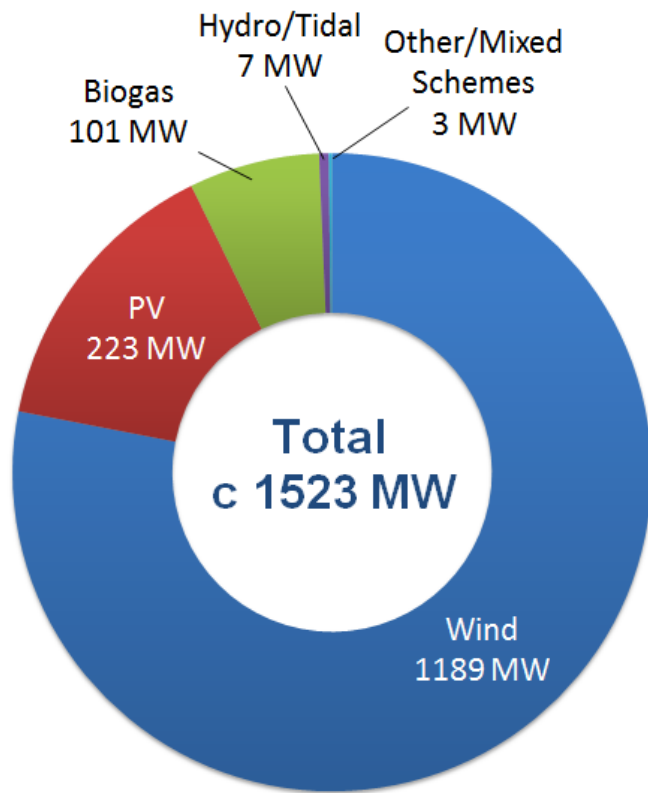


Connected and Committed Renewable Generation

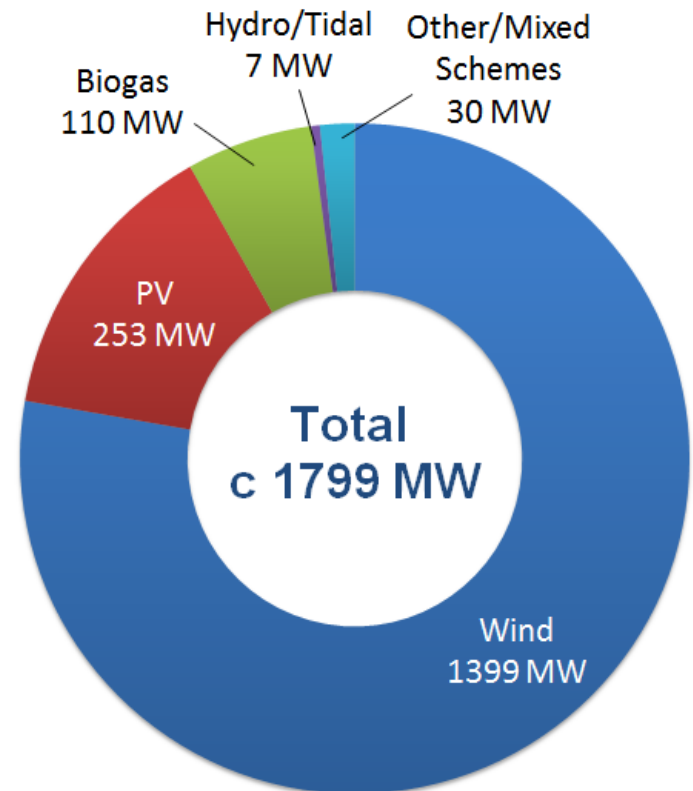
28 Feb 2018



**NI Connected
Renewable Generation
Technology Mix**



Expect to have
c1570 MW
connected by end
March



**NI Connected + Committed
Renewable Generation
Technology Mix**

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 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)

