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for energy consumers

Company Secretary
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Date: 19 December 2014

Dear Company Secretary,

**Project Direction ref: NGET / Enhanced Frequency Control Capability /
19 December 2014**

National Grid Electricity Transmission (NGET) submitted the Project¹, Enhanced Frequency Control Capability (EFCC), on 25 July August 2014 to be considered for funding through the Electricity Network Innovation Competition (NIC). In this year's decision², we³ selected the project for funding.

We have issued this Project Direction to NGET. It contains the terms to be followed by NGET as a condition of EFCC receiving funding through the Electricity NIC. It must comply with these terms, which can be found in the schedule to this direction.

Project Direction

Paragraph 5.66 of the Electricity NIC Governance Document states that a Project Direction will:

- set out the Project-specific conditions that the Network Licensee is committing to in accepting funding;
- require the Network Licensee to undertake the Project in accordance with the commitments it has made in the Full Submission. 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, that will form part of the calculation contained in the Funding Direction issued by the Authority under chapter 7 of the Governance Document;
- set out the Project budget that the Network Licensee must report against and how variances against the Project budget will be reported and approved; and

¹ Unless otherwise specified, defined terms in this Project Direction have the meaning given to them in Appendix 1 of the NIC Governance Document.

² [Decision on the second year Electricity Network Innovation Competition](#).

³ The terms 'the Authority', 'Ofgem', 'we' and 'us' are used interchangeably in this letter. The Authority is the Gas and Electricity Markets Authority. Ofgem is the Office of the Authority.

- the mechanism for the Network Licensee receiving the Approved Amount is set out in the Funding Direction.

These are described for Enhanced Frequency Control Capability Project in the schedule to this Project Direction.

Decision

Provided NGET complies with the NIC Governance Document and with the schedule to this Project Direction, the Enhanced Frequency Control Capability Project is deemed to be an Eligible NIC Project⁴.

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

Yours faithfully,



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

⁴ Eligible NIC Project has the meaning given in definitions of the Electricity Transmission licence.

Schedule to Project Direction

1. TITLE

Project Direction ref: NGET/ Enhanced Frequency Control Capability/ 19 December 2014

2. PREAMBLE

This Project Direction issued by the Gas and Electricity Markets Authority (the "Authority") to National Grid Electricity Transmission plc (the "Funding Licensee") pursuant to the Electricity NIC Governance Document issued pursuant to Part E of Special Condition 3I (Network Innovation Competition) of the Electricity Transmission Licence (the "Licence") sets out the terms to be followed by the Funding Licensee in relation to Enhanced Frequency Control Capability (the "Project") as a condition of it being funded under the NIC and the Funding Return Mechanisms¹.

Unless otherwise specified, defined terms in this Project Direction are defined in Appendix 1 of the Electricity NIC Governance Document.

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

3. Condition Precedent

The Funding Licensee 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

Alstom
Centrica
Flexitricity
The University of Manchester
The University of Strathclyde

4. COMPLIANCE

The Funding Licensee must comply with Special Condition 3I of the Licence and with the NIC Governance Document (as may be modified from time to time in accordance with Special Condition 3I and as modified and/or augmented in respect of the Project by this Project Direction) and with this Project Direction.

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

Pursuant to Special Condition 3I.8 of the Licence Disallowed Expenditure is revenue received (whether by the Funding Licensee or another Licensee) under the NIC and Funding Return Mechanisms that the Authority determines not to have been spent in accordance with the provisions of the Electricity NIC Governance Document or those of the relevant Project Direction.

Pursuant to paragraph 8.48 of the Electricity NIC Governance Document, Disallowed Expenditure includes any funds that must be returned if the Project is halted without

¹ The Funding Return Mechanism is defined in part C of Special Condition 3I.

Ofgem's² permission, any funds that have not been spent in compliance 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 £6,911,880.

6. PROJECT BUDGET

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

The Funding Licensee 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 8.17 of the Electricity NIC Governance Document. Ofgem will use the reported expenditure and explanation to assess whether the funding has been spent in accordance with the Electricity NIC 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 Licensee with respect to reporting that are set out in the Electricity NIC Governance Document.

7. PROJECT IMPLEMENTATION

The Funding Licensee must undertake the Project in accordance with the commitments it has made in the Full Submission approved by the Authority pursuant to the Electricity NIC Governance Document and with 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 Network Licensee Compulsory Contribution of £823,870;
- (iii) complete the Project on or before the Project completion date of 31 March 2018; and
- (iv) disseminate the learning from the Project at least to the level described in Section 5 (Knowledge Dissemination).

