



Company Secretary
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*Promoting choice and value for
all gas and electricity customers*

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Date: 19 December 2011

Dear Company Secretary,

Project Direction ref: WPD/ FALCON (Flexible Approaches for Low Carbon Optimised Networks/ 19-12-11)

Project Direction issued to Western Power Distribution (East Midlands) Plc ("WPD") pursuant to the LCN Fund Governance Document¹ issued pursuant to Part E of Charge Restriction Condition 13 (Low Carbon Networks Fund) ("CRC13") of the Electricity Distribution Licence setting out the terms to be followed in relation to the FALCON project (the "Project") as a condition of it being funded under the Second Tier and Discretionary Funding Mechanism².

CRC13 establishes the arrangements, known as the Low Carbon Networks Fund ("LCN Fund"), for the purposes of incentivising the development of low carbon networks.

Part E of CRC13 requires the Gas and Electricity Markets Authority (the "Authority") to issue the LCN Fund Governance Document for the purposes of regulating, governing and administering the LCN Fund.

Part G of CRC13 defines a Project Direction as a direction issued by the Authority pursuant to the LCN Fund Governance Document setting out the terms to be followed in relation to the Eligible LCN Fund Project³ as a condition of its being funded pursuant to the Second Tier and Discretionary Funding Mechanism. A Project Direction must, by virtue of paragraph 3.74 of Section Two of the LCN Fund Governance Document:

- set out the Project-specific conditions that a distribution network operator ("DNO") is committing to in accepting Second Tier Funding⁴;
- require the DNO to undertake the Project in accordance with the commitments it has made in the Full Submission⁵. Where appropriate the Project Direction may therefore include extracts from the Full Submission;

¹ <http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=77&refer=Networks/ElecDist/lcnf>

² Second Tier and Discretionary Funding Mechanism has the meaning given in CRC 13.3(b).

³ Eligible LCN Fund Project has the meaning given in Part G of CRC 13.

⁴ Second Tier Funding has the meaning given in CRC13.11.

⁵ Unless otherwise specified, defined terms (terms in capitals) in this Project Direction are defined in Section seven of the LCN Fund Governance Document.

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- set out the Approved Amount for the Project, as defined in CRC13.28, that will form part of the calculation contained in the direction issued by the Authority under CRC13.16 (the Funding Direction); and
- Set out the Project Budget that the DNO must report against and how variances against the Project Budget will be reported and approved.

WPD submitted the Project for funding under the LCN Fund on 18 August 2011 and the Authority decided to award the funding to WPD in a decision dated 27 November 2011 (the "Decision Document"⁶) subject to WPD complying with CRC 13, the LCN Fund Governance Document (as may be modified from time to time in accordance with CRC 13 and as modified and/or augmented in respect of this Project by this Project Direction) and this Project Direction. In accordance with the LCN Governance Document the Authority hereby requires WPD to comply with the conditions set out in the Schedule to this Project Direction.

This Project Direction is issued by the Authority, and provided WPD complies with the LCN Fund Governance Document and this Project Direction, the Project is deemed to be an Eligible LCN Fund Project, as defined in CRC13.

This Project Direction constitutes notice pursuant to section 49A (Reasons for decisions) of the Electricity Act 1989.



Rachel Fletcher

Acting Senior Partner, Distribution and Governance

Signed on behalf of the Authority and authorised for that purpose by the Authority
19 December 2011

⁶ <http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=92&refer=Networks/ElecDist/lcnf>

Schedule to Project Direction

1. TITLE

Project Direction ref: WPD/ FALCON (Flexible Approaches for Low Carbon Optimised Networks) /19-12-11

2. PREAMBLE

This Project Direction issued by the Gas and Electricity Markets Authority (the "Authority") to Western Power Distribution (East Midlands) (the "Implementing DNO") pursuant to 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 FALCON project (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 Full Submission in this Project Direction are, for ease of reference, made by referring to the section number in the Implementing DNO's 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 Project Partners named in Table 1.

Table 1 Condition Precedent

Logica
Alstom
Cisco
Cranfield University (Boeing IVHM Centre)
Aston University
University of Bath

The Implementing DNO must, prior to signing an initial contract with Cranfield University (Boeing IVHM Centre) provide a report to the Authority which details:

- (i) the functional capabilities that the Scenario Investment Model (SIM – as described in Section 2 of the Full Submission) will be designed to deliver but not the detailed algorithms required to deliver this capability; and
- (ii) the data required by the SIM in order to deliver this functional capability.

