Connected and Committed Renewable Generation
28 Feb 2018

Position as of 28th Feb 2018

+276 MW Committed

Expect to have c1570 MW connected by end March

Total c 1799 MW

NI Connected + Committed Renewable Generation Technology Mix

Total c 1523 MW

NI Connected Renewable Generation Technology Mix

Position as of 28th Feb 2018
Generation Consultation Update

RGLG
6th Feb 2018
Call for Evidence-Summary

• Market Information
  • Market still for LSG connection beyond 40% target
  • Limited market for SSG connections especially new connections

• Solution to Capacity Restriction
  • Respondents keen for further investigation of innovative connection techniques e.g. ANM, DLR, Hybrid etc.
  • Further optimisation of existing MEC at connection points
  • High levels of support for the Hybrid Site Working Group;

• Capacity Allocation and Connection Process
  – Respondents keen to stop capacity hoarding
  – Planning permission to be a pre-requisite for application
  – Milestones as interim measure
  – Prioritisation of connections for DS3 System Services
Potential Capacity Solutions

• Potential for DS3 prioritisation in NI
  – Views sought on whether this should be introduced in NI
  – In the absence of a batch process how such a scheme would work

• Hybrid Sites Working Group
  – Working Group is already established with progress being made

• Potential “Connection Innovation Working Group”
  – To consider how further generation can be connected in the absence of new network investment
    – Connections with zero FAQ
    – Active Network Management Schemes
  – The working group would investigate;
    – Would these methods free up potential for further connection and what would the scope be
    – How the introduction of such methods would impact on constraints and curtailment levels
    – What would this mean commercially in market terms and could the market accommodate
Immediate Process Modifications: NIE Networks

Immediate process changes required as a result of:

– No further block extensions/‘system-wide generation queue’ which were essential for the existing Phase 1 rules

– NIE Networks is exempt from issuing connection offers under the circumstances set out under the Distribution Licence Condition 30 and Article 21 of the Electricity Order (NI) 1992

– No NIRO deadlines to encourage project progression- may lead to ‘capacity hoarding’

New Proposed Principles for Distribution Connections (without block extensions)

– Export capacity applicants ordered by receipt of valid application;

– Offers issued where capacity is available with [consulted on] milestones;

– Overinstall facility allowing additional 20% installed capacity on existing MEC’s kept under review;

– Maintain review of Zero-export against operational constraints of the system.
UPDATE: NIE NETWORKS MILESTONE WORKSHOP

HELD 20TH FEB
NIE Networks: Proposed Milestones

Stage 1 ‘Termination’ Milestone
- Offer Issued
- Offer Acceptance
- Planning Approval
- 90 days
- 90 days
- 180 days
- ‘6 months’
- ‘12 months’

Stage 2 ‘Flexible’ Milestones (see designation of capacity ‘at risk’)
- Customer Submission of Programme of Works
- Submit ICP Design (if applicable)
- Work Commenced
- Mid Way Progress
- Completion of Works
- TBD
- TBD
- TBD
- TBD
### NIE Networks: Flexible Milestone Enforcement

#### Capacity Queue Illustration

<table>
<thead>
<tr>
<th>Project</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 1</td>
<td>Progressing</td>
</tr>
<tr>
<td>Project 2</td>
<td>Progressing</td>
</tr>
<tr>
<td>Project 3</td>
<td>Progressing</td>
</tr>
<tr>
<td>Project 4</td>
<td>Progressing</td>
</tr>
</tbody>
</table>

All projects progressing in accordance with milestones.

Projects 1 & 2 fail to meet a milestone, and are designated 'at risk'.

<table>
<thead>
<tr>
<th>Project 3</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 4</td>
<td>Progressing</td>
</tr>
<tr>
<td>Project 1</td>
<td>'at risk'</td>
</tr>
<tr>
<td>Project 2</td>
<td>'at risk'</td>
</tr>
</tbody>
</table>

Projects 3 & 4 may now have reduced connection costs.

Project 2 fulfils milestone, returns to 'Progressing project' status, but is now behind projects 3 & 4 who have not missed milestones.

<table>
<thead>
<tr>
<th>Project 3</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 4</td>
<td>Progressing</td>
</tr>
<tr>
<td>Project 2</td>
<td>Progressing</td>
</tr>
<tr>
<td>Project 1</td>
<td>'at risk'</td>
</tr>
</tbody>
</table>

Connection re-design and revised reinforcement costs are likely to apply to Project 2 in order to re-instate export capacity. Export capacity may no longer be available therefore re-instatement of export capacity may not be possible unless a project above in the queue withdraws.