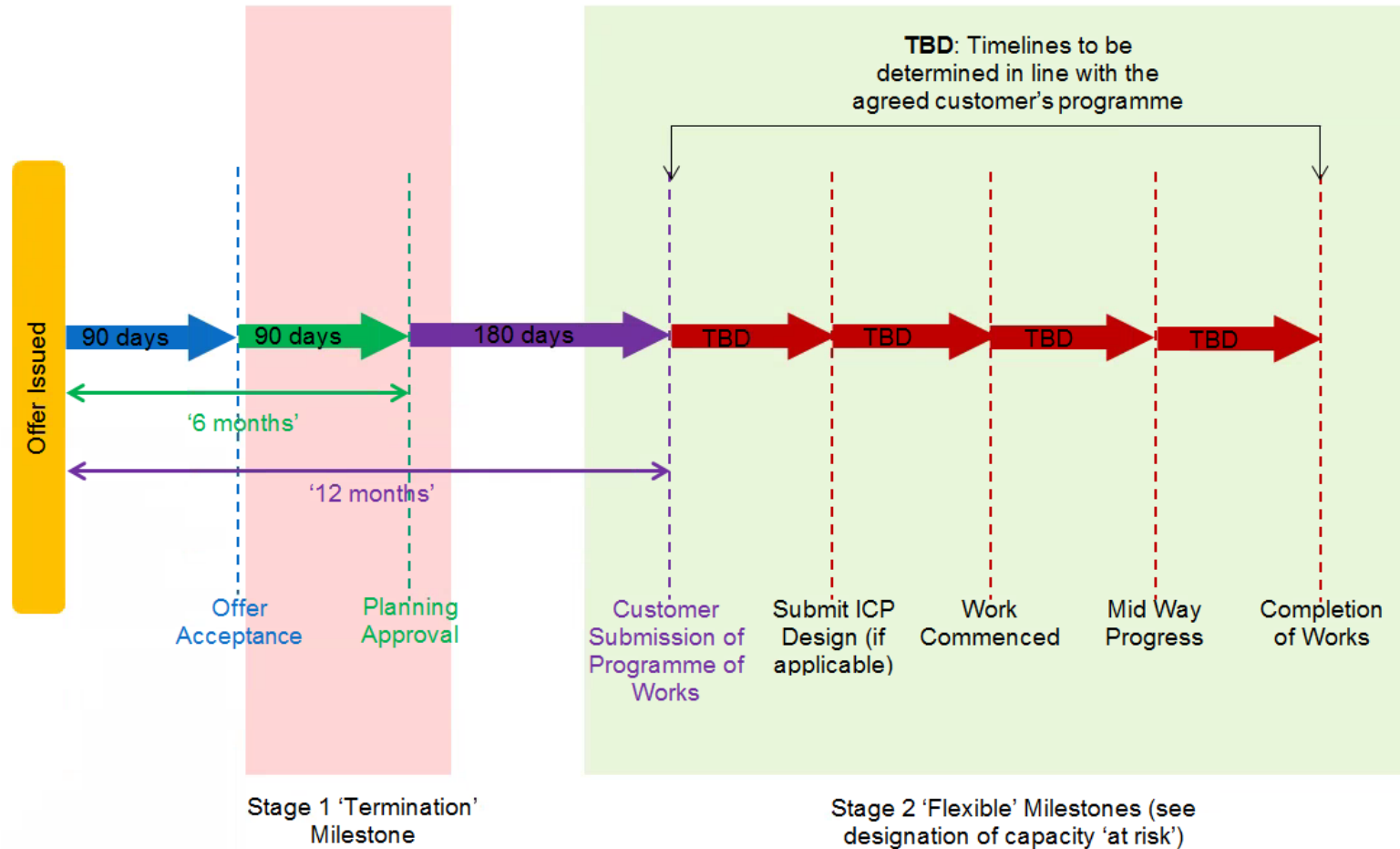
- Export capacity applicants ordered by receipt of valid application;
- Offers issued where capacity is available with [consulted on] milestones;
- Overinstall facility allowing additional 20% installed capacity on existing MEC’s kept under review;
- Maintain review of Zero-export against operational constraints of the system.



