OFGEM LOW CARBON NETWORK FUND

PROJECT PROGRESS REPORT

JUNE 2013

ACCELERATING RENEWABLE CONNECTIONS

Version: **1.0**

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SP ENERGY NETWORKS
ACCELERATING RENEWABLE CONNECTIONS (ARC)
REPORTING PERIOD JANUARY 2013 – JUNE 2013

1. EXECUTIVE SUMMARY

1.1 PROJECT PROGRESS HIGHLIGHTS

Over the course of this the first reporting period (January 2013 – June 2013), the team have driven forward a number of activities that form the initial scope of works required to commence activity on the ARC project.

- **Appointment of ARC Project Delivery Team** – Following the successful award of LCN Funding to deliver ARC, SPD immediately commenced the recruitment process to appoint the project team. The Project Manager had already been identified prior to the award of funding and the appointment of the successful candidate to the role of Lead Engineer was made in early January 2013. In addition, following completion of a very successful recruitment campaign in respect of the Stakeholder Engagement/Knowledge Transfer Lead role, the successful candidate will join the project team in July 2013. Work is currently ongoing to appoint successful applicants to the remaining roles.

- **Collaboration Agreements** – Project partner collaboration agreements are in place or being finalised with all collaborative partners included in the final project direction namely Smarter Grid Solutions, Community Energy Scotland and University of Strathclyde.

- **Internal Technical Workshop** – Internal stakeholder workshop held with key internal staff to establish 'User Requirements' for implementation of the ANM scheme within trial area and how it will interface with existing systems.

- **Scottish Renewables Annual Conference** – In May 2013, SP Energy Networks attended the Scottish Renewables Conference whereby we took the opportunity to raise awareness of the ARC project and provide developers with information on how they could become part of the trial.

- **National Grid Electricity Transmission Engagement** – To date, three meetings have been held with NGET regarding the opportunity of installing an ANM solution at one of the sites within the trial area in order to facilitate the connection of distributed generation ahead of the need for major reinforcement on the transmission network which has been identified through the Statement of Works process.

1.2 KEY RISKS IDENTIFIED

1.2.1 RECRUITMENT RISKS – We consider that any risk in the recruitment of developers who will actively seek a connection via the Active Network Solution on a non-firm basis to be low. This is based upon our engagement with customers and developers to date who are actively seeking such connection options from their DNO. The initial rollout of the Active Network Management platform will take place at our Dunbar Grid Supply Point and to date we have engaged with two developers seeking connection to the distribution network. Based upon initial discussions both have expressed interest in developing a connection solution that enables the connection of generation on a non-firm basis.

1.2.2 PROCUREMENT RISKS – We consider any perceived risk to be low as a consequence of our internal procurement governance arrangements and that our collaboration partners will be responsible for a large proportion of the enabling equipment to deliver the project.

1.2.3 INSTALLATION RISKS – We consider that at this stage of the project any risk associated with the installation of equipment onto the network to be low. This is currently being managed through the positive engagement between internal stakeholders/departments and Smarter Grid Solutions in developing User Requirement documentation. This will ensure that all parties are provided with a full awareness of the equipment to be installed and from a project perspective the minimum criteria required in order to be operated alongside our existing network.

1.3 LEARNING OUTCOMES ACHIEVED

1.3.1 KEY LEARNING OUTCOMES DELIVERED IN THE PERIOD – As we have only recently embarked upon the delivery of the project we do not have sufficient learning outcomes of the trial to disseminate at present.

1.3.2 SP ENERGY NETWORKS APPROACH TO CAPTURING LEARNING – A key enabler in the process for capturing and delivering the learning gained from the project is the appointment of a dedicated Stakeholder Engagement and Knowledge Transfer Lead for the project. The successful applicant is scheduled to be in post in July 2013.

