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# ***Project Progress Report (PPR)***

Capacity to Customers (C<sub>2</sub>C) Project



This report was submitted to Ofgem in June 2013

Produced by: Craig McNicol  
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## VERSION HISTORY

Version	Date	Author	Status (draft, etc)	Comments
1.0	14 June 2013	C McNicol	1 <sup>st</sup> issue	For sign off and issue

## APPROVAL

Name	Role	Signature & date
Mike Kay	Networks Strategy and Technical Support Director	
Steve Cox	Future Networks Manager	
Lynne Fulton	Distribution Finance Business Partner	

## GLOSSARY OF TERMS

Abbreviation	Term
CEP	Customer Engagement Plan
CRMS	Control Room Management System
C <sub>2</sub> C	Capacity to Customers
DPS	Data Protection Statement
I&C	Industrial & Commercial
MPAN	Meter Point Administration Number
SDRC	Successful Delivery Reward Criteria
SDRC output	Discrete evidence of attainment or part attainment of an SDRC as defined in the Project Direction
RTU	Remote Terminal Unit
NMS	Network Management System
GE PoF	GE PowerOn Fusion Network Management System

All other definitions shown starting with a capital letter are as per Low Carbon Networks Fund Governance Document v.6

## 1. EXECUTIVE SUMMARY

The C<sub>2</sub>C Project was authorised to commence in January 2012 and is due to complete in December 2014.

The aim of the Project is to test new technology, network operational practices (ie closed HV rings) and commercial demand response contracts that will allow Electricity North West to increase the loadings on a selection of Trial circuits representing approximately 10% of our HV network without resorting to conventional network reinforcement. In other words to 'release' inherent spare capacity in the HV system in order to accommodate the future forecast increases in demand whilst avoiding (or deferring) the cost and environmental impacts that are associated with traditional network reinforcement. The Project consists of customer and commercial, technology and learning, and dissemination workstreams.

The Project will develop and trial new demand response contracts that will allow Electricity North West to manage the import or export capacity of contracted customers, with their agreement, on the Trial circuits under fault or abnormal system conditions. When a new customer connects to the network they will be offered the option to sign up to a connection contract with demand response obligations in exchange for a reduced connection charge.

In the event that a fault occurs on or adjacent to the HV network feeding such a customer, the contract will allow Electricity North West to manage all or part of their import or export capacity, if required by the network, to enable Electricity North West to restore customers' supplies in as short a time as possible. It is envisaged that many future customers may opt for part of their demand to be managed in this manner in exchange for reduced connection charges.

The Project has now commenced the live Trial phase, which continues until September 2014. There has been considerable customer engagement throughout the Project in preparation for Trial go-live and this will continue throughout the Trial period.

Dissemination of learning is a key deliverable for the Project and this will be achieved by sharing our findings via the Project's website, industry conferences, consultations and publication of trade articles and white papers.

### **Progress to date**

This report is the third Project Progress Report and covers the period December 2012 to May 2013 inclusive. The Project is on track and key highlights to date are;

### **The technology role out was been completed on time during March 2013**

- 489 Remote Control Devices have been commissioned.
- An interface to the GE PowerOn Fusion product has been successfully implemented and the automation elements of the Project are now commissioned.
- 78 monitoring devices have been installed on 72 circuits (ie across 36 closed rings).

### **Our customer engagement programme is on track**

- We have completed a survey of I&C customers on C<sub>2</sub>C circuits and produced a market Segmentation Report.

- We have completed an Engaged Customer Panel process to establish the most effective way to communicate with domestic customers on the Trial circuits.
- We have developed a suite of 'Trial' customer surveys aimed at continuously engaging with, and obtaining feedback from, both active Trial participants, customers that declined a C<sub>2</sub>C connection quotation and domestic customers connected to Trial circuits.

**Our commercial activities are on track, but our plans have evolved in order to adapt to external circumstances**

- We have appointed npower to purchase 10 C<sub>2</sub>C agreements acting as our agent. One of our aggregator Partners (Enernoc) did not wish to participate in the tender process.
- We have successfully negotiated three contracts directly with existing customers and have requested Flexitricity purchase three agreements using their own contracts and equipment.
- The combination of the above will test the three main routes to market and establish the total cost under all models ie service provision costs plus agent/ aggregator/ direct enabling costs.

During the reporting period the Project has delivered 16 SDRC outputs, these are detailed in section 5. The most significant are shown below.

**Table 1.1 Most significant SDRC delivered during the reporting period**

Milestone	Workstream	Completion date
C <sub>2</sub> C commercial templates available to customers	Commercial	Dec-12
Software & IT hardware I&C complete	Technical	Mar-13
Actuators, communications & ME I&C complete	Technical	Mar-13
P2/6 industry consultation completed	Technical	Mar-13
Live Trials commence	Technical	Apr-13
Present to industry conference 2 (ENW C <sub>2</sub> C knowledge sharing event)	Dissemination	Apr-13

During the next reporting period the Project will seek to complete negotiations of at least 20 post-fault demand response contracts across existing and new customers, continuously monitor and model the effect of changes to the network running configuration, monitor any subsequent impact on Trial participants and customers connected to Trial circuits and continue to disseminate learning on an ongoing basis.

**Summary of key risks**

There are two risks associated with the achievement of a Project SDRC or maintaining consistency with the Full Submission. These risks are summarised below and described in detail in section 4 of this report.

Risk description	Category
Low market activity for new connections customers may affect participation	Recruitment

Risk description	Category
Risk that aggregator Partners may not secure sufficient Trial Participants	Recruitment

### Summary of key learning outcomes delivered in the period

A detailed description of the Project's learning outcomes can be found in section 6, the areas where learning has emerged are summarised below:

- Engagement with domestic customers.
- Engagement with business customers.
- Commercial template development.
- Aggregator and agent engagement.
- Demand side response price model.
- Managing the network.
- Updating Engineering Recommendation P2/6.

### Overall approach to capturing the learning

The Project maintains a lessons-learned database. This is populated on an ongoing basis and contains internal and external lessons. We encourage all parties involved in the delivery of the Project to generate lessons-learned during the delivery of Project deliverables.

### Third Party dissemination activities

Event	Contribution	Date
Connections Customer Seminar, Reebok Stadium	Presented	December 2012
Ofgem learning & dissemination workshop, Manchester	Presented	April 2013
Demand Side Response seminar (with npower), Bolton Arena	Presented	April 2013
Electricity North West C <sub>2</sub> C Knowledge Sharing Event	Presented	April 2013
SmartGrid GB/Electricity North West Workshop	Presented	May 2013
Various trade magazine articles and newsletters	Published	Various

### Internal dissemination activities

- Various briefings to Connections business' system planners/ designers.
- Briefings and training to system planners regarding production of C<sub>2</sub>C design and quotations.
- Briefings to control and operational staff regarding the changes to operational configuration of the Trial circuits.
- Briefings to Executive Leadership Team via Project reporting process.
- Company-wide briefings via our intranet and internal Newswire magazine.

## **2. PROJECT MANAGER'S REPORT**

### **2.1 General Project Management**

The most significant general Project management activities undertaken during the reporting period are listed below:

- Management of Project resources.
- Project monitoring and control.
- Internal and external stakeholder awareness.

During this reporting period the Project has continued to recruit resources in preparation for Project go-live activities. These reached a peak from December 2012 to March 2013. Internal stakeholder engagement has continued with the emphasis moving away from initial Project awareness to describing the specific impacts of the Project on each group of stakeholders. This process will continue as the Trial phase progresses as and when learning is generated that requires internal communication.

During the next reporting period significant Project management activities will be:

- Continued stakeholder engagement and management.
- Continued Project monitoring and control.

There are no Project management risks or issues that are associated with delivery of a Project SDRC or maintaining consistency with the Full Submission.

### **2.2 Technology Workstream**

The most significant Technology Workstream activities during the reporting period are listed below:

- Commissioning of network management system software.
- Commissioning of 489 remote control devices on the HV network.
- Completion of ER P2/6 consultation process.
- Commissioning of power quality monitoring equipment.

All SDRC that are associated with the above activities are complete or on track.

The Technical Workstream activities reached a peak during January to March 2013 in the run up to Trial go-live in April 2013. The emphasis of the Workstream has now shifted to completion of P2/6 consultation recommendation report and management of work with our academic Partners. The Workstream will also respond to any technical issues that arise during the Trial.

During the next reporting period, the Technology Workstream's significant activities will be:

- Completion of the ER P2/6 industry engagement process and drafting of our report on the implications of C<sub>2</sub>C on ER P2/6.
- Commencement of losses, power quality, carbon and economic benefit analysis work with the Universities of Manchester & Strathclyde.
- Installation of remote control equipment at customers' premises and other locations as appropriate as and when Trial participants are secured.



