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*Promoting choice and value for
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Date: 21 December 2012

Dear Ben

Decision to approve changes to London Power Network's Low Carbon Networks Fund project - Low Carbon London

We have decided to approve amendments to London Power Network's (LPN) Low Carbon Networks (LCN) Fund project, Low Carbon London (LCL).

We have approved these amendments because we consider they will mitigate the challenges presented by some material changes in circumstances that were beyond LPN's control and which have arisen since we originally funded the project. These amendments will allow the project to continue to deliver value for money to customers. We also note the return of £3.5m to customers.

This letter describes the background to LPN's request to amend LCL, the process we have followed to assess the costs and benefits of the request, our decision and the next steps for the project.

Background

LCL is an innovation project run by the distribution network operator (DNO) LPN, owned by UKPN. We awarded it funding through the LCN Fund¹ in December 2010. In our decision to award LCL funding, we stated that it could generate valuable learning for all DNOs and that this could deliver significant benefits to customers.

LCL aims to generate learning from a variety of technical and commercial trials across London. It involves National Grid, suppliers, aggregators and a range of residential, business and industrial and commercial customers. In its full application for funding from the LCN Fund (the full submission), LPN committed through LCL to -

- leveraging smart meter data using IT solutions
- monitoring the impact of photovoltaic solar panels on the low voltage network
- deploying electric vehicle charging points, heat pumps and up to 5,000 smart meters
- trialling automated management of distributed generation
- trialling new commercial arrangements, including time of use distribution use of system (DUoS) tariffs. These offer flexible demand to National Grid and match demand with centralised wind generation to help balance the electricity system.

¹ More information on the LCN Fund is available on our [website](#).

On 17 December 2010 we issued a project direction to London Power Networks (LPN).² The project direction contains the specific conditions that LPN committed to in accepting Second Tier Funding³.

The project direction requires LPN to comply with -

- Charge Restriction Condition 13 (CRC 13) of its Electricity Distribution Licence
- the LCN Fund Governance document
- the project direction.

Amongst other things, LPN is required to: undertake the LCL project in accordance with the commitments it made in the full submission; provide us with progress reports every six months; and inform us in writing of any event or circumstance likely to affect its ability to deliver the LCL project as set out in its full submission. On 5 April 2012 we amended the project direction to ensure that it required LPN to take all reasonable steps to minimise customer interruptions and customer minutes lost as a result of carrying out the project.

Following consideration of LPN's December 2011 progress report, we were concerned that changes in circumstance beyond LPN's control could present challenges to the progress of the LCL project. These changes included difficulties with recruitment of trial participants and the unavailability of compliant smart meters. To help us monitor the situation, we required LPN to provide us with monthly progress reports from February 2012.

In April 2012, LPN informed us that it was likely to request an amendment to its LCL Project Direction to allow it to mitigate these challenges. We can only amend a project direction if a DNO can demonstrate that it has experienced a material change in circumstance, and we only expect to amend project directions in exceptional circumstances. The DNO must also demonstrate that any amendments will deliver benefits to customers.

Process

After LPN informed us that it was likely to request an amendment to the LCL Project Direction, we met with it and discussed its proposals. Throughout this process we have sought to ensure that the project will continue to deliver the same benefits that were outlined in its original full submission and which informed our decision to award LCL funding. We have required LPN to provide sufficient evidence to determine whether the amendment is appropriate and, in particular, whether the amendments are in the best interests of customers. In addition to our review and consideration of the changes, we have taken a number of further steps to ensure that the amendment will deliver the necessary benefits -

- We required LPN to seek the views of all GB DNOs on the impact that the requested amendments to the project may have on the learning the project can achieve.
- TNEI, the consultant which assessed the projects during the LCN Fund competition through which LCL received its funding, reviewed the proposed amendments and associated costs. It has provided a report on the impact the amendments will have on the project⁴.
- We required LPN to provide assurance from Imperial College London, its academic partner, that LCL would deliver the benefits outlined in its original submission.

LPN has included the feedback it received from the DNOs in its amendment request. We required LPN to consider the views provided by the DNOs and TNEI in developing its change request, and justify responses to these views.

² <http://www.ofgem.gov.uk/Networks/ElecDist/lcnf/stlcnf/year1/low-carbon-london/Pages/index.aspx>

³ Second Tier and Discretionary Funding Mechanism has the meaning given in CRC 13.3(b).

⁴ [TNEI's report](#)

Summary of the change request

On 11 December 2012, LPN formally submitted a request to amend the LCL Project Direction (amendment request). It explained each material change in circumstance; the amendment to be made in response to the change and why the amendment was in customers' best interests. It also provided us with an amended full submission detailing each change. The amendment request is on our website.^{5,6}

In considering this request, we have taken into account all the information provided by LPN within its amendment request, the amended full submission, and the comments from DNOs and TNEI. In particular we have considered if the amendments still represent value for money for the customers and allow the project to deliver the agreed outcomes and learning it committed to.