UPDATE: NIE NETWORKS MILESTONE WORKSHOP

HELD 20TH FEB

NIE Networks: Proposed Milestones



Capacity Queue Illustration

Project 1	Progressing
Project 2	Progressing
Project 3	Progressing
Project 4	Progressing

All projects progressing in accordance with milestones



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

Project 3	Progressing
Project 4	Progressing
Project 1	'at risk'
Project 2	'at risk'

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.

Project 3	Progressing
Project 4	Progressing
Project 2	Progressing
Project 1	'at risk'

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

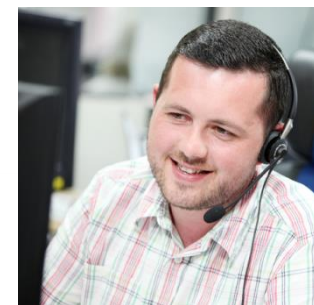
- **Constructive and interactive session- Summary & Slides circulated to wider mail list**
- **c15 Industry representatives (majority from LSG background)**
- **Planning Milestone deemed reasonable, no major objections.**
 - Some discussion over timing for planning milestone, could be shortened to time 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 ;

<https://www.lr.org/en/utilities/national-electricity-registration-schemes/search-northern-ireland/>
- 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.

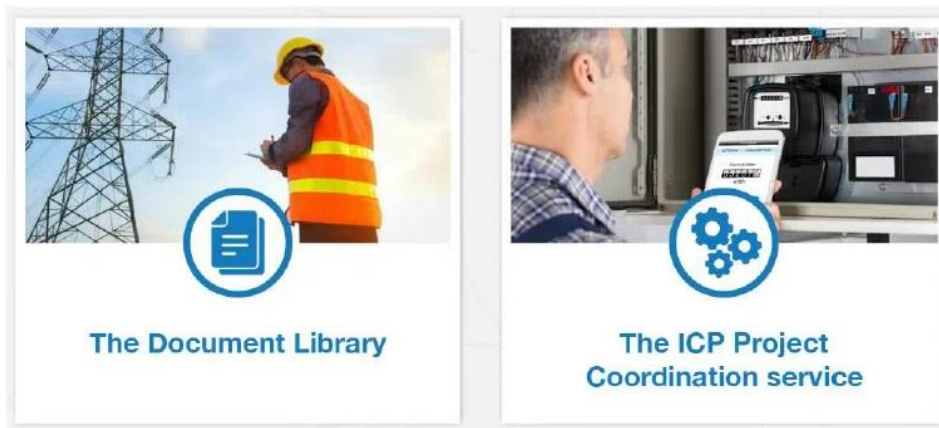
Contestably Constructed Assets

- 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.