There are no Technical Workstream risks or issues that are associated with delivery of a Project SDRC or maintaining consistency with the Full Submission.

### 2.3 Customer and Commercial Workstream

The most significant Customer and Commercial Workstream activities during the reporting period are listed below:

- Publication of post fault DSR commercial templates.
- Aggregator tender process to agree recruitment processes and costs.
- Direct engagement with existing I&C customers to secure Trial participants. Electricity North West has signed up three customers.
- Direct engagement with new I&C and generator customers to secure Trial participants.
- Production of trade magazine articles to inform interested stakeholders of the Project.
- Formation of customer workshops to sell the C<sub>2</sub>C concept and understand the customer's drivers.
- Formation of Engaged Customer Panels to establish strategy for engaging with domestic customers on C<sub>2</sub>C circuits.
- Publication of domestic customer communications leaflet.
- Design of series of Trial participant and domestic customer surveys to be conducted throughout the Trial.

All SDRC that are associated with the above activities are complete or on track.

During the next reporting period the Customer and Commercial Workstream's significant activities will be:

- Continued engagement with existing I&C customers via our Partners Flexitricity and npower to secure Trial participants.
- Continued direct engagement with new I&C and generator customers to secure Trial participants.
- Customer seminars and briefings.
- Ongoing customer surveys throughout Trial to obtain feedback from Trial participants and domestic customers connected to Trial circuits.

There are two Commercial risks associated with the achievement of a Project SDRC or maintaining consistency with the Full Submission. These risks are summarised below and described in detail in section 4 of this report.

Risk description	Category
Low market activity for new connections customers may affect participation	Recruitment
Risk that aggregator Partners may not secure sufficient Trial Participants	Recruitment

### **3. CONSISTENCY WITH FULL SUBMISSION**

During the reporting period we have informed Ofgem of a divergence from the Full Submission. This divergence was in relation to the involvement of one of our aggregator Partners, Enernoc. Enernoc declined to participate in the tender exercise that was undertaken in order to agree the recruitment processes and costs for a Partner to purchase C<sub>2</sub>C demand response from our existing customer base. Enernoc will continue to support the Project in a consultative role where required. The contract to procure 10 C<sub>2</sub>C agreements from existing customers was awarded to npower. With the exception of the above issue the Project is being undertaken in accordance with the Full Submission.

### **4. RISK MANAGEMENT**

#### **4.1 Risks and issues experienced during reporting period**

##### **Recruitment Risks**

There are currently two recruitment risks that are associated with the achievement of the Project SDRCs or maintaining consistency with the Full Submission.

##### **Low market activity for new connections customers may affect participation (R023) - Status: Open – Likelihood: Moderate, Impact: Significant**

**Risk:** There is a risk that we may not secure 10 demand response contracts with new customers, leading to failure to achieve a Project SDRC, because of lower than anticipated connections market activity.

##### **Action plan:**

We have performed a number of actions to mitigate this risk. The first proactive action was taken during Trial circuit selection activity where connections market activity was a key criterion for assessing suitability of the circuit for inclusion in the Trial. Since December 2012 we have increased engagement with developers to reinforce and cement awareness of the opportunities that may exist to obtain lower cost connection quotations. We have been closely monitoring the volumes of new connections applications on the C<sub>2</sub>C circuits from January 2013 onwards. In addition to this we are also performing a number of other actions such as:

1. Review accepted 'non C<sub>2</sub>C quotations' that have gone into construction but not yet started on site. Some of these may be eligible for and benefit from being re-designed and re-quoted based on the C<sub>2</sub>C design principles. In all cases this would be by agreement with the customer.
2. Review non C<sub>2</sub>C applications that have expired or are about to expire. There may be opportunities to re-design and re-quote based on the C<sub>2</sub>C design principles to customers who have not accepted on the basis of the original quote being too high.

**Risk that aggregator Partners may not be able to secure Trial Participants (R033) - Status: Open – Likelihood: Low, Impact: Moderate**

**Risk:** There is a risk that our agent/ aggregators may fail to purchase 10 C<sub>2</sub>C agreements, leading to difficulties in testing all possible routes to market.

**Action plan:**

We have now appointed npower to procure 10 C<sub>2</sub>C agreements from existing customers acting as our agent. The contract has a step-in clause that can be initiated if npower fail to meet key performance criteria. In the event of this being triggered npower would lose exclusivity regarding the purchase of the C<sub>2</sub>C agreements and Electricity North West could perform the activity directly or issue an element of the work to other Partners or service providers.

We are also working with Flexitricity in order to procure additional agreements using their contracts and equipment in order to test this route to market.

We are confident that 10 C<sub>2</sub>C agreements will be procured from existing customers, as we have been successful in securing three contracts directly over an eight-week period prior to Trial go-live. This issue relates to obtaining a balanced data-set for the three main routes to market as opposed to the ability to secure 10 C<sub>2</sub>C agreements.

**Procurement, Installation and Other Risks**

There are currently no Procurement, Installation or Other risks that affect our ability to deliver the Project as described in the Full Submission.

**4.2 Risks that existed at time of documenting the Project Full Submission**

The narrative below refers to risks that existed at time of submission and were detailed in Appendix 2 of the Full Submission.

**Recruitment Risks**

No recruitment risks were detailed in Appendix 2 of the Full Submission

**Procurement Risks**

**Risk 8 – Project Partners walk away once Project is won - Status: Controlled**

We have signed contracts with GE Energy, PB Power, npower and our University Partners who are all actively engaged in the Project. As described in section 3 of this report, Enernoc has declined to actively participate in the purchase of C<sub>2</sub>C DSR agreements for strategic commercial reasons. We are currently working with Flexitricity who remain committed to the Project and we are working to secure their participation in engaging with and securing Trial participants. This will be a key area of focus during the next reporting period.

## Installation Risks

### **Risk 1: Risk that internal Operations team will not be able to support installation of automated devices - Status: Controlled**

The vast majority of installation work has now been completed. The only installation work remaining is the installation of equipment at Trial customer's premises as and when they sign contracts (approximately 20 sites). Our Technology Workstream is liaising directly with the installation resource and no issues are foreseen over the remainder of the Project.

### **Risk 6 – Network equipment cost overruns - Status: Controlled**

This activity has been completed within budget.

## Other Risks

### **Risk 2: Risk that key personnel will not be available to deliver the Project - Status: Controlled**

The Project delivery team has been recruited and are part of the same department as the bid development team, which supported the delivery team during the mobilisation stage of the Project. The Project is now past its most intensive period and is sufficiently resourced to deliver the remainder of the Project.

### **Risk 3: Risk of problems with the financial control of the Project because of the new requirement for a separate bank account - Status: Controlled**

The Project Bank Account has been set up and monthly processes have been put in place to review receipt and payments on a monthly basis.

### **Risk 4: Failure to achieve low carbon saving - Status: Open – Likelihood: Moderate, Impact: Significant**

The carbon impact of the Project will be better understood once we begin to negotiate C<sub>2</sub>C contracts and gain an understanding of the levels of DSR secured.

**Action plan:** Continuously review from commencement of Trials. This is also a key activity that is being modelled by our Partner, Tyndall Centre (for Climate Change) at University of Manchester.

### **Risk 5: Poor Project management - Status: Controlled**

The Project team has been recruited. The Project manager is a member of the Project Management Institute and holds Professional Project Manager credentials (PMP). Weekly and monthly Project governance meeting have been established and implemented. These include monthly updates to the sponsoring director.

### **Risk 7 – Payment to customer cost overruns - Status: Open – Likelihood: Moderate, Impact: Moderate**

The costs associated with the payments to customers will be better understood as we continue to negotiate C<sub>2</sub>C contracts and gain an understanding of the levels of DSR secured. In addition to this it may be appropriate to purchase more than the minimum

commitment of 10 agreements from existing customers in order to test all routes to market. We have currently purchased three agreements directly and contracted with npower to purchase 10 agreements acting as our agent. We are also working with Flexitricity to secure additional agreements using their own contracts and equipment.

## 5 SUCCESSFUL DELIVERY REWARD CRITERIA

During the reporting period, 16 planned SDRC were delivered. These are detailed in table 5.1 below.