#### “Post-Acceptance Queue”

The aim is to provide those who stop progressing and fail to meet stage 2 milestones with the opportunity to continue with the project at a later date.
NIE Networks Milestone Workshop Summary

- Constructive and interactive session- Summary & Slides circulated to wider mail list
- c15 Industry representatives (majority from LSG background)
- Planning Milestone deemed reasonable, no major objections.
  - Some discussion over timing for planning milestone, could be shortened to time of offer acceptance
- Further discussion around Stage 2 Milestones
  - Recognition that milestones are a “double-edged sword” – No one wants to be disadvantaged by them, but equally everyone is supportive of capacity being re-allocated from stalled projects or “capacity hoarders”.
  - Alternatives such as long stop dates or capacity bonds discussed
  - Any method should not be prohibitive to new development
- NIE Networks position- The current proposals are our best attempt at finding a reasonable approach based on experience and the limited detail provided in CfE Responses. Aiming to take on feedback in order to develop a final approach that is widely supported.
Contestability – Readiness for Go Live
RGLG
6th March 2018
NIE Networks
Introduction & Background

What is COMPETITION IN CONNECTIONS?

COMPETITION in connections, or CONTESTABILITY, means that other accredited companies can provide a quotation for and build certain elements of a new connection. For the contestable elements of the connection, customers will have a choice whether to accept a quotation from us or look elsewhere.

BACKGROUND

The Utility Regulator [UR] wants to introduce competition in the connections market in NI. Competition in connections was introduced in GB in 2000 for connections to the distribution market, so the UR wants to bring the NI market in line with GB.

PHASE 1
saw the market opened to competition for connections greater than 5MW, in June 2016

PHASE 2
will see the rest of the connections market opened to competition, from 28 March 2018
Lloyds Register NERS Northern Ireland

• An Independent Connections Provider (ICP) is a company accredited under the Lloyds Register National Electricity Registration Scheme (NERS) to build electricity networks to the specification and quality required for them to be adopted and then maintained by NIE Networks in Northern Ireland.

• The NERS scheme is operated by Lloyd’s Register.

• List of Lloyds accredited ICPs in Northern Ireland can be found at:

• ICPs are independent companies that are wholly responsible for their safe working and adherence to all relevant legislation (ESQCR, CDM, Streetworks etc.)
The Distribution Offer – the “Dual Offer”

• A Terms Letter will be issued containing two options for the Connection Works. The options are mutually exclusive and only one can be accepted:
  • Option 1 - NIE Networks will undertake all of the Connection Works and the Reinforcement Works, if any. The “Full Works Option”.
  • Option 2 - NIE Networks will only undertake the Non-Contestable Works and the Reinforcement Works, if any. The “Non-Contestable Works Option”.

• The Terms Letter will be accompanied by:
  • A Functional Specification which will describe the Contestable Works and the Non-Contestable Works; and
  • The Quotation Summary will set out the charges payable by the customer.
Contestably Constructed Assets

• An Independent Connection Provider ("ICP") may undertake elements of the delivery of a new connection if the customer chooses to accept option 2 in their dual offer.

• After successful commissioning, and providing certain conditions are met:
  • NIE Networks will take ownership of the Contestable Works, and
  • NIE Networks will assume operational responsibility for connections to the Distribution System, and
  • SONI will assume operational responsibility for connections to the Transmission System.
ICP Portal Overview and Purpose

The ICP Portal will act as a gateway providing access to contestable content for independent connection providers. This will include:

- Information on market policies, specifications and standards accessed via the Document Library.

- The ability to formally exchange information and requests relating to contestable projects via the ICP Project Coordination service.

The Document Library

The ICP Project Coordination service
How are we communicating this externally?