Decision

LCL has requested amendments to three areas of the project. We have outlined below our consideration of the evidence provided in each of these areas and our decision on whether to approve each amendment.

1. Heat Pumps

LPN has experienced a very low demand from heat pumps in London, possibly due to delay in the establishment of the Renewable Heat Incentive. In response, it proposes to cease active recruitment of residential and I&C participants for the heat pumps trial, due to the high costs of recruitment. LPN's alternative approach, developed with ICL, will supplement the existing sample with empirical data from other sources. We consider this to be a material change in circumstance as the number of customers with heat pumps willing to participate in the trial is less than anticipated in the full submission.

TNEI suggested removing heat pumps from the project, although it noted that there could be benefits in continuing with just the existing heat pump customers. However, LPN has explained that there would be significant costs in removing heat pumps from the project. It also says that, by supplementing the existing sample, LCL can deliver the same learning promised in the original submission. One DNO said that further information was required on the sources of further data, and how applicable they were to GB. In response, LPN has outlined the potential data sources.

Based on the evidence provided, we agree that further active recruitment within London is not a cost-effective use of customers' money. ICL has confirmed that the current sample, combined with new data, will provide statistically significant results. We consider that the potential data sources outlined by LPN would be applicable to GB. We also note that TNEI suggested there could be benefits in continuing with existing customers.

We consider that LPN's approach is appropriate and that the existing sample, supplemented by further data, would provide a statistically significant sample that is applicable to GB. As such, we consider this amendment is likely to provide the learning outlined in the original LCL submission. Therefore we approve this amendment.

2. Trial area

LCL was originally based on the Mayor of London's 10 low carbon zones (LCZs). These were neighbourhoods that were provided funding to trial carbon saving techniques and local environmental sustainability. However, these were discontinued in 2012. In response, LPN proposes to use all of the LPN network, including developing three engineering instrumentation zones (EIZ) to provide areas for intense technical analysis of the impact of

⁵ [Covering letter to London Power Networks' request to make amendments to Low Carbon London](#)

⁶ [London Power Networks' request to make amendments to Low Carbon London](#)

low carbon technologies. We consider this to be a material change in circumstance as the LCZs, which are crucial for the delivery of LCL, are no longer active.

We note that TNEI requested further justification of the level of reduction in costs, as the number of areas is being reduced from ten to three. In response, LPN has explained that the EIZs serve different purposes to the LCZs. LPN will install a full range of monitoring equipment in each EIZ, whereas a limited range would have been installed in each LCZ. LPN says that the three EIZs will deliver the same range of learning as the ten LCZs.

Our key concern was that LPN needed to ensure that the three EIZs would still deliver the same range of customer types as the ten LCZs. We note that LPN will undertake a greater range of activities in each EIZ than they would have in each LCZ. We consider three EIZs would provide the same intensity of low carbon activities as the ten LCZs. We also note that TNEI considers this to be a reasonable approach. Using the wider London area, rather than just the LCZs, could also lead to a more balanced demographic, potentially providing a sounder basis for extrapolating the learning across GB. As such, we consider this amendment is likely to provide the learning outlined in the original LCL submission. Therefore we approve this amendment.

3. Carbon impact reporting tool

In October 2011 the party which was to deliver a carbon impact reporting tool was acquired by new owners. The new owners would not provide the necessary modifications to meet LCL's needs at a reasonable price. In response, LPN has contracted with Logica to provide a carbon impact reporting tool. We consider this to be a material change in circumstance, as a crucial part of the project was no longer available in the form agreed in the full submission.

TNEI queried the costs of the new tool. We note the increase in cost and would have expected LPN to have undertaken a competitive procurement process to deliver the new carbon reporting tool. We expect DNOs to put the same pressure on value for money in LCN Fund projects as they would under business as usual operations. However, we are pleased to note that Logica has absorbed some of this cost increase.

The carbon impact reporting tool is an important element in delivering LCL's learning. Based on the evidence provided by LPN, we consider that LCL's requirements cannot be met by an "off the shelf" solution. As such, a tailored carbon impact reporting tool, provided by Logica, is appropriate. We consider this amendment is likely to provide the learning outlined in the original LCL submission. Therefore we approve this amendment.

4. Costs

LPN has also provided a summary of the changes in the cost of the project due to the amendment request. A number of DNOs have highlighted that they would expect the costs of the project to fall, or at least remain the same, as a result of the amendments. LPN has reduced the costs of the project by £0.35 million. We have scrutinised these costs and consider them appropriate for the scale of changes. TNEI has also confirmed that it considers that the cost changes are consistent with the amendments to the project.