**Table 5.1 SDRC delivered in reporting period**

Milestone	Planned date	Completion date	Comments
C <sub>2</sub> C commercial template available to customers	Dec-12	Dec-12	Completed
Customer seminar number one (Connections Customers)	Dec-12	Dec-12	Completed
Submit Project Progress Report number two to Ofgem	Dec-12	Dec-12	Completed
Publication of white paper number 2 (P2/6 derogation)	Dec-12	Dec-12	Completed
Publication of trade magazine article number three (Commercial Templates)	Jan-13	Jan-13	Completed
P2/6 workshops completed	Jul-13	Jan-13	Brought forward
News letter number one	Jan-13	Jan-13	Completed
Publication of trade magazine article number four	Mar-13	Mar-13	Completed
Software & IT hardware I&C complete	Mar-13	Mar-13	Completed
Actuators, communications & ME I&C complete	Mar-13	Mar-13	Completed
P2/6 industry consultation completed	Dec-13	Mar-13	Brought forward
Customer seminar number two (npower)	Apr-13	Apr-13	Completed
Live Trials commence	Apr-13	Apr-13	Completed
Complete P2/6 simulation exercise	Apr-14	Apr-13	Completed
News letter number two	May-13	Apr-13	Completed
Present to industry conference number 2 (ENW C <sub>2</sub> C knowledge sharing event)	Apr-13	Apr-13	Completed

Details of the SDRC that were delivered at variance to the planned dates agreed in the Project Direction are highlighted below:

### **P2/6 workshops, consultation and recommendation report – Activity brought forward**

If the Capacity to Customers concept were to be rolled out post Trial, changes may need to be made to ER P2/6. An industry consultation has always been in scope of the Project and

in our last Project Progress Report we highlighted our plan to accelerate this consultation in order to avoid an overlap between it and an industry debate regarding its replacement ie the development of ER P2/7 and also to fit in with Ofgem's timetables for ED1 and WS6 (Smart Grids Forum). We believe it will be beneficial to the Project and the industry as a whole to conclude this debate as soon as practicable and to that end we have engaged with all the DNOs and various industry stakeholders. We are currently in the process of drafting our report on the implications of C<sub>2</sub>C for P2/6 and plan to publish this in June 2013.

The SDRC planned for the next reporting period can be seen in table 5.2 below.

**Table 5.2 SDRC look ahead**

Milestone	Planned date	Forecast Completion date	Comments
Submit Project Progress Report number 3 to Ofgem	Jun-13	Jun-13	On track
Publication of white paper number 3	Jun-13	Jun-13	On track
Present to industry conference number 3 (European Demand Response and Dynamic Pricing 2013)	Oct-13	Jun-13	Brought forward
P2/6 recommendation report issued	Sept-14	Jun-13	Brought forward
Publication of trade magazine article number 6	Jul-13	Jul-13	On track
News letter number 3	Jul-13	Jul-13	On track
Customer seminar number 3	Aug-13	Aug-13	On track
Publication of trade magazine article number 7	Sep-13	Sep-13	On track
Project pamphlet number 2	Oct-13	Oct-13	On track
Present to industry conference number 4 (2013 LCN Annual Conf)	Dec-13	Oct-13	Brought forward
News letter number 4	Oct-13	Oct-13	On track
Publication of trade magazine article number 8	Nov-13	Nov-13	On track
Customer seminar number 4	Dec-13	Dec-13	On track
Submit Project Progress Report number 4 to Ofgem	Dec-13	Dec-13	On track
Publication of white paper number 4	Dec-13	Dec-13	On track

During the next reporting period two SDRCs are forecast to be delivered at variance to the planned dates contained within the Project plan appended to the Full Submission, these are attendance or presentation to industry conferences as shown in the table above.

## 6 LEARNING OUTCOMES

We have established a Project website which is used as a repository for sharing Project learning to interested stakeholders. The learning outcomes during the period are described below.

### **Lesson 1: Engagement with domestic customers (Engaged Customer Panel findings)**

**Background:** A series of Engaged Customer Panels were held in order to develop our strategy for communicating with over 300 000 domestic customers connected to the Trial networks. We are committed to engage with domestic customers and we therefore designed and held nine workshops in total across three phases. The workshops were conducted in partnership with Impact Research and stimulus materials were produced prior to each workshop to support discussions.

#### **Lessons learned**

1. Customers were very 'Supplier' focused.
2. Relationship between DNO and Supplier is still confusing for customers.
3. C<sub>2</sub>C concept is too complex for many customers to understand.
4. Customers think it's their right to know about changes to their electricity supply, particularly if message is positive.
5. Information should be simple and informative, so as not to create confusion.
6. Customers want to know more about their DNO.
7. Customers want to know what to do in a power cut.

#### **Further comments**

Any direct communication with customers needed to address the current lack of awareness of Electricity North West and its role as a DNO in a simple, friendly manner with clear delineation from the role of Suppliers.

Customers tend to be supply focused, in the sense that they expect a safe, continuous supply at a fair price and should any changes be proposed, they require reassurance on the reliability of their supply going forward. Indeed the main focus of any communication should make it clear how any changes to the customer's supply will benefit them.

Beyond this, there is no apparent need to 'sell' the C<sub>2</sub>C initiative to domestic customers.

Any attempt to explain decarbonization, gain customer's acceptance of the problem, achieve credibility and enhance the appeal of the solution opens them up to information that is deemed too technical and unnecessary.

The outcome of the Engaged Customer Panels was a proactive approach to informing customers about C<sub>2</sub>C, which meant contacting those on Trial circuits before the Trials started. An information leaflet was produced and sent to all domestic customers on the Trial circuits. The contents of the leaflet were influenced by the lessons learned above and can be found on the Project's website.

## **Lesson 2: Engagement with business customers**

**Background:** As a distribution business the absence of a detailed customer database created challenges when attempting to contact role holders within customer organisations who were responsible for the energy usage.

### **Lessons learned**

1. Customer data (eg contact name) is critical to success.
2. Partnership with Supplier would be beneficial regarding obtaining accurate customer data.
3. 86% of new customers found C<sub>2</sub>C appealing.

## **Lesson 3: Commercial template development**

**Background:** In order to explain C<sub>2</sub>C and gain an understanding of customer willingness to participate in the Trials we conducted a detailed survey of I&C customers during the summer of 2012. The survey information was an input to the development of our C<sub>2</sub>C commercial templates. During the current reporting period we developed and published those templates on the Project's website. In order to develop the commercial templates our commercial manager held a series of customer focus groups and one to one meetings to further explore the potential motives and barriers to participation in the Trial and subsequent acceptance as business as usual. This was essential to developing a commercial offering that would be attractive to potential Trial participants.

### **Lessons learned**

1. Developing an open and honest relationship with customers is key to full engagement.
2. Customers require a simple contract with a maximum of two C<sub>2</sub>C events per annum.
3. The customer's attitude to risk changed over time as their understanding of the C<sub>2</sub>C concept become clearer ie from risk averse to less risk averse. This was particularly prevalent for those customers that actually went on to sign a C<sub>2</sub>C Managed Connections Agreement.
4. As there is no accepted market price for C<sub>2</sub>C Managed Connections Agreements the customers developed their own impact assessments for a C<sub>2</sub>C event and each customer provided a breakdown of costs to their business based on an eight-hour power outage.

### **Two contract options were considered:**

1. Refining the existing Bi-lateral DSM contract already in place with customers - Aggregator suggestion
2. Development of a contract variation based on the National Terms of Connection Agreement/ DCUSA Customer feedback – simple contract – Internal suggestion.

In order to satisfy the customers' requirement for a simple contract we decided to choose option 2 and produce a simple set of variations to the National Terms of Connection and DCUSA, both of which the customers are already familiar with and have either already signed or would be about to sign in the case of new customers. This approach facilitates ease of transferability to other DNOs.



Finally, in order to cater for Demand/ Generation and New/ Existing Customers, four permutations of contracts were considered. However, it soon became clear that only two types of Managed Connections Agreement were required covering both Demand and Generation types, namely:

1. Managed Connections Agreement - New Customer.
2. Managed Connections Agreement - Existing Customer.

#### **Lesson 4: Aggregator and agent engagement**

**Background:** A key commercial deliverable during the current period was to understand the likely cost to serve of aggregators or agents for the purchase of C<sub>2</sub>C contracts. In order to do this we fully engaged with aggregators and provided as much information as possible to them including list of customer MPANs, post codes and circuit list such that aggregators could check these against their own client lists.

#### **Lessons learned**

1. The aggregators had few clients within the Electricity North West area.
2. Aggregators tend to be focused on a small number of large customers geared to FR<sup>1</sup> and STOR<sup>2</sup>.
3. There are three possible routes to market namely:
  - a. DNO direct,
  - b. Agent/ aggregator finder's fee using our equipment with the contract model being Electricity North West direct with the customer; and,
  - c. Aggregator providing equipment, with bilateral contracts between DNO and the aggregator and the aggregator to the customer.
4. Each aggregator had different views on the value of C<sub>2</sub>C Managed Connections Agreements, commission levels and contract models.

**Further comments:** Due to the variation of opinion between aggregators regarding cost to serve we decided the most effective way of establishing a 'market rate' was to conduct a tender exercise for the contract to procure 10 C<sub>2</sub>C Managed Connections Agreements from existing I&C customers.

