



Electricity distribution network operators (DNOs), independent distribution network operators (IDNOs), distributed generators, electricity suppliers and other interested parties

Promoting choice and value for all gas and electricity customers

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Date: 01 December 2011

Dear Colleague,

Low Carbon Networks Fund: Two Year Review

We are undertaking a review of the Low Carbon Networks (LCN) Fund following two years of operation. The LCN Fund was a first of a kind for Ofgem. As such, in the Distribution Price Control Review 5 (DPCR5) final proposals we stated that there would be a review after two years to take stock and assess whether the design of the LCN Fund was delivering its intended objectives¹. We consider that the LCN Fund has been a significant success to date but believe that this review provides an opportunity to consider ways to build on this success.

On 27 November, we announced the Authority's decision on which projects it has selected for second tier funding in this second year of the LCN Fund². Following the conclusion of the second year of the competition, this letter launches the review. It sets out the areas we are considering in the review, and invites views ahead of a decision in early 2012. We also set out the process for the review which will inform the publication of an updated governance document in Spring 2012 which, where appropriate, will reflect the outcomes of this consultation. We will take consultation feedback into account in the ongoing development of the LCN Fund and Network Innovation Competitions (NIC)³ where relevant. Any changes we make following the review will not be retrospective so will not affect any projects already approved or being undertaken.

We welcome responses regarding any of the issues raised in this document by 11 January 2012. Please send responses to sam.williams@ofgem.gov.uk.

The LCN Fund

Distribution Network Operators (DNOs) are entering a period of significant change. The challenges presented by the transition to a low carbon economy will directly impact their networks. The widespread connection of distributed generation (DG) and the electrification of heat and transport will require new approaches to the design, construction and operation of these networks. In particular, it will no longer be possible to assume that power will flow in one direction in a relatively predictable way. Further, the roll out of smart meters will encourage customers to change their pattern of energy usage. As a result, essentially passive networks that have worked so well in the past may have to evolve into more

¹ [Electricity Distribution Price Control Review Final Proposals – Incentives and Obligations](#)

² [Low Carbon Networks Fund winning projects 2011](#)

³ We will introduce the NIC as part of the RIIO-T1 and GD1 price controls. These are annual competitions for electricity and gas, where network companies compete for funding for research, development and trialling for new technology, operating and commercial arrangements. More information on the NIC is available on the [Ofgem website](#).

active, intelligent networks that are capable of meeting customers' increasing and less predictable needs.

To meet these challenges in a timely and cost effective way DNOs will need to innovate in the way they design, build and operate their networks. They will also need to explore how they can make use of the opportunity presented by demand side response from customers and generators. As part of DPCR5 we created the £500 million LCN Fund to encourage the DNOs to use the period to 31 March 2015 to try out new technologies, operating practices and commercial arrangements which are required to meet these challenges.

The objective of these trials and demonstration projects is to help all DNOs understand how they can ensure their networks are capable of meeting the changing requirements of generators and consumers at value for money as we move to a low carbon economy. More broadly and more ambitiously, the fund is intended to help the DNOs understand what role they should play in the overall supply chain in a low carbon energy sector and how they can enable the transition to a low carbon economy. As such, the learning is important not just for network companies but for the energy industry and its stakeholders as a whole.

The LCN Fund consists of two funding tiers. DNOs are able to use first tier funds (totalling £80 million over five years across all DNOs) to recover a proportion of expenditure incurred on small scale projects. They can also use this funding to recover the expenditure incurred to put in place the people, resources and processes to progress larger innovative projects developed under the second tier. Under the second tier of the LCN Fund, Ofgem holds an annual competition to enable a small number of significant scale projects to receive funding. DNOs compete against each other for an allocation of the £64 million funding available each year. Most of the topics in this review focus on the second tier, but we are interested in stakeholder views on the first tier.

The LCN Fund Governance Document (the governance document)⁴ sets out the regulation, governance and administration of the LCN Fund. It was developed in three separate stages during the first year of the Fund and revised following a 'lessons learnt' exercise which focussed on the first annual second tier competition⁵. We are now on the fourth version of the governance document.