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.

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

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.

Pursuant to CRC 13.14 Disallowed Expenditure is revenue received (whether by the Implementing DNO or another DSP⁸) 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 3.117 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 £ 12,399k

6. PROJECT BUDGET

The Project Budget is set out in Annex 1. The Implementing DNO must not spend more than 110% of any category total (e.g. "Labour") in Annex 1 without the Authority's prior consent (such consent is not to be unreasonably withheld).

The Implementing DNO will report on expenditure against each line under the category totals 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 3.92 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.

7. PROJECT IMPLEMENTATION

The Implementing DNO must undertake the Project in accordance with the commitments it has made in the Full Submission approved by the Authority pursuant to the LCN Fund Governance Document 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 Section 2 (Project Description);
- (ii) provide a DNO Compulsory Contribution of £1,413k;
- (iii) complete the Project on or before the Project completion date of 30 September 2015; and
- (iv) disseminate the learning from the Project at least to the level described in Section 5 (Knowledge Dissemination).

⁸ As defined in the Licence.

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

8. REPORTING

Ofgem will issue guidance (which may be amended from time to time) about the structure and content of the reports required by paragraph 3.92 of Section Two of the LCN Fund Governance Document. The Implementing DNO must follow this guidance in preparing the reports required by paragraph 3.92 of Section Two of the LCN Fund Governance Document.

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 5%.¹⁰

10. INTELLECTUAL PROPERTY RIGHTS (IPR)

In Section 5 (Knowledge Dissemination) the Implementing DNO has stated that the Project does conform to the default IPR arrangements set out in Section 5 of the LCN Fund Governance Document and must therefore undertake the Project in accordance with the default IPR arrangements.

11. 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 2¹¹ below (that comply with paragraphs 3.27 and 3.28 of Section Two of the LCN Fund Governance Document).

Table 2. Successful Delivery Reward Criteria

Successful Delivery Reward criterion	Evidence
<p>The Scenario Investment Model (SIM) design blueprint will be complete by September 2012 and a prototype visualisation developed.</p> <p>Cranfield will lead design workshops to determine the user requirements and detailed functionality required. Attendees at the workshops will be ElectraLink, ELEXON, University of Bath and WPD. The workshops will determine aspects such as the database sizing, the data architecture, and the input and output criteria required. A customer data privacy strategy will be developed. Coding standards, version control and back up methodologies will be developed. A separate activity will take place to determine the means of loading measurement data from the 200 trial substations and other available SCADA data. This will include the design of the Cisco telecommunications network infrastructure. We will have a fully designed blueprint of the functionality and equipment required for the SIM. At this stage, Cranfield University will have recruited the development and build team. The design will be reviewed by all the partners and signed off by WPD Technical Experts and responsible managers</p>	<p>Commercial agreements will be in place with Cranfield University, ElectraLink, ELEXON, University of Bath, Alstom, Cisco and Aston University by March 2012. Decision made on the required hardware and software to be purchased. The SIM design blueprint will be documented. A prototype visualisation of the SIM will be developed and available for viewing. A customer data privacy strategy, data resilience and back up methods developed and documented. A draft operations manual for SIM will be produced by 28th September 2012, which will be refined in the subsequent phases. All documents will be stored in the project files and subject to version control as per the configuration plan.</p> <p>A comprehensive communications plan detailing knowledge dissemination roles and responsibilities and activities will be complete. A specific workshop will be held with other DNOs and LCNF project partners to share the output of the final trials design (Milestone DE2). A FALCON website, e-newsletter and podcast will be developed and established to disseminate the learning to a wider audience.</p>

¹⁰ This is the amount requested by the Implementing DNO in its Full Submission.

¹¹ These are the Successful Delivery Reward Criteria set out in the Implementing DNOs Full Submission