#### **Further lessons learned**

1. The tender created competition between the aggregators.
2. The bids revealed very different commission levels from aggregator's initial opinions.
3. No alternative contract models were offered by the aggregators.

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<sup>1</sup> **Frequency Response** - System frequency is a continuously changing variable that is determined and controlled by the second-by-second (real time) balance between system demand and total generation.

<sup>2</sup> **Short Term Operating Reserve** - A service for the provision of additional active power from generation and/ or demand reduction.

The outcome of the tender was the award of the contract to npower to act as agent to procure C<sub>2</sub>C agreement on our behalf.

We are also working with Flexitricity to secure a number of contracts using their own equipment and establishing bilateral contracts with the aggregator and the aggregator with the customer.

### **Lesson 5: Demand side response price model.**

**Background:** In addition to establishing aggregator/ agent cost to serve it has been necessary to analyse a variety of data sources in order to establish the range of market prices for the C<sub>2</sub>C Managed Connections Agreements for existing customers. Numerous sources of data were examined including Reckon<sup>3</sup> report, aggregator view, feedback from potential service providers (I&C customers), IIS proxy method<sup>4</sup> and internal Electricity North West experience of purchasing DSR products. It should be noted that this exercise was not straightforward as the C<sub>2</sub>C concept is new and there is no like-for-like historic data to analyse for this type of service.

### **Lessons learned**

1. There were widely differing values from each of the sources regarding the projected cost of C<sub>2</sub>C (post fault) DSR.
2. For commercial reasons we are unable to publish the anticipated projected costs, but the data that was analysed was sufficient for us to identify what we believe to be a sensible target price with upper and lower limits that we are now using as the basis for negotiations with potential Trial participants.
3. During the development of the commercial templates, customers indicated they would value certain variables within the contract such as protected days, protected circuits eg essential load and a range of hours associated with the maximum delay to supply restoration.
4. Having formulated a target price for the 'vanilla' service of 1MVA of DSR with no protected days and a maximum supply restoration delay of 8 hours we then had to decide what adjustment factors should be applied to the 'target price' taking account of each contract variable. This was done and an easy to understand contract calculator was produced and made available to customers in order for them to observe the affect of introducing contract variables.
5. As customers became more aware of the affect of the contract variables, the flexible options became less important to them. Most customers that have agreed to participate in the Trial have agreed to the few or no contract variables in order to maximise their revenue.

### **Lesson 6: Managing the network**

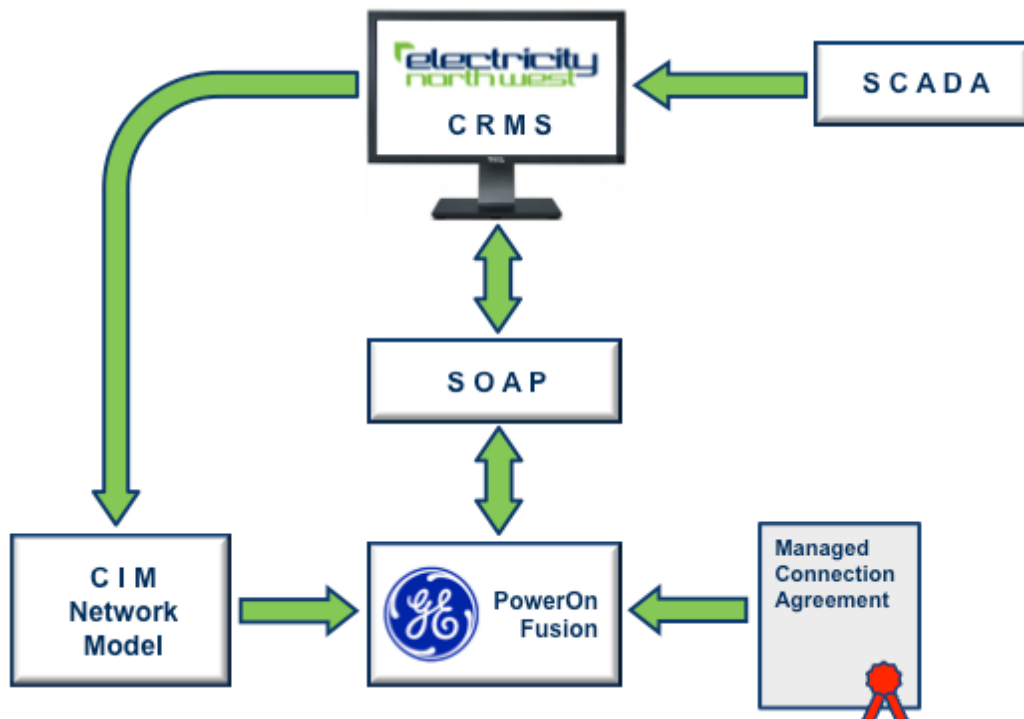
**Background:** During a system fault on a C<sub>2</sub>C circuit that supplies a Trial participant, it will be necessary to disconnect some or all of a Trial participant's network. The fault

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<sup>3</sup> Desktop review and analysis of information on value of lost load for RIIO-ED1 and associated work.

<sup>4</sup> Used current IIS incentives for CIs and CMLs to model value of 1MW of C<sub>2</sub>C Managed Load per 8-hour interruption.

management system architecture and process that we have embedded is summarized below.



1. CRMS (Electricity North West) carries out automated restoration of non-managed customers.
2. GE PowerOn Fusion (PoF) will then provide a switching plan to restore any managed customers off supply.
3. The Control Engineer will then decide to follow plan or wait for completion of manual switching.
4. On completion of manual switching the Control Engineer will request a PoF switching plan for any customers still off supply.
5. PoF will produce a switching plan to restore any customers still off supply.

In order for this process to work effectively it is necessary to keep both systems synchronised. At the design stage our initial requirements were to create interfaces with weekly refresh and a 24-hour reload relating to the assets and real time updates to analogues and switch states.

Our final system design allows for incremental updates relating to assets, a maximum reload time in event of a required re-synchronisation of three hours and real time analogue and state updates within seconds. The system contains a managed customer database that contains managed customer restoration criteria eg protected days, number of interruptions per annum etc. We have implemented a fully functioning process that enables C<sub>2</sub>C to be tested during the Trial period.

## **Lesson Learned**

1. Splitting the fault process between two NMS system significantly increased difficulty, but a working solution was developed that significantly outperformed our initial requirements. This demonstrates that a UK wide roll out on a single NMS is realistic and achievable.

## **Lesson 7: P2/6**

**Background:** We have conducted a consultation to gather views on the ability of Engineering Recommendation P2/6 (ER P2/6) "Security of Supply" to recognize customer load management and demand side response (collectively termed DSR) and the requirement or otherwise for modification of ER P2/6 in the short term to explicitly include the effects of DSR. In December 2012 Electricity North West was granted derogation from P2/6 relating to the C<sub>2</sub>C circuits for the duration of the Trial.

The consultation format included network simulations to develop scenarios to be used in workshops and consultation documents. Internal workshops were initially held with selected staff with varying levels of P2/6 knowledge. The staff were questioned and provided their views on scenarios. A consultation document was then developed as an output from the internal workshop and opened to third parties. External Workshops involving other DNOs, IDNOs and NGET took place and attendees gave their view on various scenarios.

## **Lesson learned**

1. Our work indicates that there is a general consensus among network operators that P2/6 does not preclude the use of n-1 DSR to maintain compliance. There is a difference of view regarding the requirement to change ER P2/6 in the short or long term to enable Demand Side Management to be used at an appropriate level. Our work indicates that there is support for an update to ETR130 to define maximum penetration level for n-1 DSR and the management of system intact load levels. We are currently in the process of documenting the recommendation report and plan to publish it in June 2013.

## **7 BUSINESS CASE UPDATE**

We are not aware of any developments that have taken place since the issue of the Project Direction that affect the business case for the Project.

## **8 PROGRESS AGAINST BUDGET**

The original Project Budget as defined in the Project Direction is shown in Appendix A.

Prior to the acceptance of the Project Direction we discussed with Ofgem the re-categorisation of expenditure as our understanding of delivery methods had changed during the development of the Project initiation documentation; for example, we proposed to change our delivery approach by using contractors for some activities rather than our own personnel. We accepted the Project Direction and agreed to inform Ofgem of the proposed changes within the Project Progress Report process. Appendix B details the proposed re-categorisation.

During the current reporting period we formally requested approval of changes to the Project Budget caused by movements of expenditure between 'Labour' and 'Contractor' cost categories. Ofgem has approved this request and agreed that moving forward we should report expenditure in relation to the re-based Project Budget.

Actual spend to date compared to re-based Project Budget is summarised in table 5.1 below. The report includes expenditure up to and including 31 May 2013. Detailed expenditure can be found in Appendix C at Project activity level.

