



Making a positive difference  
for energy consumers

Company Secretary  
Western Power Distribution (South West) Plc  
Avonbank  
Feeder Road  
Bristol  
BS2 0TB

Direct Dial: 020 7901 1851  
Email: Dora.Guzeleva@ofgem.gov.uk

Date: 19 December 2014

Dear Company Secretary,

**Project Direction ref: WPD/ Network Equilibrium / 12 December 2014**

Western Power Distribution (South West) plc (WPD) submitted the project *Network Equilibrium* on 25 July 2014 to be considered for funding through the Low Carbon Networks (LCN) Fund. In this year's decision, we selected the Project for funding.<sup>1 2</sup>

We have issued this Project Direction to WPD. It contains the terms to be followed by WPD as a condition of *Network Equilibrium* receiving funding through the LCN Fund. It must comply with these terms, which can be found in the schedule to this Project Direction.

**Project Direction**

Paragraph 3.80 of Section Two of the LCN Fund Governance Document states that a Project Direction will:

- set out the Project-specific conditions that the distribution network operator (DNO) is committing to in accepting Second Tier Funding;<sup>3</sup>
- require the DNO to undertake the Project in accordance with the commitments it has made in the Full Submission.<sup>4</sup> Where appropriate the Project Direction may therefore include extracts from the Full Submission or refer to specific sections of the Full Submission;
- set out the Approved Amount for the Project, as defined in Charge Restriction Conditions (CRC) 13.30, that will form part of the calculation contained in the direction issued by the Authority under CRC13.18 (the Funding Direction); and

<sup>1</sup> The terms 'the Authority', 'Ofgem', 'we', 'us' and 'our' are used interchangeably in this letter. The Authority is the Gas and Electricity Markets Authority. Ofgem is the Office of the Authority.

<sup>2</sup> You can find our decision on the fifth year competition [here](#).

<sup>3</sup> Second Tier Funding has the meaning given in CRC13.11.

<sup>4</sup> Unless otherwise specified, defined terms (terms in capitals) in this Project Direction are defined in section six of the LCN Fund Governance Document.


- set out the Project Budget that the DNO must report against and how variances against the Project Budget will be reported and approved.

These are described for *Network Equilibrium* in the schedule to this Project Direction.

### **Decision**

Provided WPD complies with the LCN Fund Governance Document (as may be modified from time to time in accordance with CRC 13) and with the schedule to this Project Direction, *Network Equilibrium* is deemed to be an Eligible LCN Fund Project.<sup>5</sup>

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



**Dora Guzeleva**

Head of Networks Policy, Local Grids

**For and on behalf of the Authority**

---

<sup>5</sup> Eligible LCN Fund Project has the meaning given in part G of CRC 13.

## **Schedule to Project Direction**

### **1. TITLE**

Project Direction ref: WPD/ *Network Equilibrium* / 12 December 2014

### **2. PREAMBLE**

This Project Direction issued by the Gas and Electricity Markets Authority (the "Authority") to Western Power Distribution (South West) Plc (WPD) (the "Funding 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 by the Funding DNO in relation to *Network Equilibrium* (the "Project") as a condition of the Project being funded under the Second Tier and Discretionary Funding Mechanism.<sup>6</sup>

Unless otherwise specified, defined terms in this Project Direction have the meaning given to them in Section Six of the LCN Fund Governance Document version 6.<sup>7</sup>

References to specific sections of the Funding DNO's Full Submission in this Project Direction are, for ease of reference, made by referring to the section number in the Funding DNO's Full Submission pro-forma.

### **3. COMPLIANCE**

The Funding DNO must comply with CRC 13 and with 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 the Project by this Project Direction) and with 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.

Pursuant to CRC 13.14 Disallowed Expenditure is revenue received (whether by the Funding DNO or another Distribution Service Provider) under the Second Tier Funding Mechanism and under the 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.<sup>8</sup>

Pursuant to paragraph 3.124 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's 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.<sup>9</sup>

### **4. APPROVED AMOUNT FOR THE PROJECT**

The Approved Amount is £11,477,542.69.

---

<sup>6</sup> Second Tier and Discretionary Funding Mechanism has the meaning given in CRC 13.3(b).

