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Dear Company Secretary

Low Carbon Networks ("LCN") Fund – approval of requested amendments to Southern Electric Power Distribution's New Thames Valley Vision project

This letter contains our[1] decision to approve requested amendments to the Successful Delivery Criteria ("SDRCs") and Full Submission for Southern Electric Power Distribution ("SEPD")'s New Thames Valley Vision project ("the project").

Background

On 19 December 2011, we issued a Project Direction[2] to SEPD.[3] The Project Direction contains the terms to be followed by the project as a condition of it being funded under the LCN Fund Second Tier and Discretionary Funding Mechanisms.[4]

Part of the project involves trialling cold thermal storage technology on the electricity distribution network. This technology could help reduce peak network load.

In March 2014, SEPD requested that the Authority approves amendments to one of the SDRCs in the Project Direction and the specifications for the cold thermal storage trial included in the Full Submission. These amendments to the documents are being requested following a review of existing and future cold thermal storage installations in the project area. We requested further clarification of the requested amendments from SEPD and final details of the amendments requested were received by us on 22 December 2014.

Trial methodology for the cold thermal storage provided in the Full Submission

The proposed amendments would change the way that cold thermal storage will be trialled by the project. The Full Submission stated the project would:

- explore the potential for cold thermal storage to offset air conditioning loads at peak times;
- understand the effectiveness of combinations of embedded thermal energy storage and demand reduction; and
- understand the synergies in energy savings for the host customer.

[1] The terms "the Authority", "Ofgem" and "we" are used interchangeably in this letter. Ofgem is the Office of the Gas and Electricity Markets Authority.
[2] https://www.ofgem.gov.uk/publications-and-updates/low-carbon-network-fund-project-direction-new-thames-valley-vision
[3] 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.
[4] Second Tier and Discretionary Funding Mechanism has the meaning given in CRC 13.3(b).

The Full Submission planned to incentivise around 50 customers who owned small-scale cold thermal storage to participate in the trial and provide a network service. This technology is used widely by customers in the United States of America ("USA") and in Australia.

As part of the project, a range of industrial and commercial customers were engaged to establish whether they had cold thermal storage devices or planned to get cold thermal storage devices and were interested in participating in the project. This exercise established that there were no current or planned installations of this technology in the trial area.

To allow the project to test the ability of this technology to provide a network service, SEPD has proposed to procure, install and operate three large-scale cold thermal storage units in the project area. SEPD would purchase the devices using the funds originally intended to incentivise customers with the devices to participate. SEPD would then identify areas of the network on which to trial the devices' ability to shift peak demand. Customers in those areas would be recruited to have the cold thermal storage device and associated refrigeration installed on their premises. Having this new equipment installed free of charge will serve as an incentive to participate (SEPD will continue to own and operate the cold thermal storage equipment). The devices would then be used to shift the customers building cooling load to periods of low network demand. SEPD says that this will allow targeted deployment to maximise network benefits and provide more predictable and regular operation of the devices allowing for greater peak demand reduction. They have indicated that this is the approach used by utilities in USA.

Given the reduction in sample size, we were keen to ensure that the value of the learning generated by the trial was the same as outlined in the Full Submission. We were concerned that the approach where the DNO purchases the cold thermal storage equipment may be less cost effective than traditional solutions.

In response to these concerns, SEPD has consulted with all of the other Great Britain (GB) distribution network operators (DNOs) to seek their views on the value of the learning from this new approach. The other DNOs agreed that the proposed revisions would still generate equivalent learning as proposed in the Full Submission. Some also provided feedback on the analysis that will be undertaken. This feedback will be actioned by SEPD.

In addition, DNV GL (an energy consultancy and project partner) has reviewed the change request and confirmed that the learning outcomes will be same as envisioned in the Full Submission. SEPD has also outlined how the new approach to using the technology could be a more cost effective than traditional solutions and has been used in this manner by network operators in the USA to manage constraints.

SDRC 9.8a(4) – LV network storage

As a result of the time spent engaging with customers and the additional time it would take to procure, install and commission these devices SEPD has also requested an alteration to one of the SDRCs. The change would allow SEPD to operate the devices throughout the summer (when they will make their biggest contribution to peak shifting) and report on the findings. It proposes to delay the reporting on the cold thermal storage trial from November 2014 to September 2015.

