative renewables trajectory for member states with targets of 24% by 2023, 40% by 2025 and 60% by 2027. The European Parliament shall meet to vote on this in the next couple of months.</p> <p>BM asked if these targets were for total energy from renewables. KMck confirmed that they were but that an NI renewable target would be a decision for the NI Executive and will form part of the considerations on a longer term Energy Strategy. These targets are currently indicative and subject to change following the European Parliament vote.</p>	

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	<p>TH enquired after the status of the Clean Energy Package for the UK in general. KMck stated that after the EU parliament vote on the current proposals it could take eighteen months to transpose the Directives. KMck stated that the Department is likely to set up an overarching Programme Board with projects emerging from this for each of the directives and regulations. The UR may be invited to sit on these boards in due course. MB asked if these targets would remain after Brexit. KMck responded that in order for the UK Government to negotiate the best possible outcome for the UK in terms of the EU Clean Energy Package, the current assumption is that the renewables target will remain following EU Exit.</p> <p>MB asked if background research would continue to be carried out for the 2030 strategy. KMck responded that the Energy Strategy Branch within the Department is continuing with work on the Strategy but that there is a limit to what can be accomplished in the absence of a Minister.</p>	
7	<p><b>Contestability Update</b></p> <p><b>Distribution</b></p> <p>DMcD gave an update stating that NIE Networks is on track to open the market on 28<sup>th</sup> March 2018 for all new connections and increased supplies where a new connection is required using a dual offer process. Two connections greater than 5MW have accepted contestable offers. Accreditation for Independent Connections Providers (ICPs) is provided by Lloyd's Register. They are running a workshop to give information on the process ICPs must undertake to become accredited in Northern Ireland on 15<sup>th</sup> February at The Mount Hotel. DMcD suggested circulating invites to this event to all attendees.</p> <p><b>Transmission</b></p> <p>HG gave an update stating that SONI and NIE Networks were seeking guidance from the Utility Regulator (UR) on outstanding indemnity issues. Both parties have sent letters to the UR in response to a previous communication received on the issue. TH stated that the UR was looking to set up a meeting between NIE Networks, SONI and the UR to resolve these issues. MC enquired if any dates had been set for this meeting. TH responded that no dates had been confirmed yet but the end of January was a possibility.</p>	
8	<p><b>Constraint/Curtailment Procedures</b></p> <p>KOD stated that slides to accompany this update would be circulated after the meeting. In April 2014 the Utility Regulator published approval in principal of SONI Grid Code modification to include minimum RoCoF requirement of 1Hz/s over 500ms. This approval required NIE Networks and SONI to develop a programme to deliver changes to the G59 Loss of Mains protection settings. NIE Networks have been providing information to SONI on protection settings applied to generators on the distribution system. SONI simulates these protection systems in real time on their Wind Security Assessment Tool (WSAT). In March 2017 TSO analysis highlighted system security issues associated with the 0.4Hz/s RoCoF setting on distribution connected generation. Analysis showed</p>	

No	Item	Action
	<p>that for the loss of our Largest Single Infeed a RoCoF greater than 0.4Hz/s could occur. This in turn would result in the loss of a large volume of generation on the distribution system. This combined loss causes frequency limits to be breached.</p> <p>The TSO acted to be compliant with their licence obligations and implemented a system to manage this risk. SONI wrote to NIE Networks informing them that this risk was beginning to bind at a transmission system operation level and encouraging a fast roll out of the new higher settings. In April 2017 SONI wrote to all affected parties to inform them of the three step process implemented to manage the system.</p> <ol style="list-style-type: none"> <li>1. Re-dispatch to reduce the Largest Single Infeed on the system if practical;</li> <li>2. Reconfigure flows on the North-South interconnector;</li> <li>3. Dispatch down renewable generation with ROCOF settings of 0.4Hz/s or lower,</li> </ol> <p>SONI also wrote to the UR highlighting the difficulties and the mitigation measures being implemented.</p> <p>In July 2017 NIE Networks published their consultation which proposed the requirement that LSG adopt the 1Hz/s settings by the end of 2017. SONI responded in favour of this. In August 2017 SONI was copied into a letter from NIRIG to NIE Networks asking specific questions on the 0.4Hz/s issue. SONI responded to this letter in September 2017 and has not received a response. In October 2017 SONI began to receive specific queries from generators and responded with site specific information. In November 2017 SONI received confirmation from NIE Networks that large scale generator RoCoF settings were being changed and witness tested. 44 out of 59 sites are fully compliant. Non-compliant sites continue to be dispatched down.</p> <p>KOD asked for feedback on how this situation was handled by SONI. MC suggested that communication of these changes should have been provided before they were implemented. KOD responded that as this was a system security risk, SONI has to act as soon as possible. MC stated that many members of NIRIG were not aware of the changes until a month after they were put in place. MC asked if there is a communications procedure for issues that do not place the system at immediate risk.</p> <p>Over frequency settings are being altered at the same time as the RoCoF changes as the suite of G59 protection is updated. The over frequency changes were presented to the Grid Code Review Panel (GCRP) and the DS3 Advisory Council, however there is still a breakdown in communication where council representatives are not passing this information to the industry. MC responded that it was not the responsibility of representatives to communicate all items discussed. MC</p>	