<sup>7</sup> Unless stated otherwise, all paragraph references to the LCN Fund Governance Document are to version 6.

<sup>8</sup> As defined in the Licence.

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

## 5. PROJECT BUDGET

The Project Budget is set out in Annex 1. The Funding 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 Funding DNO will report on expenditure against each line under the category total 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 3.98 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 and with this Project Direction.

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

## 6. PROJECT IMPLEMENTATION

The Funding 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 £1,309,097.08;
- (iii) complete the Project on or before the Project completion date of 14 June 2019; and
- (iv) disseminate the learning from the Project at least to the level described in Section 5 (Knowledge Dissemination).

## 7. REPORTING

Ofgem will issue guidance (as amended from time to time) about the structure and content of the reports required by paragraph 3.98 of Section Two of the LCN Fund Governance Document. The Funding DNO must follow this guidance in preparing the reports required by paragraph 3.98 of Section Two of the LCN Fund Governance Document.

As required by paragraph 3.100 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.

## 8. COST OVERRUNS AND DIRECT BENEFITS

The maximum amount of Discretionary Funding that the Funding DNO can request as additional funding for cost overruns relating to the Project is 0% of the Approved Amount.<sup>10</sup>

The maximum amount of Discretionary Funding that the Funding DNO can request as additional funding for shortfall in direct benefits relating to the Project is 0% of the Approved Amount.<sup>11</sup>

---

<sup>10</sup> This is the amount requested by the Funding DNO in its Full Submission.

<sup>11</sup> This is the amount requested by the Funding DNO in its Full Submission.

## 9. INTELLECTUAL PROPERTY RIGHTS (IPR)

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

## 10. 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 2 below (that comply with paragraphs 3.27 of Section Two of the LCN Fund Governance Document).<sup>12</sup>

**Table 2. Successful Delivery Reward Criteria**

Successful Delivery Reward criterion	Evidence
<b>9.1 Criterion 1 (SDRC-1)</b>  <b><u>Specific:</u></b> Detailed design of the <u>Enhanced Voltage Assessment (EVA)</u> Method;  <b><u>Measurable:</u></b> Delivery of a report on the detailed design of the EVA Method. The report will contain chapters or appendices titled: (1) Key findings from the statutory voltage limit workshop and questionnaire; (2) The limiting factors for amending 11kV and 33kV statutory voltage limits; (3) Where statutory limits for 11kV and 33kV networks could be amended; (4) Specification and Guide to implementation of an EVA power system analysis tool.  <b><u>Achievable:</u></b> The preliminary design process has been developed in parallel to the production of the Full Submission Pro-forma;  <b><u>Relevant:</u></b> This criterion corresponds to the delivery of the <u>EVA</u> Method;  <b><u>Time- bounded:</u></b> The SDRC-1 report will be submitted to Ofgem after the end of the design phase by 29 <sup>th</sup> January 2016.	<b>SDRC-1 evidence</b>  <ol style="list-style-type: none"><li>1. Conduct a questionnaire and workshop with GB DNOs (and other relevant stakeholders) to discuss and explore amendments to existing statutory voltage limits and Engineering Recommendations;</li><li>2. Share a report with the industry detailing evidence for the limiting factors for 11kV and 33kV statutory voltage limits including new and existing transformers, tap changers, cables, overhead lines, switchgear, CTs, VTs customer equipment, stating the limiting factors and safety margins will be detailed for future evaluations;</li><li>3. Issue a discussion paper suggesting where the statutory limits for 11kV and 33kV networks could be amended; and</li><li>4. A DNO relevant specification and guide to implementation of an EVA power system analysis tool.</li></ol>
<b>9.2 Criterion 2 (SDRC-2)</b>  <b><u>Specific:</u></b> Detailed design of the <u>System Voltage Optimisation (SVO)</u> Method;  <b><u>Measurable:</u></b> Delivery of a report on the detailed design of the <u>SVO</u> Method; The report will contain chapters or appendices titled: (1) SVO technical specification; (2) SVO algorithm design and considerations; (3) Sample SVO detailed designs (The contact details for requesting all details designs will be included with the sample designs).	<b>SDRC-2 evidence</b>  <ol style="list-style-type: none"><li>1. Create a technical specification (including performance metrics) with input from UK DNOs;</li><li>2. Sharing of the SVO algorithm design and considerations to facilitate SVO; and</li><li>3. Make detailed designs available explaining how SVO will be installed for DNOs and interested parties.</li></ol>