LPN has also identified ways to deliver a number of elements of the project more efficiently. These are elements that would have been delivered despite the change request, and are not directly linked to the material changes in circumstance outlined above. This has led to a cost reduction of £1.2 million. Under the LCN Fund governance, this money would have been returned to customers following conclusion of the project. However, we are pleased to see that LPN has highlighted this to us at an early stage and the money can be returned to customers sooner. We expect other DNOs who identify ways to deliver their LCN Fund projects at a lower cost than estimated also highlight this to us at the earliest opportunity.

Finally, we are pleased to note that LPN has increased its contribution to the project by £2 million. This means that, in total, the costs of LCL to the customer has reduced by £3.5 million. As explained under "Next steps", this money will be returned to customers from April 2013.

Other developments

Throughout the process, LPN highlighted a number of other developments in LCL that may have also required an amendment to its project direction. However, following discussions with us, it considers that these developments are within the scope of the original full submission. To provide transparency of the process, LPN has provided a description of these developments in its amendment request. It has also explained the basis for not amending its project direction. Based on the information provided, we do not consider that further amendments to the project direction are required in response to these developments.

Next Steps

As explained above, we consider that LPN's proposed amendments are likely to deliver the benefits outlined in the original full submission. Therefore we approve these amendments. To implement these changes, we have amended the LCL project direction so that it requires LPN to deliver LCL in line with the new submission. The amended direction is in annex 1. We will require LPN to provide monthly progress updates until we are satisfied that it has successfully mitigated the material changes in circumstances described in this letter.

We have also issued the 2012 Funding Direction. This sets the amounts which each DNO should recover to fund the 2012 LCN Fund projects, and the amounts to transfer between each DNO. The 2012 Funding Direction reflects the reductions in costs associated with LCL, and will return £3.5 million to customers. This money will be returned in the 2013/14 financial year.

If you would like to discuss any of the issues raised in this letter, please contact Sam Williams at sam.williams@ofgem.gov.uk or 020 7901 0532.

NOW THEREFORE:

In accordance with section 13 of the LCL project direction, and in particular section 13 (i), the Authority hereby amends the schedule to the LCL project direction in the manner set out in annex 1 of this letter.

This constitutes notice of reasons for the Authority's decision pursuant to section 49A of the Act.

Yours sincerely,



Andy Burgess

Associate Partner, Transmission and Distribution Policy

Annex 1

Schedule to Project Direction

1. TITLE

Project Direction ref: LPN/Low Carbon London – A Learning Journey/17-12-10

2. PREAMBLE

This Project Direction issued by the Gas and Electricity Markets Authority (the “Authority”) to London Power Networks Plc (the “Implementing DNO”) pursuant to version 5 of the LCN Fund Governance Document issued pursuant to Part E of Charge Restriction Condition 13 (Low Carbon Networks Fund) (“CRC 13”) of the Electricity Distribution Licence (the “Licence”) sets out the terms to be followed in relation to the Low Carbon London – A Learning Journey (the “Project”) as a condition of it being funded under the Second Tier and Discretionary Funding Mechanism⁷.

Unless otherwise specified, defined terms in this Project Direction are defined in section 7 of the LCN Fund Governance Document.

References to specific sections of the Implementing DNO’s Amended Full Submission⁸ in this Project Direction are, for ease of reference, made by referring to the box number in the Implementing DNO’s Amended Full Submission pro-forma.

3. CONDITION PRECEDENT

The Implementing DNO will not access any funds from the Project Bank Account until it has signed contracts with the third parties (who are not External Collaborators) and External Collaborators named in Table 1.

Table 1. Condition Precedent

Logica
Siemens
EDF Energy Customers plc
EnerNOC
Flexitricity
Institute for Sustainability
Smarter Grids Solutions
Imperial College

4. COMPLIANCE

The Implementing DNO must comply with CRC13 and the LCN Fund Governance Document (as may be modified from time to time in accordance with CRC13 and as modified and/or augmented in respect of the Project by this Project Direction) and the Project Direction.

Any part of the Approved Amount that the Authority determines not to have been spent in accordance with this Project Direction (or the LCN Fund Governance Document) is deemed to be Disallowed Expenditure.

⁷ Second Tier and Discretionary Funding Mechanism has the meaning given in CRC 13.3(b).

⁸ [Low Carbon London - Amended Full Submission](#)

Pursuant to CRC 13.14 Disallowed Expenditure is revenue received (whether by the Implementing DNO or another DSP) under the Second Tier and Discretionary Funding Mechanism that the Authority determines not to have been spent in accordance with the provisions of the LCN Fund Governance Document or those of the relevant Project Direction.