² Ofgem is the offices of the Gas and Electricity Markets Authority. The terms 'Ofgem' and 'Authority' are used interchangeably in this Project Direction.

8. WORK PACKAGE 2.4 - STORAGE

The Funding Licensee must secure consent from the Authority before accessing the funds, £1,122,820, for work package 2.4. The Funding Licensee must submit an application to the Authority which presents options for work package 2.4. As part of this application, the Funding Licensee must conduct an investigation into existing battery storage facilities and trials in the UK, considering both technical and commercial information, to determine if existing facilities and/or trials can be used for the Project. The Funding Licensee must also present cost benefit analysis of potential learning from this work package against the cost to consumers. The Funding Licensee must present this information in a report to the Authority by 30 June 2015.

Based on the Funding Licensee's application the Authority will determine whether the funds for work package 2.4 will be released. If the Authority determines not to release these funds, the funds will be returned to customers.

9. REPORTING

Ofgem will issue guidance (as amended from time to time) about the structure and content of the reports required by paragraph 8.17 of the Electricity NIC Governance Document. The Funding Licensee must follow this guidance in preparing the reports required by paragraph 8.17 of the Electricity NIC Governance Document.

As required by paragraph 8.22 of the Electricity NIC Governance Document, the Funding Licensee 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.

10. COST OVERRUNS

The maximum amount of Discretionary Funding that the Funding Licensee can request as additional funding for cost overruns on the Project is 0%³.

10. INTELLECTUAL PROPERTY RIGHTS (IPR)

In Section 5 (Knowledge Dissemination) the Funding Licensee has stated that the Project does conform to the default IPR arrangements set out in Section Five of the Electricity NIC 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 NIC Successful Delivery Reward against the Successful Delivery Reward Criteria set out in Table 3⁴ below (that comply with paragraphs 5.26 – 5.29 of the Electricity NIC Governance Document).

Table 3. Successful Delivery Reward Criteria

Successful Delivery Reward criterion	Evidence
<i>Formal contract signed by all Partners</i> In order to achieve the project objectives, it is crucial that all project partners are committed to deliver allocated tasks. At the early stages, establishing this agreement with the project partner is the first measure of success for EFCC.	<ul style="list-style-type: none">Formal contract of EFCC signed by all partners (by the end of March 2015 and prior to accessing the NIC funds)Flexitricity to have agreements in place with DSR customers (by the end of June 2016 – end of WP2.1.1.6)

³ This is the amount requested by the Funding Licensee in its Full Submission.

⁴ These are the Successful Delivery Reward Criteria set out in the Funding Licensees Full Submission

<p><i>Monitoring and Control System (MCS)</i> <i>Developed Successfully</i></p> <p>One of the key deliverables of the project is to enhance frequency monitoring capability enabling the measurement and comparison of rate of change of frequency at regional level, and distinction between disturbance, from a real frequency event. The development of the MCS is central to this.</p>	<p>Application development:</p> <ul style="list-style-type: none"> • Event detection algorithm completed (by the end of April 2015 - WP1.1.1) • EFCC resource allocation algorithm completed (by the end of August 2015 – WP1.1.2) • Optimisation algorithm completed (by the end of January 2016 - WP1.1.3) • Testing completed (by the end of April 2016 – WP1.1.4) • Revision completed (by the end of March 2017 – WP1.1.5) <p>Control platform development:</p> <ul style="list-style-type: none"> • Specification completed (by the end of April 2015 – WP1.2.1) • Development completed (by the end of April 2016 – WP1.2.2) • Controller testing completed (by the end of August 2016 – WP1.2.3) • Revision completed (by the end of July 2017)
<p><i>Storage Decision Point</i></p> <p>Full analysis of Storage costs and benefits to be made with final recommendation made to Ofgem on inclusion within EFCC.</p>	<ul style="list-style-type: none"> • Recommendation made to Ofgem by the end of June 2015 (WP2.4.0)
<p><i>Response Analysis from Service Providers</i></p> <p>In this project, we will demonstrate how different technologies will respond to frequency events and their capability to provide response in proportion to rate of change of frequency.</p>	<p>Reports detailing the result of the demonstration of the response from providers:</p> <ul style="list-style-type: none"> • Demand Side Response WP2.1 (November 2017) • CCGT Power Stations WP2.2 (July 2017) • PV power plant WP2.3 (October 2017) • Storage WP2.4 (October 2017, subject to the Authority's decision on funding Work Package 2.4)) • Windfarm WP2.5 (July 2017)
<p><i>Successful Validation of Response</i></p> <p>The project must deliver technology that is effective in reducing the overall response requirement for the grid. To achieve this, it must be demonstrated that response can be optimised to provide the most economic and efficient rapid frequency response. This requires the trials carried out as part of Criteria 9.4, to be validated against the representative models.</p>	<ul style="list-style-type: none"> • Successful delivery of representative models and validation of trial results using the models (November 2017 – Following all trials and validation activities)
<p><i>New Enhanced Frequency Response Service Developed Successfully</i></p> <p>The roll out of EFCC requires a new</p>	<ul style="list-style-type: none"> • Successful development of new enhanced frequency response service as part of new balancing services