Our approach to capturing learning is firstly to document our approach and techniques to capture and disseminate learning developed by the project. A key element of this strategy is to ensure throughout the duration of the project that learning is adequately understood and fully evaluated by the Project Team, appropriate identification of both internal/external stakeholders and what information they require to be furnished with is the second step. Finally we give consideration to developing a series of knowledge transfer techniques in order for each stakeholder group to fully understand and gain appropriate and targeted learning from ARC that can be translated into both Business As Usual activity for GB DNO's and understood by developers to enable them to integrate the learning from ARC into their existing and future generation projects.

In addition, we have also been actively engaged in the dissemination programmes of other DNOs and have gained valuable learning not just on the progress and outcomes of the various LCNF projects but on the techniques and mediums used. We will use to maximise the learning opportunities for all stakeholders.

1.3.3 THIRD PARTY ACTIVITIES – Following award of LCN Funding to develop the ARC project, we have actively engaged with external stakeholders to promote the objectives of ARC and long term benefits to developers in creating a greater opportunity to access to the distribution network.

In March 2013 SP Energy Networks attended the Scottish Renewables Annual Conference in Edinburgh whereby we had a stand manned by members of the Project Team over the course of the two day event. This allowed delegates the opportunity to be informed of the trial and how they could interact and become involved with the project. Representatives were also part of the planned debating sessions along with Smarter Grid Solutions. Delegates were

informed of progress to date which resulted in several developers seeking further information on how they could be part of the trial and how this could become a business as usual solution. This further highlighted to us the need for a well coordinated approach and developer's appetite to engage with a new type of connection for distribution generation projects.

During the early part of June, members from the ARC Project Team attended SP Transmission's Transmission Summit held in Glasgow attended by a variety of stakeholders from distributed generation developers and consultants to representatives from The Scottish Government and NGET who both also presented on the day.

The purpose of our involvement at this summit was to communicate to delegates the purpose of the ARC trial as many developers also have interests in connecting to the distribution network. In addition it provided the opportunity to highlight our objective of removing the barriers for those generators connecting at distribution voltages and are being constrained due to their impact upon the transmission network, which requires significant reinforcement and impacts upon timely delivery of connection.

1.3.4 INTERNAL DISSEMINATION – Our internal dissemination to date, given the early nature of the project has mainly been at a working level. We have identified the key internal stakeholders that are required for the implementation of the Active Network Management platform within the trial area. We have been engaged in developing 'User Requirements' documentation to ensure all internal requirements with respect to System Security, IT, Protection and Operation are met.

Through meetings with our parent company Iberdrola, we have also identified synergies in the ARC project with a European Project iGREENGrid which has commenced this year. We will be aiming to maximise any common elements with this project to ensure that the learning is shared within the Iberdrola group and a wider group of European Stakeholders who can be influential in the development of European codes relating to the connection of distributed generation.

2. PROJECT MANAGER'S REPORT

2.1. PROJECT OVERVIEW

Following successful award of funding to undertake the ARC project, each of the collaboration partners; Smarter Grid Solutions; Community Energy Scotland and University of Strathclyde, were all issued with contract agreements setting out the key objectives of the project and the obligations placed upon each collaborative partner to facilitate the delivery of those objectives. Embedded within each of the agreements are details of what each partner will contribute to the project, in time and/or financial contribution, the work that they will be delivering and the appropriate milestones that must be delivered in order to trigger any agreed payment schedule.

A key aspect of the agreements is that each partner has agreed to conform to the LCNF default IPR arrangements for this project and execute their duties in delivering their objectives in line with LCNF Governance Document v.6.

Accelerating Renewable Connections (ARC) will facilitate an increase in the penetration of renewable, low carbon generation gaining access to the distribution network in a more efficient and timely manner. The project will undertake a holistic review of the distributed generation connections process and deliver its objectives through the application of novel commercial arrangements and network technology deployment.

The ARC project will offer innovative alternatives to address concerns raised by stakeholders that would not normally be catered for through business as usual. A key aim of ARC is to provide those seeking connection to the distribution network with a richer source of information which will inform on the available capacity on the network at a particular point. This aspect of ARC will provide 'real-time' demand and network generation capacity information via a publically available web-portal to empower those seeking connection to the distribution network to 'optioneer' their proposed connection and gain valuable insight and information ahead of making a formal application to the incumbent DNO.