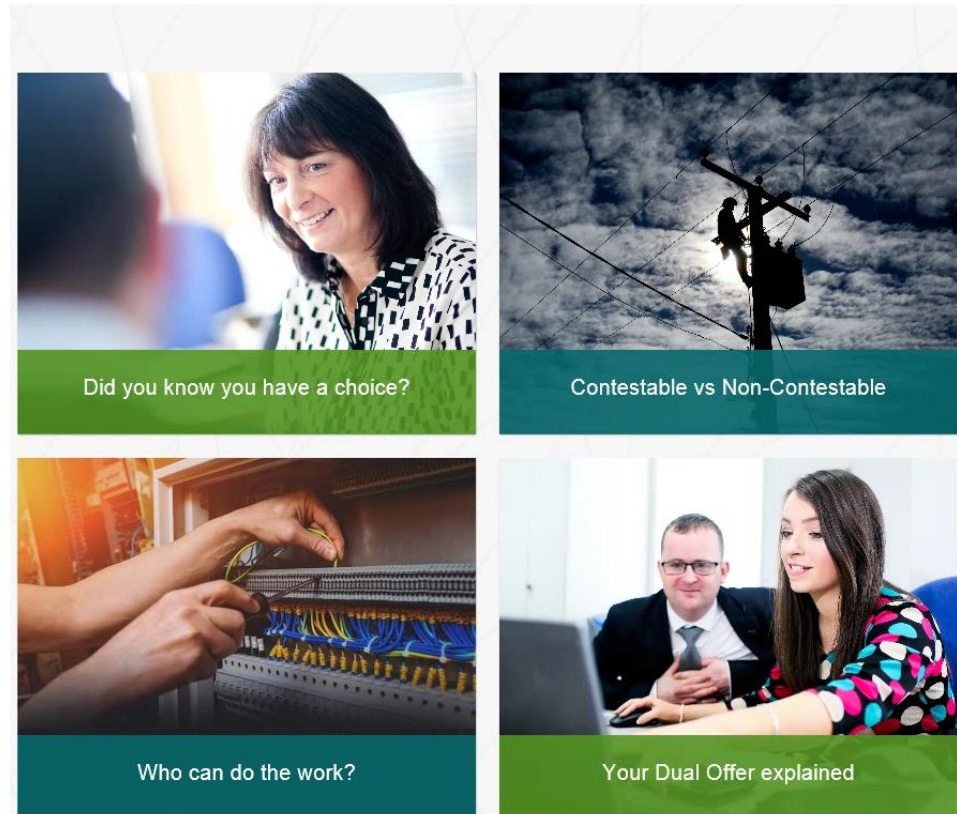
How are we communicating this externally?

