

1. Executive Summary

The Low Carbon London project has made steady progress in the second half of 2011, delivering to the plans, objectives and deliverables as set out in the project direction and underpinned by the LCNF bid submission. A set of Successful Delivery Reward Criteria (SDRC) was delivered on schedule at the end of September, most notably the commissioning of the Low Carbon London Learning Lab at Imperial College. The project is on schedule to deliver the remaining SDRC of the initial 500 smart meters and trial customers by the end 2011.

The innovative DNO-level Demand Response Contracts have been signed and the three-month proof of concept winter trial started in earnest on 5 December, with 2MW of demand currently contracted in and the potential for a further 8MW to be added later to the trial. This contract, coupled with that which was signed in the summer, represents a major achievement for the project and the culmination of a significant effort across the project and its aggregator partners.

The main focus of the second half of the year, building upon the mobilisation of the project in the first six months, has been on the detailed solution design work required to flesh out the high level use case blueprint submitted as part of the bid. Low Carbon London is a complex and highly integrated project that brings together a comprehensive set of trials, delivering a range of outputs, models and reports that together encompass the full breadth of a DNO's activities.

This ambitious project is still in its initial stages, but the bedrock has been established to deliver the outcomes, learning and objectives to develop, share and implement change based on validated early learning.

The highly inter-dependent nature of the detailed design work requires a high level of intricate configuration management to ensure all internal and external inter-dependencies are accurately maintained as the overall and individual component designs progress and mature. These relationships are managed through a specially written software application that manages all the internal dependencies between the various components of the overall solution; the application currently manages 3401 unique design component interdependencies across the overall detailed solution design.

A portfolio of formal trial hypotheses and associated tests has been constructed that provides a solid academic and transparent basis for conducting the trials, evaluating the results and facilitating early implementation where viable.

Significant effort has gone into the engagement and enrolment of the first 500 smart meter trial customers. The decision to use a currently available smart meter was taken in October, as soon as the delay in finalising the national (DECC) Smart Metering Equipment Technical Specifications (SMETS) became apparent. This left a very tight window to recruit and install 500 trial customers and meters. Following the announcement of the meter delay, a comprehensive campaign, which had been readied and prepared in advance, was implemented immediately, encompassing targeted telephone recruitment, day and evening Low Carbon Zone local community drop-in centres supported by internet and postal campaigns.

This campaign has been successful to date with 686 meter installation appointments booked and 263 meters installed.

The Low Carbon London Learning Lab was successfully commissioned on schedule in September, with a formal opening ceremony performed jointly by Basil Scarsella, CEO UK Power Networks, and Professor Goran Strabac of Imperial College London. This prestigious facility provides a research and educational focal point, as well as a meeting hub for academics, employees, industry professionals, other interested parties and key stakeholders; it also enables the project to present the portfolio of trials, findings, and innovation outcomes in an ideal learning environment.

The project has also reached agreement with two of its partners, Logica and Siemens, for them to each establish a Low Carbon London learning and demonstration hub within their own facilities, to promote the project and its learning outcomes. These learning hubs will further enable the engagement with the general public, wider stakeholders and other interested parties. UK Power Networks would also like to establish its own LCL hub during 2012 at its central training facility, to promote the project's learning and embed its practice.

The other main areas of focus continue to be the customer journey; data privacy and security; communication and stakeholder engagement; and innovation and learning. In addition to these themes and specifically for this reporting period, the project has concentrated upon trial customer recruitment and participation where steady, albeit at times challenging progress has been made, with insights and learning gained.

The prevailing UK economic and legislative conditions continue to present challenges to the project and have meant that significant time and resource effort has been expended addressing substantial issues previously unidentified in the bid or during the project mobilisation phase. Delays continue in the finalisation of the SMETS and hence availability of SMETS-compliant smart meters; electric vehicle take-up continues to be suppressed below previous forecasts and decisions in 2011 on the renewable heat incentive and feed in tariff have adversely affected the availability of Heat Pump and Photovoltaic installations. It should be noted, however, that these challenging conditions have at the same time encouraged the project to develop innovative mitigations to identify and recruit trial participants and so generate intermediate useful learning outcomes that may otherwise have not been created.

Trial participation is currently the single biggest risk to the project. The lack of prior provision for incentives to attract potential industrial and commercial trial participants has hindered recruitment to date. The project however, has adopted several innovative approaches in reaching out to as many potential participants as possible, including working with numerous trade associations, low carbon component construction and installation companies and leveraging project partners such as the Greater London Authority and Transport for London as potential trial participants. The inclusion of British Gas as an additional energy supplier will enable the project to enrich several areas of activity and to open new channels of engagement with potential stakeholders and participants, including smart meter roll-out.