In addition, ARC through collaboration with Community Energy Scotland and University of Strathclyde, will seek to explore how the deployment of network innovation can assist community owned generation schemes to gain network access by considering the potential for those groups to provide coordinated or managed generation output that is directly linked with local demand thus reducing the need for wider and in most cases project prohibitive network reinforcement, where a network constraint is identified.

The deployment of Active Network Management (ANM) across the project area, facilitated through collaboration with Smarter Grid Solutions, lies at the heart of the ARC project. An early deliverable of ARC is the roll-out of ANM enablement at three Grid Supply Points (GSPs) that have been selected based upon known network characteristics and constraints and knowledge of the number of generators seeking to connect at the various sites.

Furthermore by integrating ANM within the distribution network, it will provide the DNO with greater opportunity to develop the commercial offering available to those seeking to connect to the distribution network which in turn will lead to reduced costs and more time effective network connections being facilitated.

2.2. PROJECT READINESS

2.2.1. RESOURCING – During the reporting period we have been actively engaged in recruiting resources into the project team. Although our initial expectation was to have all resources in place by end of the first quarter 2013, this has not been fully achieved due to a lack of appropriate candidates being identified with the required skills and experience for the engineering roles. A further advertising campaign has progressed well and we are now confident of having resources in place shortly. We remain on track to address this during quarter three of 2013 and consider at this stage of the project any risk upon the delivery of the project milestones to be low.

Early appointments include the ARC Project Manager and Lead Engineer, both identified ahead of full funding award by Ofgem. We have also completed the selection process and identified the preferred candidate to fulfil the role of Knowledge Transfer Lead and who is scheduled to join the team during July 2013. In addition, a number of existing internal resources that will support the project throughout its development have been identified from key internal stakeholders that include Network Design, SP Network Connections, Regulation & Commercial, System Operations and Real Time Systems.

2.2.2. COLLABORATION PARTNERS

- **SMARTER GRID SOLUTIONS (SGS)**

SGS are currently engaged in the project developing 'User Requirement' documentation that will be reviewed in authorised by internal stakeholders that will interact and operate the ANM platform throughout the trial period and beyond if proved successful. Following LCN Funding award by Ofgem, SGS have appointed a full-time Project Manager who will oversee the activities of SGS and who is the direct interface with the ARC Project team. Further analytical and engineering resources have been identified and are engaged on the project on a full-time basis.

In addition, SGS has also been involved in the initial discussions held with NGET regarding the requirements for network data sharing and development of commercial terms that will govern the connection of small embedded generation on a non-firm basis.

Key delivery milestones for SGS over the second half of 2013 are the completion of 'User Requirement' documentation, Design and roll-out of the ANM scheme at Dunbar GSP and completion of curtailment analysis that will form the basis of the non-firm commercial agreements to be offered to the two generators actively seeking connection in the Dunbar area.

- **COMMUNITY ENERGY SCOTLAND (CES)**

CES are currently in the process of recruiting a full-time Community Development Officer who will be responsible for managing the interface and ongoing relationship between the SP Energy Networks ARC project team and Community Groups seeking to develop, own and operate their own generation project.

CES have to date identified up to 15 potential Community owned projects that are currently being considered within the trial area of East Lothian and the Borders Region of Scotland.

- **UNIVERSITY OF STRATHCLYDE (UoS)**

UoS have identified resources that will undertake the activity associated with the development of Community owned generation models and trial of network technology to expedite the connection of renewable generation onto the distribution network.

A key aspect of the trial of new technology included within our original submission was undertaking this activity at the newly opened Power Networks Demonstration Centre (PNDC). The PNDC will assist the ARC project in accelerating the adoption of advanced technologies and enable the trial and research of low carbon solutions for electricity networks.

2.3. PROGRESS IN THE CURRENT REPORTING PERIOD

Although still in the early stages of the project the following information provides an update on each of the Work Packages included as part of our final submission:

Work Package 1 (Empowering Customers) – We are currently in the process of finalising and issuing a tender for the procurement of external services to undertake stakeholder surveys and management of our ongoing stakeholder engagement activities throughout the duration of the project.