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	<p>highlighted the importance of publishing meeting minutes on relevant websites for members to access. KOD recommended the DS3 Advisory Council Quarterly Update for information relating to DS3. DS3 Advisory Council information is available at <a href="http://www.eirgridgroup.com/how-the-grid-works/ds3-programme/industry-forums/index.xml">http://www.eirgridgroup.com/how-the-grid-works/ds3-programme/industry-forums/index.xml</a>. GCRP minutes are available at <a href="http://www.soni.ltd.uk/Operations/GridCodes/meetingsandworkinggroups/">http://www.soni.ltd.uk/Operations/GridCodes/meetingsandworkinggroups/</a></p> <p>MC enquired if there are actions on industry representatives attending these DS3 and GCRP meetings to communicate relevant messages. KOD clarified that it is a responsibility of industry representatives in forums such as the GCRP to communicate with the section of the industry which they represent. The large scale distribution connected wind farms in Northern Ireland are having their over-frequency settings increased from 50.5Hz to somewhere in a range of 50.5 – 52Hz. In 2015 the Transmission System Operators undertook a study which highlighted that the loss of an interconnector whilst exporting or system separation whilst exporting to ROI, the system frequency could reach 50.5Hz. At this point, a large volume of wind generation would be lost through the secondary tripping due to this over frequency protection setting. This simultaneous loss of a large amount of wind generation could result in a secondary low frequency event that could breach system load shedding thresholds. In order to avoid this situation over frequency protection settings of WFPS on the Island were increased above 50.5Hz and staggered to avoid a large simultaneous loss of generation. The staggered settings vary between 50.5Hz - 52Hz and generators were allocated a setting based on the required MW response and the location of the generation. The staggered nature of the over frequency protection settings covers a range of system conditions including various levels of wind, demand and interconnector flows. It is important to note that this analysis has been completed on an all-island basis and generators will only have their settings increased from their previous setting i.e. no WFPS will have its setting reduced below the historic 50.5Hz setting.</p> <p>The operation of the over frequency protection is not expected to be a regular event and is seen as a system security measure. The normal operating range of the system is 49.5Hz – 50.5Hz; therefore, these high frequencies will only be experienced during a large system event i.e. system separation or loss of an interconnector whilst exporting. However, if the operation of the power system is fundamentally different to these assumptions in the future, the TSO will review these settings through updated prudent analysis; recommend updated settings which takes account of the likelihood of tripping.</p> <p>CiD enquired why these settings were staggered. RS explained that there is a large imbalance between demand and generation in Northern Ireland. If for example, Northern Ireland was exporting to the Republic of Ireland and all interconnectors were lost then the frequency would rise, all generation would trip once the frequency reaches 50.5Hz and 1000MW of generation could be lost. The frequency would then drop rapidly. Raising the over frequency settings means that the generation</p>	

No	Item	Action
	<p>will not trip until the frequency is at a higher level. This gives time for the wind generation to pull back. These new settings shall stop large amounts of generation in similar areas tripping at the same time.</p> <p>BM enquired if under frequency settings would remain the same. LF confirmed that this was the case. TH asked SONI to produce a report detailing how the decisions on this matter were made. KOD stated that a report would be published this month. TH requested that the report be sent to the UR a week before publication. KOD explained that the Grid Code allows SONI to set the over frequency settings at any value from 50.5Hz up to 52Hz. Any new generators connecting to the network from now on shall have a frequency setting of 52Hz. TH enquired how often this scenario would occur in a year. KOD stated that there was a section in the report detailing how often it has happened in the past but that it was very infrequent. The settings remain suitable post commissioning of the second North-South Interconnector.</p> <p>DMcD clarified at the RGLG meeting on 6<sup>th</sup> March 2018 that following the SONI analysis to move to 52Hz, NIE Networks conducted a Strathclyde study to evaluate our own protection settings and conclude that we were content to move to 52Hz.</p>	
9	<p><b>Publication of Applicant Details</b></p> <p>Covered in actions</p>	
10	<p><b>Update Circulation List</b></p> <p>Covered in actions</p>	
11	<p><b>AOB</b></p> <p>COD gave a report on the hybrid working group. The group has met twice and is made up of eight representatives from different industry sectors. The group considers how hybrid sites may be connected to the network. In consultation the group has defined seven likely combinations of technologies for hybrid sites.</p> <ul style="list-style-type: none"> <li>• Wind/Solar</li> <li>• Wind/Battery</li> <li>• Wind/Flywheel</li> <li>• Solar/Battery</li> <li>• Conventional Storage</li> <li>• Biomass/Storage</li> <li>• Conventional DSU</li> </ul> <p>The group considers possible issues with these sites from a system operator perspective and if the I-SEM market is able to cope with them. The group has already considered the Wind/Solar combination and foresees no operational or market issues. These technologies shall be treated separately in dispatch and in the market but what makes it a hybrid site is the sharing of a single connection point between multiple technologies. The market may require changes for generation/storage hybrid sites. The next meeting is at the end of January 2018.</p>	