<sup>12</sup> These are the Successful Delivery Reward Criteria set out in the Funding DNOs Full Submission

<p><b>Achievable:</b> Initial scoping and design of the <u>SVO</u> Method has taken place in parallel to the production of the Full Submission Pro-forma. A comprehensive feasibility study of substation locations has been carried out, building on the learning from other WPD LCNF projects. The sites will be investigated in more detail to determine their suitability for the demonstration of this Method;</p> <p><b>Relevant:</b> This criterion corresponds to the delivery of the <u>SVO</u> Method;</p> <p><b>Time- bounded:</b> The SDRC-2 report will be submitted to Ofgem after the end of design phase by 26<sup>th</sup> February 2016.</p>	
<p><b>9.3 Criterion 3 (SDRC-3)</b></p> <p><b>Specific:</b> Detailed design of the <u>Flexible Power Link (FPL)</u> Method;</p> <p><b>Measurable:</b> Delivery of a report on the detailed design of the <u>FPL</u> Method; The report will contain chapters or appendices titled: (1) FPL tender specification; (2) FPL performance metrics; (3) System incorporation designs; (4) FPL – Installation design (The contact details for requesting all details designs will be included with the installation designs); (5) Key considerations when incorporating FPLs within 33kV networks; (6) Key considerations when incorporating FPLs within 11kV networks.</p> <p><b>Achievable:</b> Initial scoping and design of the <u>FPL</u> Method has taken place in parallel to the production of the Full Submission Pro-forma. A comprehensive feasibility study of substation locations has been carried out, building on the learning from other WPD LCN Fund projects. The sites will be investigated in more detail to determine their suitability for the demonstration of this Method;</p> <p><b>Relevant:</b> This criterion corresponds to the delivery of the <u>FPL</u> Method;</p> <p><b>Time- bounded:</b> The SDRC-3 report will be submitted to Ofgem after the end of the design phase 25<sup>th</sup> March 2016.</p>	<p><b>SDRC-3 evidence</b></p> <ol style="list-style-type: none"> <li>1. Share FPL specification used in the tender;</li> <li>2. Detail the performance metrics of how FPL will be measured;</li> <li>3. System incorporation design, physical and protection;</li> <li>4. Sharing detailed designs of how the FPL will be installed by request of other DNOs; and</li> <li>5. Define the key considerations when incorporating a FPL within 33kV networks.</li> <li>6. Record of knowledge and learning throughout the design process that would be relevant to the incorporation of FPLs into the 11kV network.</li> </ol>
<p><b>9.4 Criterion 4 (SDRC-4)</b></p> <p><b>Specific:</b> Trialling and demonstrating the <u>EVA</u> Method;</p> <p><b>Measurable:</b> Delivery of a report on the trialling and demonstration of the EVA Method; The report will contain chapters or appendices titled: (1) Potential benefits of adjusting the statutory limits; (2) Evidence of EVA demonstration at Equilibrium</p>	<p><b>SDRC-4 evidence</b></p> <ol style="list-style-type: none"> <li>1. A report demonstrating the potential benefits of adjusting the statutory limits;</li> <li>2. Demonstration of EVA power system analysis software for planning and operational uses;</li> <li>3. Recommendations to GB DNOs on how to model the SVO control components;</li> <li>4. Recommendations to GB DNOs on how</li> </ol>

