

Section 9: Successful Delivery Reward Criteria – Version 2

Criterion (9.1)

Successful initial engagement with customers: This criterion corresponds to successfully holding a workshop with Bristol City Council, potential trial participants and interested parties before 30th April 2012.

Holding the workshop on or before this date will demonstrate the project is on schedule to recruit trial participants' inline with the project plan. Prior to the workshop the customer communication plan will have been submitted and accepted by Ofgem. WPD will work with our partner, Bristol City Council and the trial participant recruitment specialist to engage with target domestic audiences and the selected schools from the Solar PV for schools scheme.

The workshop will be used to explain the purpose of the project, provide a guide to the installations, detail the project timeline and gather customer feedback. It will be an opportunity for customers to learn more about the project first hand and ask any questions they may have.

Evidence (9.1)

- The Customer Communication plan will be sent to Ofgem at least two months before any intended contact with customers, the final version will be shared with customers Energy Retailer when the trial participants have been selected, published on the Western Power Distribution website and on the project BRISTOL website.
- The recruitment plan, copies of material used to recruit trial participants and locations targeted will be recorded.
- Minutes and notes captured from the workshop will be stored for future use during knowledge dissemination outputs. Feedback from the event and recruitment process will be gathered through a post event questionnaire where any outstanding questions can be collated.
- An overview of the workshop and feedback will be posted on the BRISTOL website for interested parties within a month of the event.

Criterion (9.2)

Confirmation of the BRISTOL design: This criterion corresponds to signing off the design of the installations by 30th September 2012 for homes, schools and office after the trial participants and locations have been confirmed. The design will confirm the capability of the equipment being installed; details which equipment will be connected to the DC network, how the equipment will be connected together and the location of equipment in a typical home, school and the selected office.

The design will be developed with our partners, Siemens and the University of Bath. It will build upon the Technical Overview outlined in Appendix C and use the outputs from the detailed survey and planning, participants wiring and structural reviews. The final design will be published through the BRISTOL website.

The designs will be reviewed and modelled to predict the performance of the solution, customer benefits and distribution network benefits of the final design.

Evidence (9.2)

- Regular meetings will be held between WPD, Siemens and the University of Bath to develop the BRISTOL design. Summaries of the meetings and design decisions will be captured and recorded.
- The results of the surveys, inspections and reviews will be recorded and stored by the University of Bath
- The predicted performance and benefits will be recorded and stored. The predicted performance will be compared against the actual performance.
- The final design will be signed off by WPD senior engineering managers and subsequently shared through the BRISTOL website.

Criterion (9.3)

Installation and commissioning of equipment: This criterion corresponds to installing and commissioning equipment in 30 domestic properties before 30th April 2013, 10 schools before 31st August 2013 and an office before 30th April 2013.

Prior to the installations WPD and our partners will Factory Acceptance Test the BRISTOL solution, provide training for the installation team, form method statements for installation, risk assessments for installation and operation, an appointment booking process, re-booking process, complaints procedure and operation guide.

Evidence (9.3)

- A test specification will be completed prior to the factory acceptance test and the commissioning of equipment; this will be signed off by the WPD project manager. The results from the factory acceptance tests will be analysed by Siemens and the University of Bath with final acceptance by WPD.
- Project documents will be peer reviewed by the WPD Project Manager before they are issued. Copies of the project documentation will be stored by the University of Bath.
- Regular installation progress reports will be posted on the BRISTOL website for interested parties to view.
- A review of the installation and commissioning activities will be carried out, capturing any lessons learnt. If required, the method statements and other related documentation will be updated and stored.

Criterion (9.4)

Early Operational Performance of BRISTOL: This criterion corresponds to successfully operating an integrated DC network with storage in homes, schools and an office. The operational performance from the data captured through the LV Connection Manager will be analysed to provide an early snapshot of the BRISTOL performance since commissioning.

We will capture and share the early learning from deploying and running DC networks and battery storage in customer premises. Data will be captured up to 30th November 2013; the learning will be released by 31st December 2013. No customer sensitive data will be released, and any data relating to customers will be completely anonymous.

A review of the early learning will be undertaken to determine if any changes are required in the operation of the LV Connection Manager, including the battery use and charging algorithms to improve the future performance of the BRISTOL solution.

Evidence (9.4)

- An operations report will be produced and shared through the BRISTOL website, Stakeholder Dissemination symposia, and the project advisory board.
- The actual data will be collected and stored by the University of Bath. The performance data including system availability, battery usage and data rates will be analysed and compared to the pre installation predictions.
- If required, the method statements and other related documentation will be updated and stored.
- Notes from the project meetings discussing operational performance in homes, schools and the office will be recorded and stored.