Context

In its first two years, the LCN Fund has been widely recognised as stimulating much needed innovation amongst DNOs. The concept has been internationally recognised as incentivising innovation and building of partnerships which would not otherwise occur under the RPI-X regulatory regime⁶. The detailed design has also been complemented for its focus and emphasis on specific learning outputs. There has been an excellent response from DNOs to the calls for funding proposals over the last two years.

In the first year, 11 submissions with a combined funding request of £153 million competed for an allocation of the annual £64 million funding available. Third parties have shown considerable interest and there has been a broad range of collaborators heavily involved with DNOs in developing project proposals. The four projects selected for funding in the first year's competition have been well received and were described by one analyst as some of the most interesting being undertaken in Europe⁷. We have also seen 21 first tier projects, with combined forecast expenditure of £11 million. These projects cover a range of issues which are detailed in appendix two, including engaging with local communities, trialling new operational practices and deploying monitoring devices to help better understand the low voltage (LV) network. These innovative projects are already generating

⁴ [Low Carbon Networks Fund Governance Document v.4](#)

⁵ [Low Carbon Networks \(LCN\) Fund Lessons Learned Letter](#)

⁶ We have been invited to speak to European counterparts on the establishment of the fund and we have received numerous comments pointing to the LCN Fund as a model which could be more widely adopted.

⁷ This quote came from a Bloomberg analyst report.

learning that will help network companies across Great Britain to facilitate the move towards a low carbon economy.

Earlier this week, we announced that we have selected six further second tier projects for funding following the second annual competition. We consider that these projects will deliver significant new learning that will assist DNOs to support the transition to a low carbon economy. You can find full details on these projects and this decision in "Low Carbon Networks Fund winning projects 2011"⁸.

Following on from this success, we have undertaken extensive work on incorporating the principles of the LCN Fund in to the development of the NIC for the electricity and gas transmission and gas distribution sectors. We have received supportive feedback from industry on this approach, and are pleased to note their comments that the governance arrangements for the LCN fund are robust. We are therefore keen that the lessons from this review also inform the development of the NIC as part of the RIIO-T1 and GD1 price controls.

Scope of review

We have set out in the governance document that this review will take into account the lessons learnt from the first two years of operation of the LCN fund and the development of the NIC. We are also keen to ensure that the LCN Fund remains relevant to ongoing network developments, including smart grids. We have identified a number of areas to consider in the review. These are set out below:

1. Evaluation criteria

There are separate but similar evaluation criteria for the registration of first tier projects, the second tier initial screening process and the second tier full submission evaluation. It is through these criteria that we apply the policy intent behind the LCN Fund, outlined above. We consider that the evaluation criteria have, to this point, worked well. We have seen the development of projects which provide relevant and timely learning to help DNOs accelerate the development of a low carbon economy and consequently provide value for money to customers. The criteria have also driven the submission of second tier projects which generally have a robust methodology, involve a range of external partners and have clearly identified learning outcomes. The governance document sets out the current evaluation criteria for first and second tier projects⁹.

We welcome respondents' views on how the evaluation criteria have driven the development of projects and whether there are any changes which Ofgem should consider as part of this review. For instance, to date, we have stated that the LCN Fund would not explicitly focus on any particular types of projects or innovation but that we would revisit this position as part of this review. Appendices one and two to this letter set out the broad areas which have been addressed in first and second tier project submissions to date.

We do not consider there has been any bias towards certain types of project but are keen to determine if respondents consider there to be any unnecessary overlap or duplication amongst first or second tier projects. We would also welcome views on whether or not the existing evaluation criteria help ensure that the outputs of the LCN Fund continue to be compatible with the requirements of distribution networks, in the face of wider network and industry developments, in particular smart grids.

1. Do respondents consider that the evaluation criteria have driven certain types of projects at the expense of other learning outcomes? If so, what are these learning outcomes and do they need to be specifically stimulated?

⁸ [Low Carbon Networks Fund winning projects 2011](#)

⁹ See pages 9-12 of [Low Carbon Networks Fund Governance Document v.4](#) for first tier criteria; pages 33-35 for second tier initial screening process criteria; and pages 48-52 for second tier full submission criteria.