- 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



SSG SCADA ENFORCEMENT

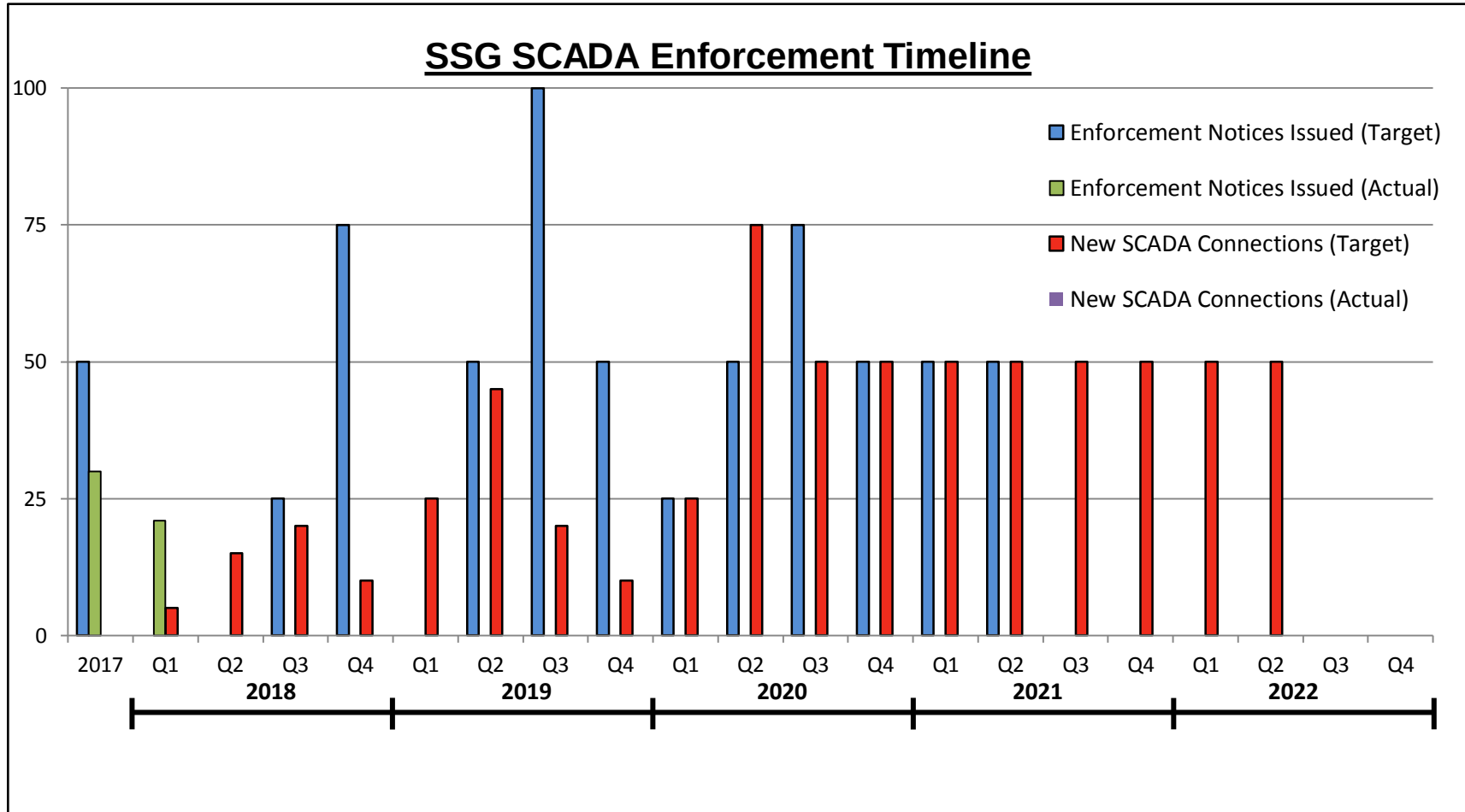
6th March 2018

- **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

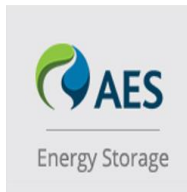


INTERREG V

SPIRE 2 – €6.7 Million

2017-2021 - Partners

Northern Ireland Partners



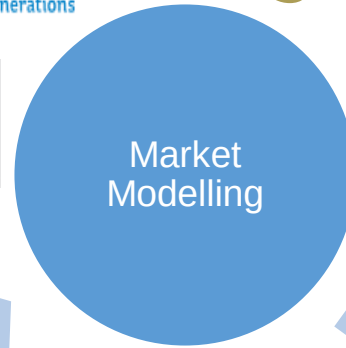
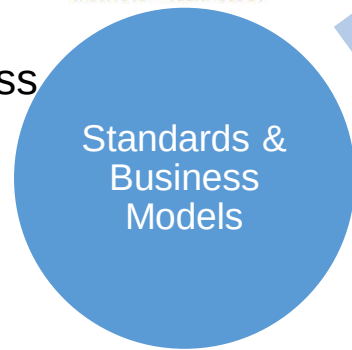
Ireland Partners

Scotland Partners



SPIRE 2

Standards, Business Models, Investor Confidence



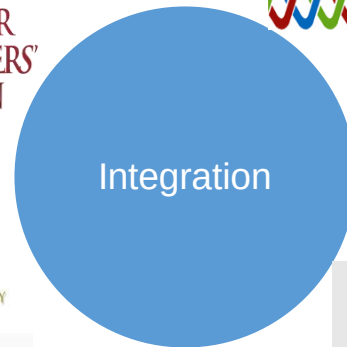
Single Electricity Market, i-SEM, DS3, etc.