Criterion (9.5)

Measured the impact on the LV network: This criterion corresponds to measuring the impact of the BRISTOL solution on the trial distribution substations operation, compared to the operation prior to the installation and commissioning of equipment in homes, schools and the office.

The long term operation of the distribution network will be captured through the LV Network Manager located in distribution substations, the data recorded will be analysed to monitor any changes in the voltage profile, load profile and power quality of the network as a result of the installation in homes, schools and the office. In substations with BRISTOL installed on one LV feeder, another similar LV feeder will also be monitored and used as a reference.

Through this criterion we will be capturing and sharing the early learning, measuring the network benefits of the BRISTOL solution, sharing the analysis before 31st May 2014.

Evidence (9.5)

- Findings shall be shared through a summary report published through the BRISTOL website by 31st May 2014.
- Notes from the project meetings discussing operational performance (changes to the LV voltage profiles, feeder demand profiles and power quality) will be recorded and stored.
- The actual data will be collected and stored by the University of Bath. The performance data recorded by the LV Network Manager will be analysed and compared to the pre installation predictions.
- If required, the method statements and other related documentation will be updated and stored.

Criterion (9.6)

Customer Opinion: This criterion relates to learning about customer acceptance of a BRISTOL solution. We will specifically report on how they feel about virtual asset sharing, taking up space in their home, the energy savings, how disruptive the equipment has been, how easy it is to operate and if there opinion of the BRISTOL solution has changed over time.

WPD will work with the trial participant recruitment specialist and the University of Bath to design a process and subsequently capture customers' feelings on the project inline with the customer communication plan.

The assessments will be completed before 31st March 2012 to capture customers' opinions before the trial starts, before 31st March 2013 to capture customers' opinions during the trial and before 31st November 2014 to capture customers' opinions after the trial.

Evidence (9.6)

- The Customer Communication Plan, detailing customer contact will be on the website
- Knowledge will be captured using a mixture of questionnaires and interviews with results published two months after each assessment is completed.
- Any customer complaints will be resolved within 14 days and the responses will be stored.
- Analysis will be shared with all trial participants, Bristol City Council and GB DNOs through the BRISTOL website. The learning from the customer opinion will be used to update the customer communication plan.

Criterion (9.7)

Keeping the lights on during power outages: This criterion corresponds to testing the domestic BRISTOL solution during an AC power outage. WPD will ask selected domestic customers to test the energy security section provided by the battery storage between 1st October 2013 and 1st October 2014.

The performance of the DC network and batteries will be monitored, through the LV Connection Manager. Customers' behaviour and use of energy during the short outage will also be captured through the LV Connection Manager and a survey. This test will inform us of the capability of the BRISTOL system during a power outage and the potential value to customers.

The trials will be scheduled at different times of the day with different weather conditions and battery capacities to maximise the learning. Selected customers will be invited to undergo this test only once during the trial.

Evidence (9.7)

- The data from the LV Connection Manager and responses from the domestic questionnaire will be stored by the University of Bath.
- The power outage test plan and communication methods used will be designed and stored by the University of Bath and will be signed off by the WPD Project Manager.
- The learning generated by analysing the data will be shared with all stakeholders and interested parties through the end of project report on 15th January 2015.
- Customers energy demands during the short power outage test will feed into the battery size review at the end of the project (SDRC 9.8 (5)).

Criterion (9.8)

Suitability of solution for mainstream adoption: This criterion corresponds to writing a comprehensive end of project report summarising the project findings. The report will contain sufficient information to advise other UK DNOs: **(1)**If the BRISTOL trial demonstrates solar PV can be integrated into the distribution network using battery storage and DC networks. **(2)**How the measured results compared to the predictions made in the set up and development period (SDRC 9.2). **(3)**How the solution could be used to incorporate other LCTs into the distribution network **(4)**What customer benefits were recorded throughout the trial. **(5)**The significant lessons learnt during the trial, how these would be reflected in a future roll out of the BRISTOL solution if used as an alternative to conventional network reinforcement. **(6)**Which policies and standards would need to be modified to allow a BRISTOL solution and **(7)**What impact the inclusion of BRISTOL will have on DNO business plans. The report will also contain an appendix with all the early learning reports from previous milestones and a feasibility study for installing a BRISTOL solution in an office using the learning generated from the trial.

Evidence (9.8)

The end of project report will review the detail knowledge generated from the design and operation of the BRISTOL project. The report will include the appendices from the key areas of learning highlighted in the other Successful Delivery Reward Criteria. The report containing the information above will be published by 15th January 2015.

The results from this milestone will determine if the solution can be adopted into mainstream. If limiting factors are present, preventing the inclusion into mainstream adoption at the end of the project, the report will recommend areas that need to be monitored (e.g. the future cost of energy storage, deployment of smart meters ...) which may facilitate the future inclusion as a network reinforcement technique.