<p>and the learning from this phase will be shared with other DNOs and the wider industry.</p>	
<p>Substation load estimates will be developed based on industry and consumer data (initial report by September 2012). The effectiveness of using estimates as an alternative to physical substation monitoring will be established by the project.</p> <p>The SIM will compare the effectiveness of estimated and measured load data. ELEXON, ElectraLink and Katalysis will establish the estimated consumptions using total consumption data, and applying new profile curves to determine half hourly usage. The profile curves will be defined building on work carried out in previous studies by WPD and others (reflecting drivers such as building heating efficiency and heat loss, economic factors, etc). The initial load estimates will be developed based on the substations within the WPD LV Network Templates project. Measured substation data for comparison purposes will be obtained from the telemetry equipment already installed.</p> <p>Subsequently the estimated load data will be applied to customers in the FALCON trials area for use in the SIM. The estimated data will be further refined using measured data from the 200 intelligent substations later in the project. The effectiveness of using estimated substation load data will thus be determined.</p>	<p>Data access agreements will be in place with required processes approved for use by ELEXON by 31st March 2012. New customer groups will be defined and estimated demand profile curves developed by 19th September 2012. By 28th September 2012 a dataset from the LV Network Templates Project data will be chosen, (based on the new customer groups) to validate the estimated demand profile curves. The data gathered will enable improved demand profile curves to be developed and further comparative iterations carried out. An interim report containing analysis results i.e. the applicability of calculated data vs. measured data, including analysis of error margins and model data validity across network types and time variations will be shared in October 2012. By 27th September 2013 the estimated demand profile curves will be applied to the trial area in order to refine the SIM. Real network data will be gathered from the trials and loaded onto the SIM by 19th September 2014. Demand profile curves will be further refined. A final report on the effectiveness of using estimates as an alternative to physical substation monitoring will be disseminated by 30th September 2015 (Milestone DE6)</p>
<p>Load scenarios based on a range of low carbon uptakes in the trials area will be created for use by the SIM by October 2014.</p> <p>Multiple Load scenarios will be developed reflecting different assumptions for the future values of the consumption drivers. There will be a minimum of four scenarios but there may be many more. Some of the scenarios will use similar assumptions to those underlying the load scenarios put forward by DECC and Ofgem.</p> <p>UK wide assumptions will be separated into regional values using publicly available data or purchasing specialist datasets. E.g. economic forecast data will be applied at the lowest level that it is cost effective to obtain data. The required network design scenario requirements for the SIM will be determined. Scenarios where the network designs to be tested can not be automatically generated will be identified. Designs will be created manually and stored as scenarios for use by the SIM.</p>	<p>Purchase agreements for specialist datasets will be in place.</p> <p>At least four future low carbon uptake scenarios will be developed and published. Details of the scenarios and the underlying assumptions will be documented and consulted upon (including other energy network operators, DECC and Ofgem). We will share the design scenarios requirements, which will be included within the testing specification.</p>
<p>SIM built and an updated run will take</p>	<p>The hardware and software to develop the</p>

<p>place to identify network `hotspots' by September 2013.</p> <p>Cranfield will issue a system design document based on our functional design specification. The hardware and software to build the SIM will be purchased and Cranfield will commence coding and integration of the software components. They will agree the system test specification with WPD and load the scenario data, the industry data and the measurement data. The SIM will then be run in line with the system test previously agreed. After the period of testing, an initial run will take place. We will have a better understanding of where the `hotspots' are in the network now, and the available headroom to accommodate low carbon technologies. Utilising the forecast scenarios we will understand where the hot spots will be under a series of low carbon uptakes. This will allow us to confirm a range of investment needs of the 11kV network in the target area. The learning from this phase will be shared with other DNOs and the wider industry.</p>	<p>SIM will have been purchased. A system design specification will have been developed. A system test plan will have been created. The first outputs from the SIM will be available for viewing. In October 2012, a specific workshop will be held with other DNOs and LCNF project partners to share the initial identified 11kV `hotspots' from the data obtained from the LV Network Templates project (Milestone DE2). The wider learning gained from the Build phase of the project will be disseminated as per the communications plan.</p>
<p>The Engineering Intervention Technique trials 1-4 will be deployed onto the network and the results loaded on the SIM. The results will be analysed and available for dissemination by December 2014.</p> <p>Alstom and Aston University will prepare and agree with WPD equipment, resourcing and deployment specifications for Intervention Techniques 1-3. WPD and Aston University will prepare and agree a functional specification for substation batteries and agree technical and commercial arrangements with GE. Alstom and GE will build the key components and WPD will witness factory testing. Key components will be deployed in the trials area with the Cisco monitoring equipment. A programme of field testing will take place. Trial data input into the SIM and analysis will demonstrate effectiveness in terms of time saving, customer service and cost efficiency of the deployment of T1 - DAR onto one primary substation and 6 11kV circuits; T2 - ALT: three automated load transfers schemes across 6 11kV feeders; T3 - Meshed Networks: on 6 11kV circuits; T4 - Storage: batteries in 5 distribution substations. The learning from these activities will be shared with other DNOs and the wider industry. The results obtained from these trials will be fed into the SIM and further modified trials will be deployed with final results available in March 2015.</p>	<p>The equipment, resourcing and deployment specifications for Intervention Techniques 1-3 will be documented. Functional specification for substation batteries (Intervention Technique 4- Storage) will have been created. Technical arrangements with GE will be documented and supported by formal commercial agreement. The results of the field testing, loading the results of the trials in the SIM, and subsequent analysis will be available and disseminated as detailed in the communications plan. A specific workshop will be held to present the analysis of the network data by the SIM (Milestone DE4).</p>
<p>The Commercial intervention technique</p>	<p>A commercial agreement will be in place with</p>