2. Do the evaluation criteria ensure that the LCN fund is compatible with future developments in smart grids?

2. Best use of learning

Facilitating knowledge transfer is one of the key aims of the LCN Fund. Following the publication of our decision on the second year of the fund, there could be 10 second tier projects in addition to 21 first tier projects. We recognise that these projects have the potential to generate a huge body of new learning that can be shared with all DNOs and other industry players. We are keen that this learning is shared effectively to prepare industry for the low carbon transition and the development of smart grids.

More fundamentally, we recognise that over the next few years there will be a significant volume of learning which is emerging from these projects. With a further three years to register first tier projects and three more annual second tier competitions due, we are interested in views on the current capability of industry to absorb the amount of learning which could emerge. We also note the role of the DECC/Ofgem led Smart Grids Forum¹⁰. This forum aims to recognise the importance of network development as a key part of the low carbon transition. One of its objectives is to facilitate the exchange of information and knowledge between key parties, including those outside the energy sector. Therefore we are conscious that the learning from the LCN Fund should align with this objective in order to have maximum value.

3. We welcome your views and experiences on how we can enhance the requirements on learning dissemination for LCN Fund projects to ensure that industry gets the best value from them.

3. Duplication

We have set out in the governance document that one of the themes of this review will be assessing the degree of unnecessary duplication across first tier LCN Fund projects. We will expand this assessment to include second tier projects in order to assess duplication across the LCN Fund more broadly. Appendix two to this letter provides a summary of all the first tier projects which have been registered.

For example, one area which we have already identified is the degree of network monitoring which cuts across both first and second tier projects.

4. We welcome respondents' views on the level of duplication across first and second tier LCN Fund projects and what changes, if any, we should make to the LCN Fund governance to address this duplication.
5. We welcome views on whether there is merit in each DNO undertaking its own monitoring or whether this could be avoided if all monitoring data was held in a single place and accessible to all DNOs.

4. Focussing learning outcomes

In the first year of the LCN Fund, we funded two large, integrated projects and we intend to fund one more through this year's competition (New Thames Valley Vision). Each of these projects aims to test the impact of a range of low carbon technologies, customer behaviours and network technologies. Generating clearly defined incremental learning is a key objective of the LCN Fund. However, the wide scope of these projects can make it harder to determine the specific learning outcomes of the individual trials within the project. This has been reflected in the extra work we have required of the New Thames

¹⁰ <http://www.ofgem.gov.uk/Networks/SGF/Pages/SGF.aspx>

Valley Vision project as a requirement of funding¹¹.

6. Given their wider scope, how can we best gain greater up front clarity in submissions on the learning outcomes of the larger, more complex projects?

5. Collaboration

A key element of the LCN Fund is collaboration between parties, and we are keen to understand from parties how receptive DNOs have been to new ideas. For example, the Energy Network Association website includes an LCN Fund Portal¹² to provide a common point of reference for DNOs and potential collaborators. We have set out in the governance document that we expect DNOs to work collaboratively to review this website annually and make appropriate changes to improve its accessibility, usability and content. We also expect these reviews to be informed by stakeholder consultation.

7. We would be interested to hear your views on your experiences of this website and other means of facilitating collaboration.

6. Cost Benefit Analysis

For second tier projects, DNOs must include cost benefit analysis in their submissions. This analysis informs our decision making process. In the first year, we required DNOs to quantify the combined financial and carbon benefits of their projects out to 2050 as part of their submissions. However, the analysis provided by each company made very different assumptions about the low carbon future. Consequently the combined net benefits presented for projects (of similar size and scope) varied dramatically. This meant that the Expert Panel and the Authority focussed on the qualitative analysis of carbon benefits. Because of this feedback, we removed the requirement to provide quantitative carbon benefits as part of full proposals in the second year. However, we retained the quantification of financial benefits. We asked that the bids addressed a counterfactual that compared the financial benefit of using the project method against the business as usual approach.

We consider that without detailed guidance quantification of carbon benefits is subjective and of limited use in evaluating the relative benefits of proposals. We consider that such quantification could be beneficial to the process, but only if we can design a suitable process that calculates benefits that are comparable across multiple and differing projects. Therefore we intend to explore the form and content of guidance that can achieve this as part of the review.