No	Item	Action
	<p>CO enquired if there was opportunity to get involved in the group. COD responded that the group was closed and limited to eight representatives but that anyone could engage with one of the industry representatives to have their views raised. Anyone wishing to be on the circulation list to receive copies of minutes and other documents should email <a href="mailto:gridcode@eirgrid.com">gridcode@eirgrid.com</a>. COD stated that he would be happy to provide a list of the working group's members. All future meetings shall have a dial in function where anyone can observe the meeting but not participate.</p> <p>TH asked if any information was being placed on the website. COD stated that the best location for meeting minutes and other information was still being considered. BM enquired what sizes of sites were being considered by the group. COD responded that the group considers sites of 1MW and above. CO enquired if lower capacity sites would be considered in future. COD answered that NIE Networks could use the data from the Hybrid Working Group and apply the principles to smaller sites if desired. TH stated that this would be for NIE Networks to consider. DMcD stated that David Hill was NIE Networks' representative for the Hybrid Working Group.</p> <p>MC asked if sub-groups of the Hybrid Working Group would be set up to take on specific pieces of work. COD stated that there may not be large amounts of work coming from the group. CO stated that more conferences on renewables and storage are taking place and asked if the involvement of NIE Networks depends on the outcome of the working group. BM stated that most issues concern operability and the market. NIE Networks should not be a blocker on any of these problems. TH stated that work is being carried out with Ulster University, NIE Networks and SONI through the SPIRE 2 project and asked NIE Networks to produce slides for the next meeting on project goals.</p> <p>CO stated that hydrogen is being researched as an alternative grid connection for wind turbines. JO'B stated that these technologies shall still require a connection agreement and suitable protection. COD stated that having multiple parties in a connection agreement was being investigated.</p> <p>MC enquired about the timeframe for the TDP. RS stated that a TDP must be published with an accompanying Strategic Environmental Assessment (SEA). A screening report shall be produced by March 2018 followed by a consultation on the SEA in June lasting around eight weeks. The TDP shall be published after this. MC enquired if the TDP would be published before the end of this year. RS responded that the TDP would be available for consultation before the end of the year. AMcC enquired if topics such as sweating transmission assets and squeezing capacity out of clusters shall be included in the TDP. RS confirmed this.</p> <p>JO'B asked about the timeline for moving from the G59 to G99 or G98. DMcD responded that GB was moving to the new standards within the next few months. A Northern Ireland version of this will then be produced and consulted on. TH placed an action on NIE Networks to confirm this timeline.</p>	

No	Item	Action
12	<p data-bbox="260 244 587 277"><b>Dates of 2018 Meetings</b></p> <p data-bbox="260 291 1222 423">TH suggested that the next meeting should be held once the NIE Networks and SONI consultation closes. DMcD stated that the consultation shall close on 2<sup>nd</sup> March 2018. MC stated that the next meeting has already been scheduled for 6<sup>th</sup> March 2018.</p>	

## Summary of Actions

Action No.	Action Description	To be Actioned by
1	NIE Networks to send link for Renewable Capacity Update to all attendees once the end of year figures are published	NIE Networks
2	NIE Networks to circulate joint NIE Networks and SONI RGLG Report PowerPoint slides to all attendees	NIE Networks
3	NIE Networks to produce a slide breaking down the connected and committed renewable generation figures by technology type	NIE Networks
4	Put a link to the relevant DS3 Advisory Council Quarterly Updates in the minutes for the 23 <sup>rd</sup> RGLG meeting	SONI
5	Circulate invites for Lloyd's Register ICP training day on 15 <sup>th</sup> February to all attendees	NIE Networks
6	Forward a copy of the report listing how decisions on RoCoF changes and over frequency settings were made to the UR a week before publication	SONI
7	Circulate slides relating to the Constraint/Curtailment Procedure report to all attendees	SONI
8	Provide a list of representatives on the Hybrid Working Group to all attendees	SONI
9	Produce slides for next RGLG meeting on goals and work of the SPIRE 2 project	NIE Networks

<b>10</b>	Confirm timeline for introduction of G98 and G99 standards in Northern Ireland	<b>NIE Networks</b>
<b>11</b>	Place a note on the UR website to announce the existence of the RGLG group and to invite interested parties to attend	<b>UR</b>
<b>12</b>	Produce a written FAQ/ATR report based on the slides presented at the meeting due for the next RGLG meeting	<b>SONI</b>