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Dear Company Secretary,

Low Carbon Networks Fund – amendments to Western Power Distribution (East Midlands)'s FALCON Project

This letter contains our agreement to amend the Condition Precedent and Successful Delivery Criteria for Western Power Distribution (East Midlands) ("WPD")'s FALCON project ("the Project").

Background

On 19 December 2011, we issued a Project Direction[1] to WPD[2]. The Project Direction set out the terms to be followed in relation to the Project as a condition of it being funded under the Second Tier and Discretionary Funding Mechanism[3].

On 19 June 2012 WPD requested two amendments to the Project Direction. These amendments ensure that the Project Direction reflects the contractual structures that WPD have put in place for the project, which have changed since their full submission.

Scenario Investment Model (SIM)

We and the Expert Panel had concerns that the SIM, a key output of the project, could have been more clearly defined in WPD's full submission for the Project. The Expert Panel recommended that we place requirements on WPD so that we have greater certainty over the structure of the SIM before any contracts are signed. Therefore under the Condition Precedent of the Project Direction, we require WPD to provide a report on certain aspects of the SIM. It must submit this report prior to signing a contract with Cranfield University for the delivery of the detailed algorithms of the model.

However, the structure of the contract agreed with Cranfield University is not consistent with the current Project Direction requirement. Weunderstood that there would be separate contracts for the stages of development of the SIM. However, rather than separate contracts, there is a single contract that includes a number of payment milestones. At each payment milestone, WPD will review delivery criteria and, if the criteria are not met, payment will be withheld until the criteria are met. If the criteria are still not met, the contract will be terminated. Therefore instead of requiring a report prior to signing a second contract with

[1] http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=98&refer=Networks/ElecDist/lcnf/stlcnp/year2/falcon
[2] This was pursuant to the LCN (Low Carbon Networks) Fund Governance Document issued pursuant to Part E of Charge Restriction Condition 13 ("CRC13") of the Electricity Distribution Licence.
[3] Second Tier and Discretionary Funding Mechanism has the meaning given in CRC 13.3(b).

Cranfield, we will require a report prior to approval of a corresponding payment milestone. We consider that such an approach still addresses our concerns and those of the Expert Panel and that it provides protection for customers. Therefore we will amend Section 3 of the Project Direction.

Successful Delivery Reward Criteria (SDRC)

Table 2 in section 11 of the Project Direction sets out SDRC by which we will judge the success of the Project for the Second Tier Successful Delivery Reward. The SDRC specify that WPD must sign contracts with a number of parties that provide certain services. However, WPD intend to run a competitive process to procure these services. Therefore it is premature to identify them in the SDRC. While Memoranda of Understanding are in place with these parties, WPD does not consider that the terms restrict WPD from conducting a competitive selection process. WPD will not be changing Project Partners providing expertise to the project and on which the the project was evaluated, but Project Suppliers, which provide services to the project. We consider that a competitive approach will provide best value for consumers. Therefore we will amend Section 11 of the Project Direction to reflect this approach to procurement.

Decision

In accordance with Section 13 of the Project Direction, and in particular Section 13 (i), the Authority hereby amends the Schedule to the Project Direction in the manner set out in the Schedule to this Direction.

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

Andy Burgess
Associate Partner, Transmission and Distribution Policy
For and on behalf of the Authority

Schedule to Direction

1. Amend existing section 11 (Condition Precedent)

Amend existing section 11 of the Schedule to the Project Direction in the following manner:

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:~~

The Implementing DNO must, prior to approving the blueprint, the visualisation and draft operations manual, as outlined in their contract with Cranfield University (Boeing IVHM Centre), provide a report to the Authority which details:

1. 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

2. the data required by the SIM in order to deliver this functional capability.

2. Amend existing section 11 (Successful Delivery Reward Criteria)

Amend existing section 11 of the Schedule to the Project Direction in the following manner:

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 3[4] 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
The Scenario Investment Model (SIM) design blueprint will be complete by September 2012 and a prototype visualisation developed.	Commercial agreements will be in place with Cranfield University, ~~Electralink~~ the party responsible for the development of enhanced customer load profiles, ELEXON, University of

[4] These are the Successful Delivery Reward Criteria set out in the Implementing DNO's Full Submission

Cranfield will lead design workshops to determine the user requirements and detailed functionality required. Attendees at the workshops will be ~~Electralink~~ the party responsible for the development of enhanced customer load profiles, 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 and the learning from this phase will be shared with other DNOs and the wider industry.	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. 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.
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. The SIM will compare the effectiveness of estimated and measured load data. ELEXON~~, Electralink and Katalysis~~ and the party responsible for the development of enhanced customer load profiles 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. 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	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)

the project. The effectiveness of using estimated substation load data will thus be determined.	
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. 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. 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.	Purchase agreements for specialist datasets will be in place. 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.
SIM built and an updated run will take place to identify network `hotspots' by September 2013. 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.	The hardware and software to develop the 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.
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.	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.

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~~ the supplier of Energy Storage Systems. Alstom and ~~GE~~ the supplier of Energy Storage Systems 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.	Technical arrangements with ~~GE~~ the supplier of Energy Storage Systems 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).
The Commercial intervention technique trials will be deployed onto the network. The results willbe analysed and dissemination by December 2014. 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	A commercial agreement will be in place with 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).

be fed into the SIM and further, modified trials will be deployed with final results available in March 2015.	
Assess the suitability of the Method for mainstream adoption and produce and optimum investment plan by 30th September 2015. 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. 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. As the intervention technique data becomes available, the SIM will be refined with multiple intervention techniques deployments and iterations of the SIM. We will continue to develop the future low carbon uptake data, taking into account latest developments in government policy and low carbon technology. The industry data will also continue to be enhanced including the introduction of data smart meter installed in the trials area.	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.