8. How should we design the form and content of guidance on carbon benefits so that they are comparable across projects?

7. Process

We are keen to learn lessons from previous years to ensure that the LCN Fund bidding process and first tier registration is as efficient as possible. We would like to know if there are ways in which we could improve the process, particularly for the second tier competition.

We will separately ask the DNOs and the Expert Panel for feedback on how we can improve the second tier process. The lessons drawn from this will feed into the next version of the governance document. For the purposes of this review we are interested in respondents' views on how the high level second tier process has worked. For example, at the moment there is little scope for DNOs to amend their project submissions in response to comments

¹¹ We will require SSE Power Distribution to provide greater clarity on aspects of their submission and evidence of the linkages between work undertaken by project partners and learning outcomes.

¹² <http://www.ena-eng.org/lcn/Home.aspx>

from the consultants or the Expert Panel during the evaluation process. As part of this year's second tier process we did provide a small time window in which DNOs could make changes to their projects in response to the Expert Panel's comments and the technical consultants report. The Expert Panel has suggested that it may be in the interests of customers to include an extra stage in the process which enables DNOs to amend their projects in response to their specific comments.

9. How can we improve the LCN fund first and second tier processes?

10. How could we implement an additional stage to allow DNOs to amend submissions in response to comments from the Expert Panel or technical consultants without undermining the competitive nature of the process?

8. Funding profile

In responses to our first year 'lessons learnt' exercise, a number of parties suggested that we should front load the profile of second tier funding so that more projects can start earlier in the DPCR5 period. We have said that we would consider this issue in this review if there are still concerns that good quality projects are not able to receive funding. Given the fund has not been oversubscribed this year we do not consider that this is an issue and do not intend to include it as part of the review. We also note that DNOs have not utilised all of their first tier allowances. Similarly, for the same reasons, we do not intend to change the funding profile to carry forward unallocated funding.

9. Discretionary funding

A significant part of the LCN Fund is comprised of discretionary funding which is available for both first and second tier projects. This was designed to mimic some of the rewards available for successful innovation in competitive markets. In the governance document we have set out three separate aspects of discretionary funding:

- i) First tier portfolio reward
- ii) Second tier reward
- iii) Second tier successful delivery reward

We have stated that there will be a maximum of three separate first tier portfolio and three separate second tier rewards and that these will not occur until a sufficient number of projects have been completed. No second tier projects are due to finish until 2013 so we expect that it will be 2014 at the earliest before a second tier reward is held.

11. We welcome your views on the suggested timings and whether or not the delay between project submissions and potential discretionary funding dampens the incentive.

10. Transition to the NIC

The first second tier competition took place in 2010 with the winning projects receiving funding in 2011/12. If we hold five separate annual competitions then the fifth competition will be held in 2014 with the winning projects receiving funding in 2015/16 - the first year of RIIO-ED1. Furthermore, as stated above it is likely that the discretionary funding will be awarded well into the RIIO-ED1 period. In April 2015 the LCN Fund will be folded into the electricity NIC and it will fund projects for electricity transmission and distribution. Consequently, there is a question of how the transition into RIIO-ED1 will work.

12. We would appreciate views on the easiest way to ensure a smooth transition from the LCN Fund to the new price control, whilst fulfilling the commitments we made on the LCN Fund in DPCR5 Final Proposals.

We would appreciate comments on these areas and any other comments you have on ways to enhance the effectiveness of the LCN Fund process.

Next Steps

We intend to use responses to inform the conclusions of this review and the insights which respondents provide to develop both the next and future versions of the governance document along with the NIC. We plan to issue the conclusions of the review in February next year and use these to inform the next version of the governance document. A high level indicative timetable for the review is set out below.

Open letter consultation closes	11 January 2012
Publish conclusions of review	End of February 2012
Issue licence notice on governance document	March 2012
Version 5 of governance document comes into effect	April 2012

We would welcome responses regarding any of the issues raised in this document by 11 January 2012. We would also welcome your views on any other areas to consider during the review. We will publish any responses received on the Ofgem website unless marked as confidential. Please send responses to sam.williams@ofgem.gov.uk.