**Table 5.1**

£'000s Excluding Partner Funding Ofgem Cost Category	Spend to date			Total Project		
	Actual	Budget <sup>1</sup>	Variance	Forecast	Budget <sup>1</sup>	Variance
<b>Summary</b>						
Labour	671	802	131	1,654	1,755	100
Equipment	2,606	3,067	461	2,668	3,078	410
Contractors	2,051	2,573	522	2,808	3,012	204
IT	614	736	122	614	740	126
IPR Costs	0	0	0	0	0	0
Travel & Expenses	0	0	0	0	0	0
Payments to users	16	9	(7)	301	300	(1)
Contingency	217	588	371	516	947	431
Decommissioning	0	0	0	0	0	0
Other	164	214	51	428	445	17
<b>Total Costs</b>	<b>6,339</b>	<b>7,990</b>	<b>1,651</b>	<b>8,990</b>	<b>10,275</b>	<b>1,285</b>

Note 1: Re-based Project Budget as agreed by Ofgem on 24 January 2013

At the end of the last reporting period we reported a £3.2m variance to the original Project Budget, this was due to profile variances caused by the deferment of placing large value orders earlier in the Project. At that time the estimated at completion costs were forecast to be in line with the Project Budget.

The Project has now completed installation and commissioning activities associated with readiness for go-live. The actual spend to date is £1.7m favourable to Project Budget and the estimated at completion costs is now £1.3m favourable to Project Budget.

The current position shows the most significant contribution to this outperformance to date is due to £0.6m of efficiencies regarding remote control installation (£0.3m of this due to scope reduction<sup>5</sup>), £0.1m IT efficiencies and £0.4m of efficiencies against contingency. There is also a £0.4m profiling variance associated with the Demand Response Survey and the analysis to be carried out by our academic Partners. Our estimated at completion cost currently reflects these efficiencies and all known risks as at the end of the current reporting period. Should any unforeseen event occur, these efficiencies may be affected.

<sup>5</sup> The Project Budget assumed the funding for the installation of 540 remote control units, in reality the Project was required to fund the installation of 489 units due to 51 units overlapping with, and being funded by our Quality of Supply investment programme.

## **9 BANK ACCOUNT**

The Project bank statement is shown in Appendix D. The statement contains all receipts and payments associated with the Project up to the end of May 2013.

## **10 INTELLECTUAL PROPERTY RIGHTS (IPR)**

Electricity North West is following the default IPR arrangements. During the current period we have undertaken the following activities that required consideration from an IPR perspective.

1. Interface to the GE PowerOn Fusion network management system.
2. Post fault demand response commercial templates.
3. Installation of network monitoring & subsequent data publication.
4. Customer engagement learning.

We have considered our IPR approach to the above Project deliverables and concluded the default IPR arrangements apply.

## **11 OTHER**

There is no other information at this time that would be of use to Ofgem in understanding the progress of the Project and performance against the SDRC.

## **12 ACCURACY ASSURANCE STATEMENT**

This document has been reviewed by a number of key business stakeholders. The Project team and select members of the C<sub>2</sub>C Project Steering Group, including the lead member of the bid development team have reviewed the report to ensure its accuracy. The narrative has also been peer reviewed by the Electricity North West Future Networks Manager and the Electricity North West Networks Strategy and Technical Support Director.

The financial information has been produced by the C<sub>2</sub>C Project Manager and the Project's finance representative who review all financial postings to the Project each month in order to ensure postings have been correctly allocated to the appropriate Project activity. The financial information has also been peer reviewed by the Electricity North West Distribution Finance Business Partner.

Issue of the document has been approved by the Networks Strategy & Technical Support Director.

## APPENDIX A – PROJECT DIRECTION PROJECT BUDGET

£000's	
Excluding Partner Funding	
Ofgem Cost Category	
<b>Labour</b>	<b>2,512</b>
Monitoring Equipment Installation - Labour	22
Business input into specs and testing & CIO System Design Approval	20
Connections – Clerical	65
Connections - Customer Relationship Management	241
Dissemination - ENWL & Customer engagement via email & training	28
Implementation of PowerOn Fusion	709
Maintenance & Support for PowerOn Fusion	187
Project Management - GE	351
Project Management - ENWL	790
Involvement in developing Future Network Planning/Operational Standard	15
Circuit Selection	32
Developing Future Network Planning/Operational Standard	53
<b>Equipment</b>	<b>3,078</b>
Publicity Materials - Informational Pamphlets & postage & packaging	18
Remote Control Installation - Plant	1,954
Monitoring Equipment Installation - Plant	112
Remote Control Installation - Materials	563
Commissioning SCADA link to Remote Control Devices	31
Delivery and configuration of GE IT hardware and software	399
<b>Contractors</b>	<b>2,254</b>
Demand Side Response Customer Survey	391
Project Management - ENWL	115
Remote Control Installation - Labour	844
Remote Control Installation at Customers' Premises	159
Contractors Travel & Publicity - Informing Affected Customers	42
Connections - Connections Design	303
Carbon Analysis	40
Data Analysis and Economic Modelling	185
Power System and Technical Modelling	175
<b>IT</b>	<b>740</b>
Data Capture and Cleanse	55
Database Licenses	100
Develop CRMS Reporting Capability	11
Develop CRMS/PowerOn (SOAP) Interface	87
Develop New Interface to PowerOn Fusion	87
Develop Real-time Data Update Functionality	55
Develop Visual Display Functionality for CRMS	73
Initial Data Load Functionality	55
System Integration & Testing	66
Testing and Development Workstation	10
Upload and Store Estimates (into historian)	85
Upload CRMS Diagram and Managed Loads	55
<b>IPR Costs</b>	<b>0</b>
<b>Travel &amp; Expenses</b>	<b>0</b>
<b>Payments to users</b>	<b>300</b>
Demand Side Response	300
<b>Contingency</b>	<b>947</b>
Development and Preparation	44
Remote Control Installation	284
Publicity, Training and Dissemination	125
DSR and Interruptions	100
Project Management	28
Connections	102
Monitoring Equipment	77
Installation and configuration of IT and Implementation of PowerOn Fusion	109
Circuit selection and data upload	24
Analysis, Modelling and Development of Standards	41
System Integration & Testing	13
Decommissioning	
<b>Other</b>	<b>445</b>
Publicity and Dissemination	257
Accommodation	160
Unplanned interruptions during trial	27
	<b>10,275</b>

Source: Ofgem Schedule to Project Direct 19-12-11

## APPENDIX B – RE-BASED PROJECT BUDGET (APPROVED 24 JANUARY 2013)

£'000s Excluding Partner Funding Ofgem Cost Category	Total Project			Comments
	Re-based Budget	Budget	Variance	
<b>Labour</b>	<b>1,755</b>	<b>2,512</b>	<b>758</b>	
Monitoring Equipment Installation - Labour	22	22	0	
Business input into specs and testing & CIO System Design Approval	20	20	0	
Connections – Clerical	65	65	0	
Connections - Customer Relationship Management	241	241	0	
Dissemination - ENWL & Customer engagement via email & training	28	28	0	
Implementation of PowerOn Fusion	0	709	709	Moved to Contractor from Labour
Maintenance & Support for PowerOn Fusion	187	187	0	
Project Management - GE	0	351	351	Moved to Contractor from Labour
Project Management - ENWL	790	790	0	
Involvement in developing Future Network Planning/Operational Standard	15	15	0	
Circuit Selection	0	32	32	Contractors used instead of internal labour
Developing Future Network Planning/Operational Standard	0	53	53	Contractors used instead of internal labour
Connections - Connections Design	303	0	(303)	Internal labour to be used instead of contractors
Remote Control Installation	84	0	(84)	10% of Remote Control Installation by internal labour
<b>Equipment</b>	<b>3,078</b>	<b>3,078</b>	<b>0</b>	
Publicity Materials - Informational Pamphlets & postage & packaging	18	18	0	
Remote Control Installation - Plant	1,954	1,954	0	
Monitoring Equipment Installation - Plant	112	112	0	
Remote Control Installation - Materials	563	563	0	
Commissioning SCADA link to Remote Control Devices	31	31	0	
Delivery and configuration of GE IT hardware and software	399	399	0	
<b>Contractors</b>	<b>3,012</b>	<b>2,254</b>	<b>(758)</b>	
Demand Side Response Customer Survey	391	391	0	
Project Management - ENWL	115	115	0	
Remote Control Installation - Labour	760	844	84	10% of original budget moved to Labour
Remote Control Installation at Customers' Premises	159	159	0	
Contractors Travel & Publicity - Informing Affected Customers	42	42	0	
Connections - Connections Design	0	303	303	
Carbon Analysis	40	40	0	
Data Analysis and Economic Modelling	185	185	0	
Power System and Technical Modelling	175	175	0	
Project Management - GE	351	0	(351)	Moved to Contractor from Labour
Circuit Selection	32	0	(32)	Contractors used instead of internal labour
Developing Future Network Planning/Operational Standard	53	0	(53)	Contractors used instead of internal labour
Implementation of PowerOn Fusion	709	0	(709)	Moved to Contractor from Labour
<b>IT</b>	<b>740</b>	<b>740</b>	<b>0</b>	
Data Capture and Cleanse	55	55	0	
Database Licenses	100	100	0	
Develop CRMS Reporting Capability	11	11	0	
Develop CRMS/PowerOn (SOAP) Interface	87	87	0	
Develop New Interface to PowerOn Fusion	87	87	0	
Develop Real-time Data Update Functionality	55	55	0	
Develop Visual Display Functionality for CRMS	73	73	0	
Initial Data Load Functionality	55	55	0	
System Integration & Testing	66	66	0	
Testing and Development Workstation	10	10	0	
Upload and Store Estimates (into historian)	85	85	0	
Upload CRMS Diagram and Managed Loads	55	55	0	
<b>IPR Costs</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Travel &amp; Expenses</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Payments to users</b>	<b>300</b>	<b>300</b>	<b>0</b>	
Demand Side Response	300	300	0	
<b>Contingency</b>	<b>947</b>	<b>947</b>	<b>0</b>	
Development and Preparation	44	44	0	
Remote Control Installation	284	284	0	
Publicity, Training and Dissemination	125	125	0	
DSR and Interruptions	100	100	0	
Project Management	28	28	0	
Connections	102	102	0	
Monitoring Equipment	77	77	0	
Installation and configuration of IT and Implementation of PowerOn Fusion	109	109	0	
Circuit selection and data upload	24	24	0	
Analysis, Modelling and Development of Standards	41	41	0	
System Integration & Testing	13	13	0	
Decommissioning	0	0	0	
<b>Other</b>	<b>445</b>	<b>445</b>	<b>0</b>	
Publicity and Dissemination	257	257	0	
Accommodation	160	160	0	
Unplanned interruptions during trial	27	27	0	
	<b>10,275</b>	<b>10,275</b>	<b>0</b>	