- Information about contestability published on NIE Networks website
- Flyer included in all application packs, making customers aware of market opening
- Lloyds Register/NIE Networks open event on 15th February for existing and potential ICPs
- Lloyds Register/NIE Networks open event on 16th February for key stakeholders
- Connections Roadshows across the province
- External stakeholder engagement events
NIE Networks Website Updates

• Website is to be the primary source of information for customers

• Customers can use the website to
  • Find out everything they need to know to avail of the open market
  • Find additional documentation
  • Follow links to the Lloyd’s website
  • Follow links to the ICP Portal
  • Get in contact

Competition in Connections

Did you know you have a choice?
Contestable vs Non-Contestable
Who can do the work?
Your Dual Offer explained
SSG SCADA ENFORCEMENT

6th March 2018
Update

- 600+ sites requiring SCADA or Telemetry
- 1 SCADA Site Acceptance Test certificate issued
- 300+ generic ‘reminder’ letters issued
  - 10 responses
- 10 Enforcement notices issued to HVCs late summer
  - 4 responses
- 41 LV enforcement notices issued since November
  - 6 responses
Proposed Rollout

- 51 enforcement notices issued for 2017/2018(Q1)
- 2018 used as a development year to bring customers and installers up to speed on SCADA requirements.
- Development year also allows NIE Networks to refine internal processes
- Process ramps up after 2018 getting all sites connected within RP6
Proposed Rollout

SSG SCADA Enforcement Timeline

- Enforcement Notices Issued (Target)
- Enforcement Notices Issued (Actual)
- New SCADA Connections (Target)
- New SCADA Connections (Actual)
INTERREG V
SPIRE 2 – €6.7 Million
2017-2021 - Partners

Northern Ireland Partners
Queen’s University Belfast
Ulster University
Glen Dimplex
Causeway Coast & Glens Borough Council
AES Energy Storage
Ulster Farmers’ Union
energia

Scotland Partners
University of Strathclyde Glasgow
SSE
Sunamp Heat Batteries
Community Energy Scotland

Ireland Partners
climote
ESB Energy for generations
PayPal
The Authentic Food Company
SPIRE 2

Standards, Business Models, Investor Confidence

Market Modelling

Technology Development

Integration

RES Lifetime Variability

Mass Energy Storage devices for Grid Support in a spatially challenged electricity network

Variation in RES performance due to Weather, Erosion etc.

Domestic, Commercial Agricultural, Industrial, Homes – Communities – Cities

Single Electricity Market, i-SEM, DS3, etc.
SPIRE 2
Ulster PhD’s

1. PCMs & TCMs for Energy Storage

- Distributed energy storage models for DNO/DSO operations.
- Development of business models for community energy schemes.
<table>
<thead>
<tr>
<th>PhD Title</th>
<th>Intended Outcomes</th>
<th>Interreg V Topic/Applicant</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributed energy storage models for DNO/DSO operations.</td>
<td>This project will address the potential creation of new business models for DSOs and market participants</td>
<td>Distributed energy storage models for DNO/DSO operations.</td>
<td>Offered</td>
</tr>
<tr>
<td>i-SEM, DS3 and GB/Fr Interconnection Electricity Market Modelling</td>
<td>This project will ascertain whether the system value of distributed energy resources can be realised in emerging and future energy markets</td>
<td>i-SEM, DS3 and GB/Fr Interconnection Electricity Market Modelling</td>
<td>Offered</td>
</tr>
<tr>
<td>Development of business models for community energy schemes</td>
<td>The role of districts and communities as variable renewable energy management systems will be assessed.</td>
<td>Development of business models for community energy schemes</td>
<td>In Post</td>
</tr>
<tr>
<td>Optimal Integrated Solutions for Energy Storage, Electrification of Heat and Transport at a Domestic Level</td>
<td>Building modelling and electricity and thermal network modelling and experimental verification will determine the role of energy storage and DER.</td>
<td>Optimal Integrated Solutions for Energy Storage, Electrification of Heat and Transport at a Domestic Level</td>
<td>In Post</td>
</tr>
<tr>
<td>Variable Speed Heat Pump Compressors for Demand Side Response &amp; Network Stability</td>
<td>High performance domestic heat pump will be linked to hydronic system radiator controls that will address heat pump compressor operations.</td>
<td>Variable Speed Heat Pump Compressors for Demand Side Response &amp; Network Stability</td>
<td>Offered</td>
</tr>
<tr>
<td>Phase Change and Alternative Materials for Domestic Thermal Energy Storage</td>
<td>Best practice in heat exchanger design and materials for PCM and TCM for domestic heating will lead to high density thermal storage systems.</td>
<td>Phase Change and Alternative Materials for Domestic Thermal Energy Storage</td>
<td>Offered</td>
</tr>
</tbody>
</table>