Should you wish to discuss the issues raised in this document, please contact me on 020 7901 1851 or at dora.guzeleva@ofgem.gov.uk

Yours faithfully,

Dora Guzeleva
Head of Networks Policy: Local Grids

Appendix one – Summary of type of Second Tier Low Carbon Network Fund Projects submitted

Project Name	Distributed Generation	Low Voltage Network	High Voltage Network	Extra High Voltage Network	Demand side response	Smart metering	Demand side intervention
Customer led Network Revolution	√	√	√		√	√	√
Low Carbon London	√	√	√		√	√	
LV Network Templates	√	√					
Low Carbon Hub	√			√			
Corridor Manchester	√	√	√		√		
Northern Gateway Smart City	√	√	√		√		√
Demand side management of domestic storage heating		√			√		√
South Liverpool Smart Grid	√	√	√				
NINES	√	√	√		√		√
Thames Valley Vision		√	√		√		√
MKSmart2020	√	√	√		√	√	
Flexible plug & play	√			√			
BRISTOL	√	√			√	√	√
FALCON	√		√		√		
Capacity to Customers			√		√		
Flexible Networks	√		√				√
New Thames Valley Vision		√			√	√	√

Appendix two: Summary of First Tier Projects registered

Project name and DNO	Description
Energy Storage on 11kV distribution network (UKPN)	To understand the potential for energy storage to be used on the 11kV network to defer network reinforcement associated with DG
Real time thermal ratings (SPEN)	Building on IFI project in North Wales to establish the first active distribution network based on thermal ratings of overhead lines
33kV superconducting fault limiter (ENW)	Understanding how the deployment of a 33kV superconducting fault limited into a 275/33kV substation can help increase network headroom
1MW Battery in Shetland (SSE)	Deployment of a 1MW battery at the Lerwick Power station to help manage network constraints and facilitate demand response
Demonstrating benefits of monitoring LV network with embedded PV panels and EV charging points (SSE)	Monitoring the impact on the LV network of 10 zero carbon homes with PV solar panels and an EV charging point over the course of 24 months
Domestic demand management solutions (SSE)	Installation of equipment in 6 houses to control domestic electric heating demand during time of network constraints
Distribution Network Visibility (UKPN)	Demonstrating the business benefits of real time visibility of operational data from remote terminal units (RTU).
Interconnection of WPD & NGC SCADA systems (WPD)	To establish a real time link between the SCADA systems operated by NGC and WPD using the ICCP protocol such that data on either system can be viewed on the other in real time
The Bidoyng Fuse (ENW)	Testing the feasibility of using smart fuses to reduce the impact of transient faults on the network
Network management on the Scilly Isles (WPD)	Network monitoring across the Isles of Scilly to help inform Island residents how to be more self sufficient
Ashton Hayes Smart Village (SPEN)	Supporting a village community to lower energy usage through provision of real time network data & facilitating PV and EV charging points
PV impact on suburban networks (WPD)	Monitoring the impact of PV on 8 LV substations to monitor the impact on voltage and current.
Hook Norton Low Carbon Community Smart Grid (WPD)	Exploring customer engagement and incentive programmes to facilitate demand response and providing the local community with real time network data to help inform their energy use.
Clyde Gateway (SPEN)	Using smart grid solutions to facilitate HV/LV automation; auto sectionalising and load transfer
Voltage control system demonstration Project (WPD)	Assessing the ability of D-SVCs (Static VAR Compensator for Distribution Networks) to control voltage issues associated with connecting DG on the 11kV network
Low Voltage Network Solutions	Installing voltage recording and power quality sensors on LV feeders to understand the current performance of the LV network & use that information to validate conclusions from other LCN Fund projects
Voltage management on Low Carbon busbars (ENW)	Deployment of tap changers and reactive power compensation equipment into LV busbars to control the impact of microgeneration on the LV network
Demonstration the functionality of automated demand response	A pilot study of automated demand response on 5 commercial sites to investigate if they can reduce peak loading on the network
LV Network modelling & analysis environment	Development of a modelling tool to aid network planners to flex assumptions around LV network design.

(SSE)	
Early learning of LV network impact from PV cluster (WPD)	Testing the accuracy of present modelling through real life voltage and load measurements on one feeder of an LV system which is densely populated with PV units
Seasonal Generation deployment (WPD)	Trialling commercial arrangements to encourage temporary generators to connect at times of peak demand to reduce network constraints