<p>Workshop 3; (3) Recommendations for modelling SVO control components; (4) Recommendations for modelling FPLs; (5) Capacity released from EVA, SVO and FPL.</p> <p><b>Achievable:</b> The completion of SDRC-1 will significantly de-risk the trialling and demonstration of <u>EVA</u> Method, making SDRC-4 achievable;</p> <p><b>Relevant:</b> This criterion corresponds to the delivery of the <u>EVA</u> Method;</p> <p><b>Time- bounded:</b> The SDRC-4 report will be submitted to Ofgem during the operation by 27<sup>th</sup> January 2017.</p>	<p>to model the FPL; and</p> <p>5. Use the EVA power system analysis models to quantify the capacity released for each of the Methods, individually and when combined together. These will be compared to the estimates included in Section 4.1.4.</p>
<p><b>9.5 Criterion 5 (SDRC-5)</b></p> <p><b>Specific:</b> Trialling and demonstrating the <u>SVO</u> Method;</p> <p><b>Measurable:</b> Delivery of a report on the trialling and demonstration of the <u>SVO</u> Method; The report will contain chapters or appendices titled: (1) Photographs of SVO hardware at BSPs and Primary substations; (2) Installation of SVO equipment at BSPs and primary substations; (3) Implementation of the SVO solution; (4) Performance and capacity released by the SVO Method; (5) SVO Policies.</p> <p><b>Achievable:</b> The completion of SDRC-2 will significantly de-risk the trialling and demonstration of the <u>SVO</u> Method, making SDRC-5 achievable;</p> <p><b>Relevant:</b> This criterion corresponds to the delivery of the <u>SVO</u> Method;</p> <p><b>Time- bounded:</b> The SDRC-5 report will be submitted to Ofgem during the trialling phase by 20<sup>th</sup> April 2018.</p>	<p><b>SDRC-5 evidence</b></p> <ol style="list-style-type: none"> <li>1. Installation of SVO across 8 BSPs and 8 primary substations;</li> <li>2. Report on the installation of SVO equipment at BSPs and primary substations;</li> <li>3. Report on the implementation of the SVO solution;</li> <li>4. Report on the performance and capacity released by the <u>SVO</u> Method; and</li> <li>5. Sharing of policies with other DNOs.</li> </ol>
<p><b>9.6 Criterion 6 (SDRC-6)</b></p> <p><b>Specific:</b> Trialling and demonstrating the <u>FPL</u> Method;</p> <p><b>Measurable:</b> Delivery of a report on the trialling and demonstration of the <u>FPL</u> Method; The report will contain chapters or appendices titled: (1) Learning from the Installation and commissioning of the 33kV FPL; (2) Guide to implementation and use of FPL; (3) Sharing of FPL policies with other DNOs; (4) Key considerations for incorporating FPLs across 11kV networks.</p> <p><b>Achievable:</b> The completion of SDRC-3 will significantly de-risk the trialling and demonstration of the <u>FPL</u> Method, making SDRC-6 achievable;</p> <p><b>Relevant:</b> This criterion corresponds to the</p>	<p><b>SDRC-6 evidence</b></p> <ol style="list-style-type: none"> <li>1. Installation and commissioning of the 33kV FPL;</li> <li>2. A guide to implementation and use of FPL, detailed evaluation of the performance, capacity increased through the technique in the report; and</li> <li>3. Sharing of policies with other DNOs.</li> <li>4. An assessment of what has been learnt through the trial that would be relevant to the deployment of FPLs across the 11kV networks.</li> </ol>