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

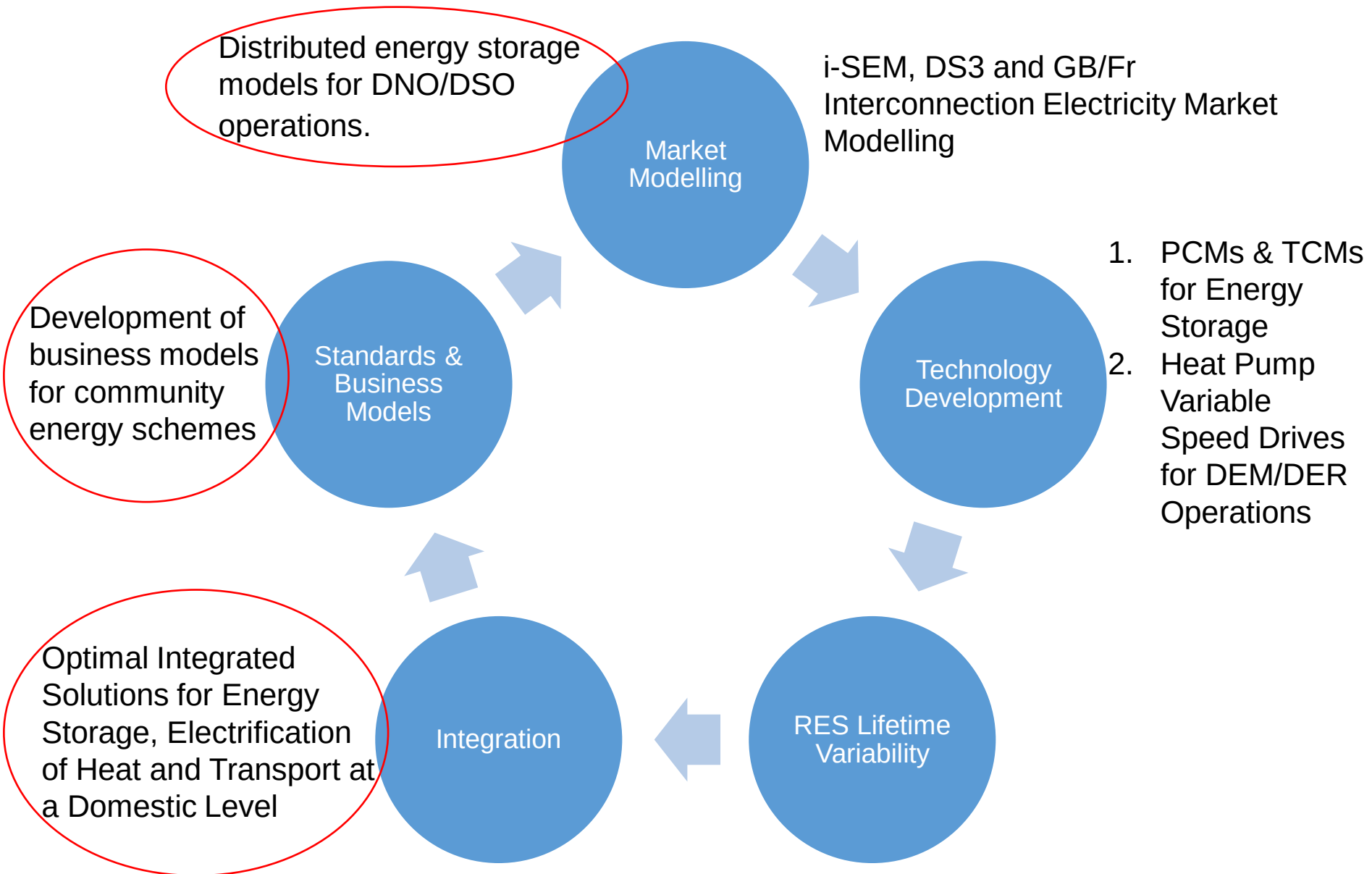


Energy for generations



SPIRE 2

Ulster PhD's



SPIRE 2

Ulster PhD's

Offered

Coleraine
project,
offered &
accepted

PowerOn
/NIHE
project, in
post

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

Interreg V Topic/Applicant	Status
Distributed energy storage models for DNO/DSO operations.	Offered
Development of business models for community energy schemes	Offered
Variable Speed Heat Pump Compressors for Demand Side Response & Network Stability	Offered
Phase Change and Alternative Materials for Domestic Thermal Energy Storage	Offered
Optimal Integrated Solutions for Energy Storage, Electrification of Heat and Transport at a Domestic Level	In Post
i-SEM, DS3 and GB/Fr Interconnection Electricity Market Modelling	In Post