The further risk of a lack of subsequent participation in the tariff-centric trials by residential customers may require escalation in mid-2012, once the initial acceptance rates to participate in time of use tariff trials is known, although at this stage it is too early to say if this risk will transpire. In anticipation, specific mitigations are being developed to increase the take-up rate for trials based on specifically targeted geographic areas, demographics and meta-data locations to participate in tariff-centric trials (using static, dynamic and dynamic wind-twinned tariffs). Using evidence gained from other trials and tariff acceptance rates experienced elsewhere, a worse-case scenario would imply that up to 30,000 smart meter trial customers will be needed in order to generate statistically valid trial groups for the various planned tariff trials.

This situation will be closely monitored during the coming months, once the SMETS-compliant meter becomes available and the trial customers with those specification meters are recruited. The situation is potentially further exacerbated by a desire, in order to preserve the purity of the data from the triallists, to only introduce the concept of time of use tariffs to the potential participants once they have been engaged with the trial on a "smart meter only" basis for a year, to establish a sound base of control data against which subsequent tariff behaviours can be compared. This would mean that the risk of significantly more than 5,000 participants being required would not be known until sometime in 2013, which would then imply severe curtailment of the latter trials or the extension of certain trials into 2015. Mitigations to bring forward any decision point are being investigated, including the adoption of concurrent control groups in parallel with the adoption of immediate time of use tariff trials.

The project has also initiated a scenario planning exercise to determine and evaluate a range of options from the potential to re-scope elements of some trials, through to extending certain trials if these risks prevail. The results of this exercise will be shared once the timing and volume availability of a SMETS-compliant meter is known and the analysis from the results of the recruitment and deployment of the initial 500 trial customers and meters, along with subsequent tariff acceptance rates is available, expected by the end of Q2 2012.

A prime example of the mitigation efforts is the work undertaken that resulted in the addition of British Gas, as a further energy supplier, contracted directly to the project through UK Power Networks, to increase both the number and variety of potential participants across the range of project trials. A letter of intent has been signed this month between UK Power Networks and British Gas to formalise this involvement.

In addition, the project has forged close working links with local London communities through London MP's (e.g. Joan Ruddock, MP for Lewisham, Deptford), London Borough Ward Councillors (e.g. in Perry Vale, Lewisham and Canning Town), the Mayor's Low Carbon Zone project managers, regeneration charities and residential social landlords, to identify and acquire as many potential trial participants as possible through these networks.

Learning continues to be the central tenet of the project, and while many of the prevailing economic and legislative conditions are challenging, they are generating extremely valuable insights to the London and wider GB low carbon landscape. A major learning event was held in early October, which saw a wide cross-section of the industry attend to hear about and discuss the learning points emerging from the Demand Response Management framework that has been put in place as an early deliverable by the project.

Further events are planned for 2012, starting with an event early in the year to share the emerging findings from the recruitment of the first 500 smart meter trial participant customers and the innovative and creative methods employed to generate that initial participant base. It is planned that this event will encompass the customer journey, the PR and communication approach and the effectiveness of the various approaches, methods and materials employed. The project has also developed and continues to refine a comprehensive detailed learning strategy, coupled with a programme of stakeholder outreach, trial participant engagement and acquisition, internal learning lunches, schools engagement and public exhibitions.

Internally, a UK Power Networks low carbon business champions' forum has been established to provide a focal point and platform for learning and discussion on the efficient sustainable distribution of low carbon electricity. An engineering governance group has also been created to bring together the company's engineering community and provide a focal point for both the project and business as usual departments on smart grid and low carbon electricity distribution matters.

Low Carbon London is now a prominent thought leader and influential part of London's low carbon economy and network through its demonstrable success in facilitating the development of London's low carbon economy. Project team members regularly speak at conferences to maximise awareness and understanding of the aims and objectives of Low Carbon London and the project team is working closely with a number of London-based initiatives, through the GLA and other bodies, to promote the efficient and sustainable use and distribution of low carbon electricity.

The outlook for the project over the next reporting period, despite the various challenges, is very positive. The addition of a second energy supplier into the project provides an increased available pool of residential and potentially SME/commercial trial participants, whilst the developing links with various industry organisations (heat pumps, PV, CHP and PHEVs) bodes well in attracting sufficient trial participants. The next reporting period will see the completion of each workstream trial design and configuration so that all trials will be fully functioning as planned by the end of June 2012.