Source: Ofgem Schedule to Project Direct 19-12-11



## APPENDIX C – DETAILED PROJECT EXPENDITURE

£'000s Excluding Partner Funding Olgem Cost Category	Spend to date			Comments
	Actual	Re-based Budget	Variance	
<b>Labour</b>	<b>671</b>	<b>802</b>	<b>131</b>	
Monitoring Equipment Installation - Labour	11	22	11	Profile variance to plan, estimated at completion in line with plan
Business input into specs and testing & CIO System Design Approval	25	20	(5)	Activity completed. £5k adverse to plan.
Connections – Clerical	14	17	4	Profile variance to plan, estimated at completion in line with plan
Connections - Customer Relationship Management	65	101	35	Profile variance to plan, estimated at completion £13k adverse to plan
Dissemination - ENWL & Customer engagement via email & training	0	9	9	Profile variance to plan, estimated at completion £7k favourable to plan
Maintenance & Support for PowerOn Fusion	45	82	38	Profile variance to plan, estimated at completion £14k adverse to plan
Project Management - ENWL (Labour)	380	355	(25)	Profile variance to plan, estimated at completion £22k adverse to plan
Involvement in developing Future Network Planning/Operational Standard	9	6	(3)	Profile variance to plan, estimated at completion £5k favourable to plan
Connections - Connections Design (Labour)	41	106	66	Estimated at completion cost £140k favourable to plan
Remote Control Installation - ENWL Labour	81	84	3	10% of Remote Control Installation moved to Labour from Contractor
<b>Equipment</b>	<b>2,606</b>	<b>3,067</b>	<b>461</b>	
Publicity Materials - Informational Pamphlets & postage & packaging	10	8	(2)	Profile variance to plan, estimated at completion in line with plan
Remote Control Installation - Plant	1,816	1,954	138	Efficiency, estimated at completion £80k favourable to plan
Monitoring Equipment Installation - Plant	179	112	(68)	Actual unit cost of monitoring equipment exceeded plan
Remote Control Installation - Materials	202	563	361	Efficiency, estimated at completion £361 favourable to plan
Commissioning SCADA link to Remote Control Devices	0	31	31	Efficiency, estimated at completion £31 favourable to plan
Delivery and configuration of GE IT hardware and software	399	399	0	
<b>Contractors</b>	<b>2,051</b>	<b>2,573</b>	<b>522</b>	
Demand Side Response Customer Survey	237	391	154	Profiling variance to plan, estimated at completion £22k favourable to plan
Project Management - ENWL (Contractors)	89	97	8	Profiling variance to plan, estimated at completion £3k favourable to plan
Remote Control Installation - Labour	583	760	177	10% of Budget moved to Labour. Estimated at completion £160k favourable to plan
Remote Control Installation at Customers' Premises	3	42	39	Profile variance to plan, estimated at completion in line with plan
Contractors Travel & Publicity - Informing Affected Customers	0	21	21	Profile variance to plan, estimated at completion in line with plan
Carbon Analysis	0	27	27	Profile variance to plan, estimated at completion in line with plan
Data Analysis and Economic Modelling	0	123	123	Profile variance to plan, estimated at completion in line with plan
Power System and Technical Modelling	0	116	116	Profile variance to plan, estimated at completion in line with plan
Project Management - GE	351	235	(116)	Profile variance to plan, estimated at completion in line with plan
Circuit Selection	38	32	(7)	Actual spend £7k higher than plan.
Developing Future Network Planning/Operational Standard (Contractors)	36	20	(16)	Activity brought forward
Implementation of PowerOn Fusion	714	709	(5)	
<b>IT</b>	<b>614</b>	<b>736</b>	<b>122</b>	
Data Capture and Cleanse	54	55	1	Activity completed. In line with plan
Database Licenses	10	100	91	Efficiency, only licence required at £10k.
Develop CRMS Reporting Capability	10	11	1	Activity completed. In line with plan
Develop CRMS/PowerOn (SOAP) Interface	86	87	1	Activity completed. In line with plan
Develop New Interface to PowerOn Fusion	103	87	(16)	Activity completed. £16k adverse to plan.
Develop Real-time Data Update Functionality	53	55	2	Activity completed. In line with plan
Develop Visual Display Functionality for CRMS	71	73	2	Activity completed. In line with plan
Initial Data Load Functionality	89	55	(34)	Activity completed. £34k adverse to plan.
System Integration & Testing	73	63	(10)	Activity completed. £7k adverse to plan.
Testing and Development Workstation	4	10	6	Efficiency, estimated at completion £6k favourable to plan
Upload and Store Estimates (into historian)	45	85	40	Efficiency, estimated at completion £40k favourable to plan
Upload CRMS Diagram and Managed Loads	17	55	38	Efficiency, estimated at completion £38k favourable to plan
<b>IPR Costs</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Travel &amp; Expenses</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Payments to users</b>	<b>16</b>	<b>9</b>	<b>(7)</b>	
Demand Side Response	16	9	(7)	Profile variance to plan, estimated at completion in line with plan
<b>Contingency</b>	<b>217</b>	<b>588</b>	<b>371</b>	
Development and Preparation	11	44	33	Activity completed. £11k of contingency required.
Remote Control Installation	0	209	209	Activity completed. No contingency required.
Publicity, Training and Dissemination	22	73	50	Profile variance to plan, estimated at completion in line with plan
DSR and Interruptions	0	0	(0)	17 agreements anticipated vs 10 budgeted.
Project Management	0	28	28	Profile variance to plan, estimated at completion in line with plan
Connections	0	31	31	Current estimate contingency will not be required.
Monitoring Equipment	65	42	(23)	Actual unit cost of monitoring equipment exceeded plan
Installation and configuration of IT and Implementation of PowerOn Fusion	102	109	8	Activity completed. Full use of contingency required.
Circuit selection and data upload	0	15	15	Activity completed. No contingency required.
Analysis, Modelling and Development of Standards	0	33	33	Current estimate contingency will not be required.
System Integration & Testing	16	5	(11)	Activity completed. £7k adverse to plan.
Decommissioning	0	0	0	
<b>Other</b>	<b>164</b>	<b>214</b>	<b>51</b>	
Publicity and Dissemination	151	138	(13)	Profile variance to plan, estimated at completion in line with plan
Accommodation	13	74	61	Profile variance to plan, estimated at completion £32k favourable to plan
Unplanned interruptions during trial	0	3	3	Profile variance to plan, estimated at completion in line with plan
	<b>6,339</b>	<b>7,990</b>	<b>1,651</b>	

Source: C2C Master Cost Forecast May 2013 FINAL

## APPENDIX D – PROJECT BANK ACCOUNT

The bank statement below details all transactions relevant to the Project up to 12 June 2013. This includes all receipts and payments associated with the Project up to the May 2013 month end reporting period.