<p>delivery of the FPL Method;</p> <p><b>Time- bounded:</b> The SDRC-6 report will be submitted to Ofgem during the trials phase by 5th October 2018.</p>	
<p><b>9.7 Criterion 7 (SDRC-7)</b></p> <p><b>Specific:</b> Trialling and demonstrating the integration of the <u>EVA</u>, <u>SVO</u> and <u>FPL</u> Methods;</p> <p><b>Measurable:</b> Delivery of a report on the integration of <b>Equilibrium's</b> Methods; The report will contain chapters or appendices titled: (1) Incorporation and impacts of all three techniques; (2) Capacity released; (3) CBA of EVA, SVO and FPL Methods</p> <p><b>Achievable:</b> The completion of SDRC-4, SDRC-5 and SDRC-6 will significantly de-risk the integration of all Methods, making SDRC-7 achievable;</p> <p><b>Relevant:</b> In this criterion, WPD will quantify the benefits of integrating <b>Equilibrium's</b> Methods. This will include the financial and carbon benefits of the Methods, based on the completion of the trials;</p> <p><b>Time- bounded:</b> The SDRC-7 report will be submitted to Ofgem during the trials and sharing phase by 28<sup>th</sup> December 2018.</p>	<p><b>SDRC-7 evidence</b></p> <p>Publication of a report detailing:</p> <ol style="list-style-type: none"> <li>1. Quantification of how all three techniques can be incorporated together and the impacts;</li> <li>2. Analysis of the passive and active generation and demand capacity that can be released across the eight different BSPs; and</li> <li>3. Cost-benefit analysis of the Methods, deployed separately and integrated, including the capital expenditure and projected operations and maintenance costs.</li> </ol>
<p><b>9.8 Criterion 8 (SDRC-8)</b></p> <p><b>Specific:</b> Knowledge capture and dissemination;</p> <p><b>Measurable:</b> Delivery of a report to summarise the knowledge generated, learning from the project and dissemination activities within <b>Equilibrium</b>; The report will contain chapters or appendices titled: (1) Details of knowledge and learning dissemination reports and presentations (Including links to publically available documents); (2) Details of Network Equilibrium Data (The contact details for requesting data will be included); (3) Details of Six-monthly progress reports submitted (Including links to these documents); (4) and (5) Details of Equilibrium project presentations (Including links to publically available presentations).</p> <p><b>Achievable:</b> Time and resource has been included in the project planning activities to ensure that knowledge and learning generated by <b>Equilibrium</b> is captured in a robust way;</p> <p><b>Relevant:</b> The SDRC-8 report will summarise all of the knowledge capture and</p>	<p><b>SDRC-8 evidence</b></p> <ol style="list-style-type: none"> <li>1. Knowledge and learning dissemination reports and presentations;</li> <li>2. Network data being made available for each of <b>Equilibrium's</b> Methods;</li> <li>3. Six-monthly progress reports submitted to Ofgem throughout the project;</li> <li>4. <b>Equilibrium</b> project presentations delivered at eight industry conferences during the course of the project from March 2015 to June 2019; and</li> <li>5. <b>Equilibrium</b> project presentations delivered at each of the LCNI conferences during the course of the project.</li> </ol>



dissemination activities within <b><i>Equilibrium</i></b> ;	
---	--

**Time- bounded:** The SDRC-8 report will be submitted to Ofgem during the trials and sharing phase by 12<sup>th</sup> April 2019.

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 £1,309,097.08.

## 11. USE OF LOGO

The Funding DNO and Project Partners, External Funders and Project Supporters 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.<sup>13</sup>

## 12. 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 Funding DNO considers that there has been a material change in circumstance that requires a change to the Project Direction, and the Authority agrees (paragraph 3.100 of Section Two of the LCN Fund Governance Document); and/ 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); and/or
- (iii) if the Funding 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 3.107 of Section Two of the LCN Fund Governance Document).

## 13. HALTING OF PROJECTS

This Project Direction is subject to the provisions contained in paragraphs 3.110 to 3.114 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 CRC 13.18.

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 Funding DNO clarifying the effect of that halting decision as regards the status and legal force of the conditions contained in this Project Direction.

### NOW THEREFORE:

In accordance with the powers contained in the LCN Fund Governance Document issued pursuant to Part E of CRC 13 (Low Carbon Networks Fund) of the Licence the Authority hereby issues this Project Direction to the Funding DNO in relation to the Project.

This Project constitutes notice of reasons for the Authority's decision pursuant to section 49A of the Electricity Act 1989.

<sup>13</sup> As listed in Box 1.5 in Section 1 of the Full Submission pro-forma.

## ANNEX 1: PROJECT BUDGET

<b>Cost Category</b>	<b>Cost (£k)</b>
<b>Labour</b>	<b>1,261.97</b>
<b>Equipment</b>	<b>6,690.67</b>
<b>Contractors</b>	<b>3,339.32</b>
<b>IT</b>	<b>396.33</b>
<b>IPR Costs</b>	<b>-</b>
<b>Travel &amp; Expenses</b>	<b>159.31</b>
<b>Payments to users &amp; Contingency</b>	<b>1,190.09</b>
<b>Decommissioning</b>	<b>-</b>
<b>Other</b>	<b>53.29</b>
<b>Total</b>	<b>13,090.97</b>