In addition we have been working with our Connections business to establish a baseline for the development of heat-maps that can be used by developers ahead of making a full connection application to SP Distribution. This activity to date has been to analyse the level of curtailment on the network at circuit level under business as usual arrangements. The next phase of this project is to analyse this baseline and consider how the deployment of Active Network Management will enable a greater capacity to be available based upon non-firm access arrangements.

Work Package 2 (Connections Design) – At this early stage of the project our focus to date has been developing a fuller understanding the various design tools available and the interaction of systems used to produce final connection designs. The project will seek to align network data sources in order to be able to assess smart options for connection design.

Work Package 3 (Network Enablers) – As described further in this document, we have commenced a programme with Smarter Grid Solutions to produce 'User Specification' documents that will establish the key requirements that the deployment of the Active Network Management have to meet in order to be integrated and operated alongside our existing network and systems interfaces. We are working towards the first installation of the ANM equipment during the autumn of 2013.

Work Package 4 (Network Connections Trials) – We have made significant progress in this area especially following the positive engagement with NGET to date whereby we have established two work-streams that will consider Operational Interfaces and the Commercial arrangements that will govern the connection of small embedded generators that connect to the distribution network but are recognised as having an impact on the transmission network. Furthermore this interaction has also involved developers actively seeking connection within the trial area.

In addition our partner Community Energy Scotland has also identified a number of potential developments that will enable the trial of community owned generation and

how such schemes gain access to the network. This activity has also involved discussions with demand customers who operate within the trial area and are interested in understanding how they can interact with locally produced generation.

Work Package 5 (Project Evaluation) – At this stage of the project no work has commenced on this Work Package.

Work Package 6 (Knowledge Transfer) – Although still early in the project timeline, we have made steady progress on this work package.

A key enabler in the process for capturing and delivering the learning gained from the project is the appointment of a dedicated Stakeholder Engagement and Knowledge Transfer Lead. The successful applicant is scheduled to be in post by July 2013.

Our approach to capturing learning is firstly to document our approach and techniques to capture and disseminate learning developed by the project. A key element of this strategy is to ensure throughout the duration of the project that learning is adequately understood and fully evaluated by the Project Team, appropriate identification of both internal/external stakeholders and what information they require to be furnished with. We give consideration to developing a series of knowledge transfer techniques in order for each stakeholder group to fully understand and gain appropriate and targeted learning from ARC that can be translated into both Business As Usual activity for DNO's and understood by developers to enable them to integrate the learning from ARC into their existing and future generation projects.

We have also been actively engaged in the dissemination programmes of other DNOs and have gained valuable learning not just on the progress and outcomes of the various LCNF projects but on the techniques and mediums used to deliver those messages. We will building on these experiences in order to maximise the learning opportunities for all stakeholders.

3. BUSINESS CASE UPDATE

The Business Case remains as per our original submission with no events or developments taking place in industry over the reporting period that would adversely affect the delivery of the ARC project.

4. PROGRESS AGAINST BUDGET

Table 1 below provides a summary of the project budget position for the regulatory year 2013-2014. As a consequence of this being only the first report and a reflection of only a six-month position, to date whilst a great deal of activity has been undertaken, not all invoices for that work have been received with many of the costs expected to accrue in the second half of the year.

Activity	Budget 2013-14 £k	Actual to May 2013 £k	Variance £k	Comments
Labour	1,359.0	76.7	(1,282.3)	Recruitment delays. Direct Labour costs debited from ARC bank account on a quarterly basis
Equipment	793.0	0.0	(793.0)	Delivery Autumn 2013 of initial ANM scheme at Dunbar
Contractors	1,250.0	0.0	(1,250.0)	External Legal services & SGS invoices remain outstanding
IT	619.0	0.0	(619.0)	Linked to Autumn 2013 delivery
Travel & Expenses	12.0	3.7	(8.3)	
Contingency & Others	98.0	0.0	(98.0)	
Total	**4,131.0**	**80.4**	**(4,050.6)**	

5. BANK ACCOUNT

A copy of the ARC bank statement detailing the transactions of the Project Bank Account since its creation is attached and included within Appendix A (Confidential Submission).