Pursuant to paragraph 3.121 of Section Two of the LCN Fund Governance Document, Disallowed Expenditure includes any funds that must be returned if the Project is halted without Ofgem's⁹ permission, any funds that have not been spent in line with the approved Project Budget contained within the Project Direction, and any unspent funds on the completion of the Project.

5. APPROVED AMOUNT FOR THE PROJECT

The Approved Amount is £20,657k.

6. PROJECT BUDGET

The Project Budget is set out in Table 2. The Implementing DNO must not spend more than 110% of any category total (e.g. Box 6 Employment costs) without the Authority's prior consent (such consent is not to be unreasonably withheld).

The Implementing DNO will report on expenditure against each line in the Project Budget, and explain any projected variance against each line total in excess of 5% as part of its detailed report which will be provided at least every six months, in accordance with paragraph 3.95 of Section Two of the LCN Fund Governance Document. Ofgem will use the reported expenditure and explanation to assess whether the funding has been spent in accordance with the LCN Fund Governance Document or with this Project Direction.

For the avoidance of doubt this reporting requirement does not change or remove any obligations on the Implementing DNO with respect to reporting that are set out in the LCN Fund Governance Document.

Table 2. Project Budget

Box 6 (Employment costs)	
Programme Director	£512k
PMO	£310k
Communications & Commercial Managers	£468k
Administrative Support	£154k
Technical Lead	£630k
Network Operations Staff	£2,520k
Box 7 (Equipment costs)	
5 ANM schemes	£736k
40 aggregator equipment/devices	£650k
smart metering	£693k
Plugged in Places contribution	£1,125k
Substation works	£1,186k
Box 8 (Contractor costs)	
Box 9 (Customer and user payments)	
Aggregator payments to I&C customers	£2,440k
Box 10 (Other costs)	
IT costs – operational data store	£2,001k
IT costs – Carbon Tool licensing	£110k
IT costs – SGS support & software licence	£465k

⁹ Ofgem is the offices of the Gas and Electricity Markets Authority. The terms 'Ofgem' and 'Authority' are used interchangeably in this Project Direction.

IT costs – Aggregator IT costs	£163k
IT costs – comms, infrastructure, environment and interfaces	£640k
IT costs – Logica head end	£394k
Contingency	£2,997k
Abnormal travel	£20k
Public engagement/learning dissemination	£1,728k
Inflation	£747k
Partner/Collaborator labour costs	£6,336k
Other solution/implementation costs	£380k
Programme Management Other	£900k

7. PROJECT IMPLEMENTATION

The Implementing DNO must undertake the Project in accordance with the commitments it has made in the Amended Full Submission, submitted to the Authority by the Implementing DNO on 11 December 2012¹⁰ and the terms of this Project Direction. These include (but are not limited to) the following:

- (i) undertake the Project in accordance with the description set out in Box 1 (Project, Method and Solution); and Box 2 (Project description);
- (ii) provide a DNO Compulsory Contribution of £2,451k;
- (iii) provide extra funding in excess of the DNO Compulsory Contribution of at least £4,145k;
- (iv) complete the Project on or before the Project completion date of 30 June 2014; and
- (v) disseminate the learning from the Project at least to the level described in Box 18 (Arrangements for disseminating learning)

8. REPORTING

Ofgem will issue guidance (as amended from time to time) about the structure and content of the reports required by paragraph 3.95 of Section Two of the LCN Fund Governance Document. The Funding DNO must follow this guidance in preparing the reports required by paragraph 3.95 of Section Two of the LCN Fund Governance Document.

As required by paragraph of 3.97 of Section Two of the LCN Fund Governance Document, the Funding DNO must inform the Authority promptly in writing of any event or circumstance likely to affect its ability to deliver the Project as set out in its Full Submission.

9. COST OVERRUNS

The maximum amount of Discretionary Funding that the Implementing DNO can request as additional funding for cost overruns on the Project is 0%.¹¹

10. SHORTFALL IN DIRECT BENEFITS

The maximum amount of Discretionary Funding that the Implementing DNO can request to cover a shortfall in Direct Benefits is 0% of any shortfall in Direct Benefits in excess of the DNO Compulsory Contribution.¹²

¹⁰ [Low Carbon London - Amended Full Submission](#)

¹¹ This is the amount requested by the Implementing DNO in its Full Submission.

¹² This is the amount requested by the Implementing DNO in its Full Submission.