<p>trials will be deployed onto the network. The results will be analysed and dissemination by December 2014.</p> <p>Customers taking part in trialling Intervention Techniques 5 - DG and 6 - DSM will obtain a new revenue stream. Through these trials we will inform best practice for how DNOs will engage with I&C customers. University of Bath (UoB) will develop a detailed specification for trials e.g. the amount of demand we would want to move and develop the customer engagement strategy and propositions. Working with MKC, customers in the target area will be approached and a commercial agreement negotiated. The energy retailers of customer's choosing to be part of the project will be notified and invited to be more actively involved. Through loading the results of the trials in the SIM, we will understand the effectiveness in terms of time saving, customer service and cost efficiency of the deployment. In addition to the evaluation criteria outlined above, we will find out how attractive the propositions are with I&C and DG customers. The learning from these activities will be shared with other DNOs and the wider industry. The results obtained will be fed into the SIM and further, modified trials will be deployed with final results available in March 2015.</p>	<p>the University of Bath by March 2012. A comprehensive specification document detailing Intervention techniques 5 and 6 will be produced i.e. components and locations of each of the trials. Use cases detailing the learning requirements and outputs from the implementation of the two commercial trials. Commercial agreements with customers will be signed. The learning obtained from loading the results of the trials in the SIM and their subsequent analysis will be available and disseminated as per the communications plan. A specific workshop will be held to present the analysis of the network data by the SIM and the outputs of the trials (Milestone DE4).</p>
<p>Assess the suitability of the Method for mainstream adoption and produce an optimum investment plan by 30th September 2015.</p> <p>An optimised future business plan for the trials area will be developed. We will be able to compare this plan with the results of the updated run of the SIM outlined in criterion 9.4.</p> <p>We will obtain an understanding of key sensitivities of low carbon uptake rates in a defined area and discuss these with Ofgem to assist in the design of suitable regulatory mechanisms.</p> <p>As the intervention technique data becomes available, the SIM will be refined with multiple intervention techniques deployments and iterations of the SIM.</p> <p>We will continue to develop the future low carbon uptake data, taking into account latest developments in government policy and low carbon technology.</p> <p>The industry data will also continue to be enhanced including the introduction of data smart meter installed in the trials area.</p>	<p>Improved industry data will be documented and shared with the industry. An investment plan will be developed and operational manuals for each intervention technique will be developed and available for dissemination. A final report consolidating the learning and the recommendations from the SIM will be developed and available for dissemination. Workshops will take place with other DNOs and Government to explore how the SIM can inform network investment and policy (Milestone DE5) A final report consolidating all the learning from the project will be produced. This will include recommendations for follow on projects, if appropriate and lessons learnt from each phase of the project. A final project symposium to share the outputs of the SIM will take place (Milestone DE6) and the findings and the outputs of the whole project will be shared.</p>

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 £1,413k.

12. USE OF LOGO

The Implementing DNO and Project Partners, External Funders and Project Supporters¹² 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.

13. 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 3.94 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 3.101 of Section Two of the LCN Fund Governance Document).

14. HALTING OF PROJECTS

This Project Direction is subject to the provisions contained in paragraphs 3.103 to 3.107 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.

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.

¹² As listed in Box 1.5 of Section 1 of the Full Submission pro-forma.

NOW THEREFORE:

In accordance with the powers contained in the LCN Fund Governance Document issued pursuant to Part E of CRC13 (Low Carbon Networks Fund) of the Licence the Authority hereby issues this Project Direction to the Implementing DNO in relation to the Project.

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

A handwritten signature in black ink, appearing to read 'Rachel Fletcher', is positioned above the printed name.

Rachel Fletcher

Acting Senior Partner, Distribution and Governance

Signed on behalf of the Authority and authorised for that purpose by the Authority

19 December 2011