As a consequence of the project only entering the early stages of its lifecycle, the bank statement currently shows mainly credits received to date, the debits for the project reflect resource costs incurred by the ARC Project Team which will be transferred in due course.

6. SUCCESSFUL DELIVERY REWARD CRITERIA (SDRC)

- **Criterion (9.1) Project Budget** – At this early stage of the project we expect to fully deliver the project in accordance with our Tier 2 Full Submission.

- **Criterion (9.2) Project Timeline Delivery** – At this early stage of the project we expect to fully deliver the project in accordance with our Tier 2 Full Submission.

- **Criterion (9.3) Demonstration of alternative solutions as detailed in case study 1** – We have commenced work with our internal stakeholders and Smarter Grid Solutions to implement the ANM scheme at Dunbar GSP during the initial phase of the project. This is expected to be delivered during autumn 2013.

  In addition, we have to date successfully engaged with both an interested distribution developer and NGET regarding implementation the ANM solution to facilitate the connection of distributed generation at that site and indeed are aware of further distribution developers seeking to connect into the same area. Over the remainder of the year we expect to continue dialogue with NGET regarding the commercial framework that will govern such arrangements. We therefore remain highly confident that we will be in a position to demonstrate one of the alternative solutions highlighted in Case Study 1 of our Tier 2 Full Submission.

- **Criterion (9.4) Demonstration of alternative solutions as detailed in Case Studies 2,3 and 4** – We remain confident that we will be able to implement an Active Network Management system and alternative connection arrangements as detailed in either case studies 2, 3 or 4. Through our initial engagement with developers to date, we have seen a real appetite to develop such a connection offering and interest on the part of developers to connect to our network via an Active Network Management solution.

- **Criterion (9.5) Creation of community energy generation scheme & model for community level generation** – Through our collaboration with Community Energy Scotland and University of Strathclyde, we are aware of a number of potential projects within the trial area whereby community groups are seeking a generation connection to our network. Furthermore during the reporting period we have held initial talks with a potential high demand customer who holds numerous assets within the trial area and is receptive to understanding how demand can be twinned with local generation. To date CES has identified approximately 15 potential projects for demonstration of a community level generation scheme.

- **Criterion (9.6) Demonstration of top-down Active Network Management** – In addition to the worked being carried out at Dunbar GSP, we have already identified an additional two Substations that will be ANM enabled with deployment of those schemes expected to be facilitated by early 2014.

- **Criterion (9.7) Detailed publication and dissemination of learning from project** – We are developing our stakeholder engagement strategy as detailed within section 1.4 of this report. A key enabler to delivering this objective is the recruitment of a dedicated Stakeholder Engagement & Knowledge Transfer Lead who will be in post by July 2013.

- **Criterion (9.8) Improved Generation Experience** – Work has commenced to issue a tender to the market for research and survey expertise in order to undertake our planned stakeholder surveys and stakeholder engagement workshops to determine the baseline of perception of the existing connections process. However we have also reviewed the comments and opinions expressed by developers through OFGEM's DG Fora and engaged with our Connections business to align objectives being taken forward under that process to improve the customer experience with the objectives of the ARC project.

  In addition, we have also commenced work to review the provision of data available to those generators seeking connection to our network specifically focused upon the availability of meaningful heat-maps and capacity availability on various circuits within our wider network area. This work will continue focussed upon the trial area to understand how the deployment of ANM can improve the available capacity and how this data can then be made available in 'real-time' via a web portal to the wider developer community.

7. LEARNING OUTCOMES

As we have only recently embarked upon the delivery of the project we do not have sufficient learning outcomes of the trial to disseminate at present.

8. INTELLECTUAL PROPERTY RIGHT (IPR)

The project is not funding the development of any technology which should create foreground IPR. All partners have accepted the LCNF default IPR arrangements.