balancing service to be developed to ensure the savings envisaged are achieved.	<p>(December 2017 – Following WP2 trials)</p> <ul style="list-style-type: none"> • Report with recommendations regarding implementation of the new service (January 2018 – Delivered through WP6&7)
<p><i>Successful Knowledge Dissemination</i></p> <p>Successful dissemination of knowledge generated by EFCC within National Grid, to other transmission owner, DNOs, and industry stakeholders will be carried out to ensure the learnings are communicated at different stages of the project to enable timely roll out of the new balancing service.</p>	<ul style="list-style-type: none"> • Knowledge sharing e-hub delivered (March 2015) • All non-confidential data and models developed as part of EFCC to be shared on the e-hub (March 2018 – end of project) • Annual knowledge dissemination event (at least one per year) organised (March 2016 – first dissemination event)
<p><i>Project close and knowledge dissemination</i></p> <p>The project is planned from January 2015 until March 2018. The project is well organised to satisfy all pre-set objectives and deadlines. Eventually the new control of system frequency and provision of frequency response in proportion to rate of change of frequency is demonstrated and the relevant commercial services are developed. The new approach to control the system frequency will be commercially rolled out at the end of the project.</p>	<ul style="list-style-type: none"> • The control systems required as part of WP2 (developed by WP1) are demonstrated and validated; • The response capability of the type of services described in WP2 are trialled; • The optimisation based on information gathered in WP2 is carried out; • Validation exercise of the WP1, WP2 and WP3 is carried out as well as further tests in PNDC to mitigate the identified risks; • Knowledge dissemination events as described in the work programme are carried out and results are shared and made available; and • As part of WP6 & WP7, the new balancing service is developed in collaboration with EFCC partners, other service providers, and commercial operation department of National Grid.

The maximum amount of the NIC Successful Delivery Reward (which will not exceed the Licensee Compulsory Contribution) that the Project will be eligible for is £823,870.

12. USE OF LOGO

The Funding Licensee and Project Partners, External Funders and Project Supporters⁵ may use the NIC logo for purposes associated with the Project but not use the Ofgem or Ofgem E-Serve logos in any circumstances.

⁵ As listed in Box 1.6 in Section 1 of the Full Submission pro-forma.

13. AMENDMENT OR REVOCATION

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

- (i) if the Funding Licensee considers that there has been a material change in circumstance that requires a change to the Project Direction, and the Authority agrees (paragraph 8.23 of the Electricity NIC Governance Document); and/or
- (ii) if Ofgem agrees to provide Contingency Funding, which requires the re-issue of the Project Direction (paragraph 8.42 of the Electricity NIC Governance Document); and/or
- (iii) if the Funding Licensee 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 8.42 of the Electricity NIC Governance Document).

14. HALTING OF PROJECTS

This Project Direction is subject to the provisions contained in paragraphs 8.30 to 8.34 of the Electricity NIC 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 Special Condition 3I of the Licence.

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

NOW THEREFORE:

In accordance with the powers contained in the Electricity NIC Governance Document issued pursuant to Part E of Special Condition 3I of the Licence the Authority hereby issues this Project Direction to the Funding Licensee in relation to the Project.

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

ANNEX 1: PROJECT BUDGET

Cost Category	Cost (£k)
Labour	
	2150.00
Equipment	
	1,146.00
Contractors	
	2,486.37
IT	
	90.00
IPR Costs	
	-
Travel & Expenses	
	149.00
Payments to users	
	653.00
Contingency	
	894.32
Decommissioning	
	24.00
Other	
	340.00
Total	7,932.69