Conclusions

Our key concern was that the learning promised in the Full Submission may not be delivered by the proposed changes. We are reassured by the responses provided by both the DNOs and project partners that the learning generated will be equivalent.

SEPD had not undertaken any surveys to establish whether cold thermal storage devices were present in the project area at the time of Full Submission. The project anticipated that

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the technology would be present due to its penetration in other countries. We encourage network companies to undertake feasibility assessments when developing projects but note that cold thermal storage is a relatively small part of this large project. We consider that the slow uptake of this technology in GB is a change in circumstances for the purposes of the project.

We consider that these changes are in the best interest of customers, as they will allow the project to deliver the same learning as that proposed in the Full Submission and at the same cost.

Decision

In accordance with Section 15 of the Project Direction, we hereby amend the Schedule to the Project Direction in the manner set out in the Schedules to this letter. By approving these changes we are not making an evaluation of SEPD's management of the project.

This letter constitutes notice of reasons for our decision pursuant to section 49A of the Electricity Act 1989.

Yours sincerely,

Dora Guzeleva,
Head of Networks Policy, Local Grids
For and on behalf of the Authority

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Schedule one

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

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

9.8a	**Focus**: Knowledge Sharing of methods 1, 2, 3 and 4 a, b and c) throughout Project - Prepare final reports on the trials carried out on the subjects listed in "Evidence 9.8" as well as an end of project report;* d) April 2017 - Hold a project review seminar to discuss the learning from the project. Attendees will be invited including Customers, Ofgem, DNO's, product suppliers and other stakeholders to discuss the way forward.* * Description of proposed report scopes as per Appendix K	a) November 2014 - (1) End Use and Network Monitoring Evaluation [Methods 1 and 3], (2) Demand Side Response Evaluation [Method 2], (3) Network controlled Automated Demand Response evaluation & Energy Efficiency [Method 2], (4) LV Network Storage [Method 4], (5) EV Chargers Usage Evaluation and Issues [Methods 2 and 1], (6) Smart Meter performance [Method 1], (7) Integration Solution Control Evaluation [Methods 1, 2 and 4] and (8) Overall Proven Benefits (both financial and customer service) [Method 1] b) September 2015 – (4) LV Network Storage (Ice Energy storage) c) October 2015 – (4) LV Network Storage (Installation, Benchmark and Battery Storage)

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Schedule two

1. Amend the cold thermal storage trial specification

Amend the cold thermal storage trial approach from the Full Submission in the following manner:

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- Demonstrate, with around 30 customers, how demand management can be achieved for large commercial customers via a building management system
- Involve around 30 small business customers in exploring the extent to which a version of this building management system could be applied to SMEs
- ~~Deploy a total of 100 hot water energy storage units and 50 ice cooling storage units to demonstrate the extent to which thermal storage can increase the available `controllable' load within a home or business~~
- Deploy a total of 100 hot water energy storage units and 3 large scale ice cooling storage units, with associated incentive structure, to demonstrate the extent to which cold thermal storage can increase the available `controllable' load within a home or business.

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~~SEPD proposes to initially install three units in conjunction with the building management system Tier 1 project. The system will be trialled on a small scale to prove the functionality and understand the associated cost savings. The devices are simply retro fitted to existing air conditioning units thereby making the installation quick, simple and low cost.~~

~~The devices will then be rolled out to 50 commercial premises connected to Bracknell primary substation as part of NTVV. As the storage devices provide a saving in energy costs to the customer and a benefit to the network, the procurement and installation costs will be part funded by the building owner. The large deployment will provide significant benefit to the network in terms of peak demand shifting and will prolong reinforcement requirements~~

The project will position 3 large scale units at critical points on the electricity network. Having identified the key network locations, a third party recruitment and installation expert would work on behalf of the DNO to install units at customer premises. These units would be funded by the DNO to provide cold thermal storage to regularly shift the electrical demand of refrigeration plant to times of low network demand; customers would elect to receive the cold thermal storage and to routinely use it in return for new air-conditioning refrigeration plant.

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