9. RISK MANAGEMENT

The project risks table below has been updated with any developments in the risks to the project. At this stage, the project management approach we have taken has meant that none of the risks have materialised.

No.	WP	Risk Description	P	C	RR	Mitigation	Contingency Plan
1	WP 1.3	Developers unwilling to trial new commercial and connections arrangements	1	3	3	External party to maintain high level of contact with developers ensuring benefits are understood by developers	Work closely with local authorities and existing applicants to develop new procedures
	WP 1.2	Dynamic network constraints and sheer data volumes could lead to IT issues	1	3	3	Ensure tools, resources and data meets the needs of connections customers	May prove too complex due to volume
2	WP 2.1	The development of new tools and processes for connections design involves some complexity and time/cost risk.	2	2	4	SPD has engaged technology partners to develop up to date tools and processes for connections design	Utilise internal IT support and resources
	WP 2.2	Increased visibility of network may have an impact on the available network headroom	2	1	2	Traditional design headroom has been conservative	Utilise learning gained from Flexible Networks project on headroom available
	WP 2.3	Integrating existing data sources and tools is not successful due to incompatibility	2	1	2	SPD will engage technical experts to conduct integration of data and tools into a single streamlined solution	Expand on previous IFI trials
3	WP 3.2 WP 3.3	There are communication issues with telecom platform meaning that some areas cannot be covered by ANM	3	2	6	SPD will carry out site surveys and specify telecoms that will meet the needs of the trial area	Resort to BAU e.g. laying fibre cable
4	WP 4.1	Failure to establish SPD/NGET processes and policy	2	2	4	Discussions with NGET. These have commenced and concept has been favourably received	ANM scheme can still be deployed without National Grid interface
	WP 4.2 WP 4.3	There is a risk that procurement of technology and software tools to facilitate trials could hold project back	1	3	3	SPD has already carried out an EoI process with technology providers already selected, allowing for procurement process to be advanced	BAU
5	WP 5.2	Network evaluation finds that generation triggers are difficult to categorise	1	3	3	Academic partner to carry out analysis and report	Work with planning authorities
6	WP 6.1	Knowledge import from other projects	1	1	1	Assign resource to implement	Review learning through DNO websites , publications & site visits
	WP 6.2	Knowledge dissemination	1	1	1	Host learning conference	Regular updates to website
	WP 6.3	PNDC demonstration of technology	1	2	2	Selected technology does not function as specified	ANM has been successfully implemented elsewhere
7		Changes to renewable incentives which change developer landscape	1	2	2	Project needs to accommodate uncertain landscape	Number of projects already identified within trial area for inclusion in the project

10. CONSISTENCY WITH FULL SUBMISSION

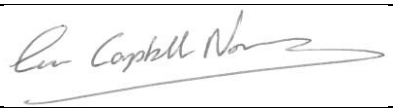
We can confirm that the project is being undertaken in accordance with the full submission.

ACCURACY ASSURANCE STATEMENT

The Project Manager and Director responsible for the 'LCNF – Accelerating renewable Connections' project confirm they are satisfied that the processes and steps in place for the preparation of this Project Progress Report are sufficiently robust and that the information provided is accurate and complete.

Steps taken to ensure this are:-

- Regular update reports from each project team member for their area of responsibility.
- Evidence of work undertaken by the project team is verified by the section manager as part of their day-to-day activities. This includes;
  - Checking and agreeing project plans.
  - Holding regular team project meetings and setting/agreeing actions.
  - Conducting frequent one-to-one meeting and setting/agreeing actions.
  - Confirming project actions are completed.
  - Approving and signing off completed project documents.
  - Approving project expenditure.
- Weekly reports are produced by each section manager of the progress of the work their department is undertaking.
- Director and Senior Management summary reports for the project progress are produced.

Author		Date	21st June 2013

Euan Campbell Norris – Senior Project Manager

Signed (1)		Date	21st June 2013

Martin Hill – Future Networks Manager

Signed (2)		Date	21st June 2013

Jim Sutherland – Engineering Director, Asset Strategy & Network Programmes