**Lloyds TSB**  
Statements and Balances

Yesterday's Statement

C082421

### ELECTRICITY NWL NO.11 LCNF (GBP)

Date	Type	Narrative	Value Date	Payments	Receipts	Balance
04JAN12		Opening Ledger Balance				0.00 Cr
24APR12	F/FLOW	SCOTTISH HYDRO-ELE F/FLOW			19,166.67	19,166.67 Cr
25APR12	F/FLOW	WESTPOWSWEST F/FLOW			117,500.00	136,666.67 Cr
27APR12	CR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00268			1,319,416.63	1,456,083.30 Cr
27APR12	BGC	LONDON POWER NETWO BGC LOW CARB NETWORKS			59,166.63	1,515,249.93 Cr
27APR12	BGC	SOUTH EASTERN POWE BGC LOW CARB NETWORKS			58,333.37	1,573,583.30 Cr
27APR12	BGC	EASTERN POWER NETW BGC LOW CARB NETWORKS			45,833.37	1,619,416.67 Cr
27APR12	BGC	NORTHERN ELECTRIC BGC LCNF			59,166.63	1,678,583.30 Cr
27APR12	BGC	NORTHERN ELECTRIC BGC LCNF			40,833.37	1,719,416.67 Cr
27APR12	BGC	R B S-SP DISTRIBUT BGC LOW CARBON NETWORK			27,500.00	1,746,916.67 Cr
27APR12	BGC	R B S-SP MANWEB BGC LOW CARBON NETWORK			39,166.63	1,786,083.30 Cr
08MAY12	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00277		372,174.17		1,413,909.13 Cr
24MAY12	F/FLOW	SCOTTISH HYDRO-ELE F/FLOW			19,166.67	1,433,075.80 Cr
25MAY12	F/FLOW	WESTPOWSWEST F/FLOW			117,500.00	1,550,575.80 Cr
28MAY12	CR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00285			292,416.67	1,842,992.47 Cr
28MAY12	BGC	LONDON POWER NETWO BGC LOW CARB NETWORKS			59,166.67	1,902,159.14 Cr
28MAY12	BGC	SOUTH EASTERN POWE BGC LOW CARB NETWORKS			58,333.33	1,960,492.47 Cr
28MAY12	BGC	EASTERN POWER NETW BGC LOW CARB NETWORKS			45,833.33	2,006,325.80 Cr
28MAY12	BGC	NORTHERN ELECTRIC BGC LCNF			59,166.67	2,065,492.47 Cr
28MAY12	BGC	NORTHERN ELECTRIC BGC LCNF			40,833.33	2,106,325.80 Cr
30MAY12	F/FLOW	SP MANWEB PLC F/FLOW			39,166.67	2,145,492.47 Cr
30MAY12	F/FLOW	SP DISTRIBUTION LT F/FLOW			27,500.00	2,172,992.47 Cr
11JUN12	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00287		68,669.60		2,104,322.87 Cr
22JUN12	F/FLOW	SCOTTISH HYDRO-ELE F/FLOW			19,166.67	2,123,489.54 Cr
25JUN12	F/FLOW	WESTPOWSWEST F/FLOW			117,500.00	2,240,989.54 Cr
28JUN12	CR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00291			292,416.67	2,533,406.21 Cr
28JUN12	F/FLOW	SP DISTRIBUTION LT F/FLOW			27,500.00	2,560,906.21 Cr
28JUN12	F/FLOW	SP MANWEB PLC F/FLOW			39,166.67	2,600,072.88 Cr
28JUN12	BGC	LONDON POWER NETWO BGC LOW CARB NETWORKS			59,166.67	2,659,239.55 Cr
28JUN12	BGC	SOUTH EASTERN POWE BGC LOW CARB NETWORKS			58,333.33	2,717,572.88 Cr
28JUN12	BGC	EASTERN POWER NETW BGC LOW CARB NETWORKS			45,833.33	2,763,406.21 Cr
28JUN12	BGC	NORTHERN ELECTRIC BGC LCNF			59,166.67	2,822,572.88 Cr
28JUN12	BGC	NORTHERN ELECTRIC BGC LCNF			40,833.33	2,863,406.21 Cr
28JUN12	CHGS	ACCOUNT CHARGE		4.20		2,863,402.01 Cr
09JUL12	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00294		455,501.23		2,407,900.78 Cr
09JUL12		Value of Credits (30)			3,304,249.98	
09JUL12		Value of Debits (4)		896,349.20		
09JUL12		Closing Ledger Balance				2,407,900.78 Cr
09JUL12		Closing Cleared Balance				2,407,900.78 Cr

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**ELECTRICITY NWL NO.11 LCNF (C2C) (GBP)**

Date	Type	Narrative	Value Date	Payments	Receipts	Balance
10JUL12		Opening Ledger Balance				2,407,900.78 Cr
24JUL12	F/FLOW	SCOTTISH HYDRO-ELE F/FLOW			19,166.67	2,427,067.45 Cr
25JUL12	F/FLOW	WESTPOWSWEST F/FLOW			117,500.00	2,544,567.45 Cr
27JUL12	CR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00297			292,416.67	2,836,984.12 Cr
27JUL12	BGC	LONDON POWER NETWO BGC LOW CARB NETWORKS			59,166.67	2,896,150.79 Cr
27JUL12	BGC	SOUTH EASTERN POWE BGC LOW CARB NETWORKS			58,333.33	2,954,484.12 Cr
27JUL12	BGC	EASTERN POWER NETW BGC LOW CARB NETWORKS			45,833.33	3,000,317.45 Cr
27JUL12	BGC	NORTHERN ELECTRIC BGC LCNF			59,166.67	3,059,484.12 Cr
27JUL12	BGC	NORTHERN ELECTRIC BGC LCNF			40,833.33	3,100,317.45 Cr
27JUL12	BGC	R B S-SP DISTRIBUT BGC LOW CARBON NETWORK			27,500.00	3,127,817.45 Cr
27JUL12	BGC	R B S-SP MANWEB BGC LOW CARBON NETWORK			39,166.67	3,166,984.12 Cr
08AUG12	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00301		518,517.25		2,648,466.87 Cr
24AUG12	CR	INTEREST ADJUSTMENT GROSS CREDIT INTEREST			1,051.61	2,649,518.48 Cr
24AUG12	F/FLOW	SCOTTISH HYDRO-ELE F/FLOW			19,166.67	2,668,685.15 Cr
28AUG12	CR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00309			292,416.67	2,961,101.82 Cr
28AUG12	F/FLOW	WESTPOWSWEST F/FLOW			117,500.00	3,078,601.82 Cr
28AUG12	F/FLOW	SP DISTRIBUTION LT F/FLOW			27,500.00	3,106,101.82 Cr
28AUG12	F/FLOW	SP MANWEB PLC F/FLOW			39,166.67	3,145,268.49 Cr
28AUG12	BGC	LONDON POWER NETWO BGC LOW CARB NETWORKS			59,166.67	3,204,435.16 Cr
28AUG12	BGC	SOUTH EASTERN POWE BGC LOW CARB NETWORKS			58,333.33	3,262,768.49 Cr
28AUG12	BGC	EASTERN POWER NETW BGC LOW CARB NETWORKS			45,833.33	3,308,601.82 Cr
28AUG12	BGC	NORTHERN ELECTRIC BGC LCNF			59,166.67	3,367,768.49 Cr
28AUG12	BGC	NORTHERN ELECTRIC BGC LCNF			40,833.33	3,408,601.82 Cr
11SEP12	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00317		278,744.88		3,129,856.94 Cr
19SEP12	INT	GROSS CREDIT INTEREST			3,409.65	3,133,266.59 Cr
24SEP12	F/FLOW	SCOTTISH HYDRO-ELE F/FLOW			19,166.67	3,152,433.26 Cr
25SEP12	F/FLOW	WESTPOWSWEST F/FLOW			117,500.00	3,269,933.26 Cr
26SEP12	CHGS	ACCOUNT CHARGE		3.11		3,269,930.15 Cr
28SEP12	CR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00327			292,416.67	3,562,346.82 Cr
28SEP12	BGC	LONDON POWER NETWO BGC LOW CARB NETWORKS			59,166.67	3,621,513.49 Cr
28SEP12	BGC	SOUTH EASTERN POWE BGC LOW CARB NETWORKS			58,333.33	3,679,846.82 Cr
28SEP12	BGC	EASTERN POWER NETW BGC LOW CARB NETWORKS			45,833.33	3,725,680.15 Cr
28SEP12	BGC	NORTHERN ELECTRIC BGC LCNF			59,166.67	3,784,846.82 Cr
28SEP12	BGC	NORTHERN ELECTRIC BGC LCNF			40,833.33	3,825,680.15 Cr
28SEP12	BGC	R B S-SP DISTRIBUT BGC LOW CARBON NETWORK			27,500.00	3,853,180.15 Cr
28SEP12	BGC	R B S-SP MANWEB BGC LOW CARBON NETWORK			39,166.67	3,892,346.82 Cr
10OCT12	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00331		600,425.90		3,291,920.92 Cr
24OCT12	F/FLOW	SCOTTISH HYDRO-ELE F/FLOW			19,166.67	3,311,087.59 Cr
25OCT12	F/FLOW	WESTPOWSWEST F/FLOW			117,500.00	3,428,587.59 Cr
25OCT12	BGC	R B S-SP DISTRIBUT BGC LOW CARBON NETWORK			27,500.00	3,456,087.59 Cr
25OCT12	BGC	R B S-SP MANWEB BGC LOW CARBON NETWORK			39,166.67	3,495,254.26 Cr
26OCT12	CR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00337			292,416.67	3,787,670.93 Cr
26OCT12	BGC	LONDON POWER NETWO BGC LOW CARB NETWORKS			59,166.67	3,846,837.60 Cr
26OCT12	BGC	SOUTH EASTERN POWE BGC LOW CARB NETWORKS			58,333.33	3,905,170.93 Cr
26OCT12	BGC	EASTERN POWER NETW BGC LOW CARB NETWORKS			45,833.33	3,951,004.26 Cr
26OCT12	BGC	NORTHERN ELECTRIC BGC LCNF			59,166.67	4,010,170.93 Cr