11. INTELLECTUAL PROPERTY RIGHTS (IPR)

In Box 19 (Arrangements for Intellectual Property Rights) the Implementing DNO has stated that the Project does conform to the default IPR arrangements set out in Chapter 2 of Section Five of version 3 of the LCN Fund Governance Document subject to further clarification with Ofgem. The Implementing DNO has subsequently identified paragraphs 2.8 and 2.13 of Section Five of version 3 of the LCN Fund Governance Document as being the parts of the default IPR arrangements that require further clarification. The Implementing DNO must therefore submit to Ofgem the reasons why it proposes to depart from the requirements of paragraphs 2.8 and 2.13 and details of any proposed alternative IPR arrangements. The Implementing DNO must obtain the Authority's approval for the alternative IPR arrangements prior to accessing any funds from the Project Bank Account. The Implementing DNO must undertake the Project in accordance with the default IPR arrangements and any alternative IPR arrangements approved by the Authority.

12. SUCCESSFUL DELIVERY REWARD CRITERIA

The Project will be judged by the Authority for the purposes of the Second Tier Successful Delivery Reward against the Successful Delivery Reward Criteria set out in Table 3¹³ below (that comply with paragraph 3.27 of Section Two of the LCN Fund Governance Document).

Table 3. Successful Delivery Reward Criteria

Successful Delivery Reward criterion	Evidence
<p>Build Phase:</p> <ul style="list-style-type: none"> • Preparation of solution implementation complete: Logica smart metering Head End solution and Learning Laboratory commissioned (Appendix 2, Use Case U07.1 and U07.2) • Preparation for c.5000 smart meter roll out complete, including address selection, acceptance surveys, privacy and security measures (working with GLA and Consumer Focus) <p>Complete Q3, 2011</p>	<p>Evidence - Outputs and Learning</p> <ul style="list-style-type: none"> • Demonstration of the Learning Laboratory facilities at Imperial College with documented schedule of trials <ul style="list-style-type: none"> ○ Clear visibility of scope of work packages ○ Clear alignment to Use Cases ○ Clear identification of project deliverables • Results of customer smart meter acceptance surveys <ul style="list-style-type: none"> ○ Overall quantification of acceptance ○ Identification of key concerns ○ Actions to improve level of acceptance • Documented Privacy and Security strategy <ul style="list-style-type: none"> ○ Overall risk assessment ○ Identification of pinch points ○ Scope for risk mitigation through data aggregation ○ Risk minimisation plan • Statistical analysis of smart meter trial sample size <ul style="list-style-type: none"> ○ To ensure statistical validity for extrapolation ○ Ensure samples sufficient to address variables (e.g. method of home heating / socio-economic consumer

¹³ These are the Successful Delivery Reward Criteria set out in the Implementing DNOs Full Submission

Successful Delivery Reward criterion	Evidence
	<p>groupings / etc.)</p> <ul style="list-style-type: none"> • Demonstration of initial functionality of Head End <ul style="list-style-type: none"> ○ Ability to (two-way) communicate with smart meters ○ Data volume capability proven
<p>Build Phase:</p> <ul style="list-style-type: none"> • 1st stage of solution implementation complete: Operational Data Store and interface to Logica head end commissioned, smart meter installation underway and "carbon impact tools" delivered <p>Trial Phase:</p> <ul style="list-style-type: none"> • Implementation of initial trials based on data from the initial smart meters and half hourly industrial & commercial (I&C) customer meters with analysed results <p>Complete Q2, 2012</p>	<p>Evidence - Outputs and Learning:</p> <ul style="list-style-type: none"> • Functioning Operational Data Store and head end accessing/processing smart meter information • Multipartite Demand side management (DSM) contracts between Aggregators, I&C customers, and EDF Energy Networks (documented contract implementation) • Initial CO2 impact assessments
<p>Build Phase:</p> <ul style="list-style-type: none"> • Final stage of solution implementation complete: Operational Data Store and interface to Logica head end commissioned, smart meter installation completed <p>Completed Q4, 2012</p>	<p>Evidence - Outputs and Learning:</p> <ul style="list-style-type: none"> • Functioning Operational Data Store and head end accessing/processing smart meter information <ul style="list-style-type: none"> ○ Proven capability to process data from head end, undertake event processing to identify key data, aggregate and map data to network nodes
<p>Trial Phase:</p> <p>Conclusion of "Using Smart Meters and Substation Sensors to Facilitate Smart Grids" trials:</p> <ul style="list-style-type: none"> • Understanding customer behaviour and potential network impact (Appendix 2, Use Case U04.1) • Use of smart meter information to support distribution network planning and design (Appendix 2, Use Case U04.2) • Use of smart meter data to support network operations (Appendix 2, Use Case U04.3) 	<p>Evidence - Learning:</p> <ul style="list-style-type: none"> • Assimilation of network voltage and load profiles from smart meter data (up to 6,500 smart meters) to validate ADMD assumptions and determine critical design criteria as a guide to the more efficient planning of LV networks (for example with regard to thermal limits, losses, power quality and voltage optimisation) <p>Evidence - Outputs:</p> <p>Learning Lab reports (Q2, 2014):</p> <ul style="list-style-type: none"> • 1-1 Accessibility and validity of smart meter data • 2-1 Network state estimation and

Successful Delivery Reward criterion	Evidence
<p>Complete Q3, 2014</p>	<p>optimal sensor placement</p> <ul style="list-style-type: none"> • 2-2 Accessibility and validity of substation sensor data <p>DNO learning reports (Q3, 2014):</p> <ul style="list-style-type: none"> • DNO learning report on the use of smart meter information for network planning and operation
<p>Conclusion of "Enabling and Integrating Distributed Generation" trials:</p> <ul style="list-style-type: none"> • Facilitating connections to LV and HV distribution networks (Appendix 2, Use Case U02.1) • Active management of DG to address security of supply concerns and postpone network reinforcement (Appendix 2, Use Case U02.2) • Exploring the impact of LV, G83 connected generation <p>Complete Q3, 2014</p>	<p>Evidence - Learning:</p> <ul style="list-style-type: none"> • Proven capability of technical and commercial dispatch / curtailment of generation (est. 5 Active Network Management Schemes) with beneficial impact on network utilisation, voltage, load factor and/or fault level • Validation of ER P2/6 / ETR130 assumptions including Tm and F factors for specific generation technologies and applications • Guidance on successful approaches to, and value of, managing SSEG connections in order to preserve network operation and power quality while best enabling their connection <p>Evidence - Outputs:</p> <p>Learning Lab Reports (Q2, 2014):</p> <ul style="list-style-type: none"> • 3-1 Impact of LV connected DER on power quality • 4-2 Impact of LV DERs on network utilisation • 7-1 Opportunities for DG in the distribution network <p>DNO learning reports (Q3, 2014):</p> <ul style="list-style-type: none"> • DNO learning report for facilitating DG connections • DNO learning report for DG addressing security of supply and network reinforcement requirements
<p>Conclusion of "Enabling Electrification of Heat and Transport" trials:</p> <ul style="list-style-type: none"> • Exploring impact of electric vehicle charging (Appendix 2, Use Case U03.1) <p>Exploring the impact of heat pump demand (Appendix 2, Use Case U03.2)</p> <p>Complete Q3, 2014</p>	<p>Evidence - Learning:</p> <ul style="list-style-type: none"> • Evidence of real changes in load patterns due to: () <ul style="list-style-type: none"> ○ Heat pumps ○ Electric Vehicles ○ Micro-generation • Guidance on successful approaches to, and value of, smart optimisation of EV charging to minimise peak demand and losses impact (maximising load factor) and to minimise need for reinforcement

Successful Delivery Reward criterion	Evidence
	<p>(maximising utilisation)</p> <p>Evidence - Outputs:</p> <p>Learning Lab Reports (Q2, 2014):</p> <ul style="list-style-type: none"> • 3-1 Impact of LV connected DER on power quality • 5-1 Impact of opportunities for wide-scale electric vehicle deployment • 4-2 Impact of LV DERs on network utilisation <p>DNO learning reports (Q3, 2014):</p> <ul style="list-style-type: none"> • DNO learning report on the impact of EV and HP loads on network demand profiles • DNO learning report on opportunities for smart optimisation of new heat & transport loads
<p>Conclusion of "Residential and SME Demand Side Management" trials:</p> <ul style="list-style-type: none"> • Energy efficiency programmes and technologies (Appendix 2, Use Case U05.1.a) • Consumer behaviour demand response and responsiveness to TOU tariffs" trials (Appendix 2, Use Case U05.1.b) <p>Complete Q3, 2014</p>	<p>Evidence - Learning:</p> <ul style="list-style-type: none"> • Quantified impact of DSM and energy efficiency measures in terms of reduced peak demand • Effectiveness of TOU tariffs and analysis of price elasticity and hence necessary level of tariff incentive to deliver effective response <p>Evidence - Outputs:</p> <p>Learning Lab Reports (Q2, 2014):</p> <ul style="list-style-type: none"> • 6-1 Residential consumer attitudes to time varying pricing • 6-2 Residential consumer responsiveness to time varying pricing • 6-4 Smart appliances for residential demand response • 4-1 Impact of energy efficient appliances on network utilisation <p>DNO learning reports (Q3, 2014):</p> <ul style="list-style-type: none"> • DNO learning report on network impacts of energy efficiency at scale • DNO guide to residential DR for outage management and as an alternative to network reinforcement
<p>Conclusion of "I&C Demand Side Management" trials:</p> <ul style="list-style-type: none"> • Demand side management with I&C customers (Appendix 2, Use Case U05.2) • Demand side management conflicts and synergies (Appendix 2, Use Case 	<p>Evidence - Learning:</p> <ul style="list-style-type: none"> • Real examples of DSM contracts with I&C customers covering highly utilised networks with clear benefits of peak demand shifting capability under unplanned outage conditions • Quantification of risk and benefit of using I&C DSM as an alternative to

Successful Delivery Reward criterion	Evidence
<p>U05.3)</p> <p>Complete Q3, 2014</p>	<p>network reinforcement - as a guide to more efficient planning for network security and as an input to an expanded version of ETR 130 (for example deriving equivalent F and Tm factors)</p> <p>Visibility of synergies (and/or method of resolving conflicts) between NG and EDF Energy Networks requirements for responsive demand</p> <p>Evidence - Outputs:</p> <p>Learning Lab Reports (Q2, 2014):</p> <p>7-1 Distributed generation and demand response services for the smart distribution network</p> <p>DNO learning reports (Q3, 2014):</p> <ul style="list-style-type: none"> • DNO guide to I&C DR for outage management and as an alternative to network reinforcement • Conflicts and synergies of DR • DNO impacts of supply-following DR report
<p>Conclusion of "Wind Twinning" trials:</p> <ul style="list-style-type: none"> • Wind twinning through ToU tariffs with suppliers (Appendix 2, Use Case U01.1) • Wind twinning through responsive demand contracts with commercial aggregators (Appendix 2, Use Case U01.2) <p>Complete Q3, 2014</p>	<p>Evidence - Learning:</p> <ul style="list-style-type: none"> • Identification of scope for manipulating demand (through commercial incentivisation) to follow wind output • Assessment of potential for: <ul style="list-style-type: none"> ○ optimisation of system level real time demand to minimise CO2 emissions; ○ reducing cost of system residual balancing; ○ minimising requirement for generation plant margin; and ○ minimising price volatility <p>Evidence - Outputs:</p> <p>Learning Lab Reports (Q2,2014):</p> <ul style="list-style-type: none"> • 7-1 Distributed generation and demand response services for the smart distribution network • <p>DNO learning reports (Q3, 2014):</p> <ul style="list-style-type: none"> • DNO impacts of supply-following DR report
<p>Conclusion of final analyses:</p> <ul style="list-style-type: none"> • New network design and operational practices (Appendix 2, Use Case U08) • New network planning and 	<p>Evidence – Learning:</p> <ul style="list-style-type: none"> • Consolidation of outputs from all trials as a comprehensive guide to the future smart management of distribution networks with high penetrations of DERs and low carbon

Successful Delivery Reward criterion	Evidence
<p>operational tools (Appendix 2, Use Case U06)</p> <p>Complete Q4, 2014</p>	<p>applications, including the applicability of commercial contracts and incentives to encourage smart management of demand and generation</p> <ul style="list-style-type: none"> • Quantified overall CO2 savings and LCTP contributions <p>Evidence - Outputs:</p> <p>Learning Lab Reports (Q4, 2014):</p> <ul style="list-style-type: none"> • 11-1 Design of smart distribution networks • 11-2 Resilience performance of smart distribution networks • 12-1 Novel commercial arrangements and the smart distribution network • 14-2 Carbon impact of smart distribution networks • 14-3 Overall summary report <p>DNO learning reports (Q4, 2014):</p> <ul style="list-style-type: none"> • DNO design and operations learning report • DNO tools and systems learning report • Final Report - DNO Guide to Future Smart Management of Distribution Networks

The maximum amount of the Second Tier Successful Delivery Reward (which will not exceed the DNO Compulsory Contribution) that the Project will be eligible for is £2,451k.

13. CUSTOMER PROTECTION

The Implementing DNO must comply with additional project-specific conditions in relation to customer protection. These conditions require the Implementing DNO to:

- (i) submit to Ofgem, at least two months prior to initiating any form of Customer engagement¹⁴, a plan of how it, or any of its External Collaborators or partners¹⁵, will engage with, or impact upon, Customers as part of the Project. The Implementing DNO and its External Collaborators or partners cannot initiate any form of Customer engagement until the plan has been approved by the Authority, and must comply with the approved plan at all times. The plan must include:
 - a. a communications strategy which sets out inter alia:
 - i. any proposed interaction with a Customer or premises of a Customer or proposed interruption to the supply of a Customer for the purposes of the Project, and how the Customer will be notified in advance;

¹⁴ For the purposes of this condition, "at least two months prior to initiating any form of Customer engagement" does not include engagement by EnerNOC, Flexitricity and EDF Energy Customers in their roles as aggregators with industrial and commercial Customers.

¹⁵ As listed in Box 23 and Appendix 1 of the Full Submission pro-forma.

- ii. ongoing communications with the Customers involved in the Project; and
 - iii. arrangements for responding to Customer queries or complaints relating to the Project; and
- b. information on the Priority Services Register Customers¹⁶ who will be involved in the Project and how they will be appropriately treated (including providing information to any person acting on behalf of a Priority Services Register Customer in accordance with condition 26 of the Electricity Supply Licence, where applicable);
 - c. details of any safety information that may be relevant to the Project; and
 - d. details of how any consents that may be required as part of the Project will be obtained; and
- (ii) publish the plan by making it readily available on its website.

The Implementing DNO and its External Collaborators or partners must also comply with the following conditions:

- (i) not visit a premises of a Customer for sales or marketing activities¹⁷ in connection with, in the context of or otherwise under the guise of the Project; and
- (ii) have regard to the implementation of the smart meter roll-out in its Distribution Services Area¹⁸ to ensure that the Project does not impede the implementation in any way.

In addition, if the Implementing DNO or any of its External Collaborators or partners is installing any equipment at the Customer's premises as part of the Project, the Implementing DNO and the External Collaborators or partners must comply with the following conditions:

- (i) not enter the premises of a Customer¹⁹, other than for the purposes contained in the Licence or for communication purposes (set out above), unless it first obtains the prior consent of the Customer, such consent to be formally recorded;
- (ii) where the equipment is any form of smart meter, the Implementing DNO or its External Collaborators or partners must first notify the Customer's Electricity Supplier²⁰; and
- (iii) provide the Customer with information (which should be identified as part of the communications strategy) on how the equipment will be installed, how long it will be installed for, and how it will be decommissioned.

14. DATA PROTECTION

The Implementing DNO must submit a strategy for dealing with personal data (as defined in the Data Protection Act 1988) to Ofgem at least two months prior to collecting or using any personal data. The Implementing DNO and its External Collaborators or partners

¹⁶ Priority Services Register Customers has the meaning given to it in SLC 10 of the Licence.

¹⁷ For the purposes of this condition, recruiting or engaging customers to participate in the Project does not constitute a sales or marketing activity.

¹⁸ Distribution Services Area has the meaning given to it in SLC 1 of the Licence.

¹⁹ Customer has the meaning given to it in SLC 1 of the Licence.

²⁰ Electricity Supplier has the meaning given to it in SLC 1 of the Licence.

cannot collect or use any personal data until the strategy has been approved by the Authority. The strategy must set out the following:

- (i) what personal data will be collected for the purposes of the Project;
- (ii) how this personal data will be used;
- (iii) how consent for use of the personal data will be obtained;
- (iv) what information will be provided to the Customer prior to consent being sought;
- (v) if Priority Services Register Customers are included in the Project, how their personal data will be obtained;
- (vi) who owns the personal data;
- (vii) how long the personal data will be retained; and
- (viii) how this personal data will be managed (which should be based on a 'privacy by design' approach, as advocated by the Information Commissioner's Office²¹).

15. USE OF LOGO

The Implementing DNO and External Collaborators or partners may use the LCN Fund logo for purposes associated with the Project but not use the Ofgem or Ofgem E-Serve logos in any circumstances.

16. AMENDMENT OR REVOCATION

As set out in the LCN Fund Governance Document and this Project Direction, this Project Direction may be amended or revoked under the following circumstances:

- (i) if the Implementing DNO considers that there has been a material change in circumstance that requires a change to the Project Direction, and the Authority agrees (paragraph 3.98 of Section Two of the LCN Fund Governance Document); or
- (ii) if Ofgem agrees to provide Discretionary Funding, which requires the re-issue of the Project Direction (paragraph 3.102 of Section Two of the LCN Fund Governance Document); or
- (iii) if the Implementing DNO applies for Discretionary Funding to cover a decrease in Direct Benefits and the Authority decides it would be in the best interest of customers to make changes to the Project Direction before the Discretionary Funding would be awarded (paragraph 3.105 of Section Two of the LCN Fund Governance Document).

17. HALTING OF PROJECTS

This Project Direction is subject to the provisions contained in paragraphs 3.107 to 3.111 of Section Two of the LCN Fund Governance Document relating to the halting of projects. By extension, this Project Direction is subject to any decision by the Authority to halt the Project to which this Project Direction relates and to any subsequent relevant Funding Direction issued by the Authority pursuant to CRC13.16.

²¹ See http://www.ico.gov.uk/news/current_topics/privacy_by_design_conference.aspx

In the event of the Authority deciding to halt the Project to which this Project Direction relates, the Authority may issue a statement to the Implementing DNO clarifying the effect of that halting decision as regards the status and legal force of the conditions contained in this Direction.