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**ELECTRICITY NWL NO.11 LCNF (C2C) (GBP)**

Date	Type	Narrative	Value Date	Payments	Receipts	Balance
26OCT12	BGC	NORTHERN ELECTRIC BGC LCNF			40,833.33	4,051,004.26 Cr
13NOV12	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00343		274,863.81		3,776,140.45 Cr
23NOV12	F/FLOW	SCOTTISH HYDRO-ELE F/FLOW			19,166.67	3,795,307.12 Cr
26NOV12	F/FLOW	WESTPOWSWEST F/FLOW			117,500.00	3,912,807.12 Cr
28NOV12	CR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00356			292,416.67	4,205,223.79 Cr
28NOV12	BGC	LONDON POWER NETWO BGC LOW CARB NETWORKS			59,166.67	4,264,390.46 Cr
28NOV12	BGC	SOUTH EASTERN POWE BGC LOW CARB NETWORKS			58,333.33	4,322,723.79 Cr
28NOV12	BGC	EASTERN POWER NETW BGC LOW CARB NETWORKS			45,833.33	4,368,557.12 Cr
28NOV12	BGC	NORTHERN ELECTRIC BGC LCNF			59,166.67	4,427,723.79 Cr
28NOV12	BGC	NORTHERN ELECTRIC BGC LCNF			40,833.33	4,468,557.12 Cr
28NOV12	BGC	R B S-SP DISTRIBUT BGC LOW CARBON NETWORK			27,500.00	4,496,057.12 Cr
28NOV12	BGC	R B S-SP MANWEB BGC LOW CARBON NETWORK			39,166.67	4,535,223.79 Cr
07DEC12	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00361		869,182.89		3,666,040.90 Cr
19DEC12	DNT	GROSS CREDIT INTEREST			4,635.39	3,670,676.29 Cr
21DEC12	F/FLOW	SCOTTISH HYDRO-ELE F/FLOW			19,166.67	3,689,842.96 Cr
27DEC12	F/FLOW	WESTPOWSWEST F/FLOW			117,500.00	3,807,342.96 Cr
27DEC12	CHGS	ACCOUNT CHARGE		3.20		3,807,339.76 Cr
28DEC12	CR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00371			292,416.67	4,099,756.43 Cr
28DEC12	F/FLOW	SP MANWEB PLC F/FLOW			39,166.67	4,138,923.10 Cr
28DEC12	F/FLOW	SP DISTRIBUTION LT F/FLOW			27,500.00	4,166,423.10 Cr
28DEC12	BGC	LONDON POWER NETWO BGC LOW CARB NETWORKS			59,166.67	4,225,589.77 Cr
28DEC12	BGC	SOUTH EASTERN POWE BGC LOW CARB NETWORKS			58,333.33	4,283,923.10 Cr
28DEC12	BGC	EASTERN POWER NETW BGC LOW CARB NETWORKS			45,833.33	4,329,756.43 Cr
28DEC12	BGC	NORTHERN ELECTRIC BGC LCNF			59,166.67	4,388,923.10 Cr
28DEC12	BGC	NORTHERN ELECTRIC BGC LCNF			40,833.33	4,429,756.43 Cr
16JAN13	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00382		829,445.57		3,600,310.86 Cr
24JAN13	F/FLOW	SCOTTISH HYDRO-ELE F/FLOW			19,166.67	3,619,477.53 Cr
25JAN13	F/FLOW	WESTPOWSWEST F/FLOW			117,500.00	3,736,977.53 Cr
28JAN13	CR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00387			292,416.67	4,029,394.20 Cr
28JAN13	F/FLOW	SP DISTRIBUTION LT F/FLOW			27,500.00	4,056,894.20 Cr
28JAN13	F/FLOW	SP MANWEB PLC F/FLOW			39,166.67	4,096,060.87 Cr
28JAN13	BGC	LONDON POWER NETWO BGC LOW CARB NETWORKS			59,166.67	4,155,227.54 Cr
28JAN13	BGC	SOUTH EASTERN POWE BGC LOW CARB NETWORKS			58,333.33	4,213,560.87 Cr
28JAN13	BGC	EASTERN POWER NETW BGC LOW CARB NETWORKS			45,833.33	4,259,394.20 Cr
28JAN13	BGC	NORTHERN ELECTRIC BGC LCNF			59,166.67	4,318,560.87 Cr
28JAN13	BGC	NORTHERN ELECTRIC BGC LCNF			40,833.33	4,359,394.20 Cr
07FEB13	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00397		593,252.91		3,766,141.29 Cr
22FEB13	F/FLOW	SCOTTISH HYDRO-ELE F/FLOW			19,166.67	3,785,307.96 Cr
25FEB13	F/FLOW	WESTPOWSWEST F/FLOW			117,500.00	3,902,807.96 Cr
28FEB13	CR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00406			292,416.67	4,195,224.63 Cr
28FEB13	BGC	LONDON POWER NETWO BGC LOW CARB NETWORKS			59,166.67	4,254,391.30 Cr
28FEB13	BGC	SOUTH EASTERN POWE BGC LOW CARB NETWORKS			58,333.33	4,312,724.63 Cr
28FEB13	BGC	EASTERN POWER NETW BGC LOW CARB NETWORKS			45,833.33	4,358,557.96 Cr
28FEB13	BGC	NORTHERN ELECTRIC BGC LCNF			59,166.67	4,417,724.63 Cr
28FEB13	BGC	NORTHERN ELECTRIC BGC LCNF			40,833.33	4,458,557.96 Cr
28FEB13	BGC	R B S-SP DISTRIBUT BGC LOW CARBON NETWORK			27,500.00	4,486,057.96 Cr
28FEB13	BGC	R B S-SP MANWEB BGC			39,166.67	4,525,224.63 Cr

**ELECTRICITY NWL NO.11 LCNF (C2C) (GBP)**

Date	Type	Narrative	Value Date	Payments	Receipts	Balance
18MAR13	DR	LOW CARBON NETWORK ELECTRICITY NWL NO.4 PYMT TRANSFER 00408		512,079.14		4,013,145.49 Cr
10MAR13	INT	GROSS CREDIT INTEREST			4,951.49	4,018,096.98 Cr
12MAR13	F/FLOW	SCOTTISH HYDRO-ELE F/FLOW			19,166.67	4,037,263.65 Cr
15MAR13	F/FLOW	WESTPOWSWEST F/FLOW			117,500.00	4,154,763.65 Cr
16MAR13	CHGS	ACCOUNT CHARGE		3.21		4,154,760.44 Cr
18MAR13	CR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00416			292,416.67	4,447,177.11 Cr
18MAR13	BGC	LONDON POWER NETWO BGC LOW CARB NETWORKS			59,166.67	4,506,343.78 Cr
18MAR13	BGC	SOUTH EASTERN POWE BGC LOW CARB NETWORKS			58,333.33	4,564,677.11 Cr
18MAR13	BGC	EASTERN POWER NETW BGC LOW CARB NETWORKS			45,833.33	4,610,510.44 Cr
18MAR13	BGC	NORTHERN ELECTRIC BGC LCNF			59,166.67	4,669,677.11 Cr
18MAR13	BGC	NORTHERN ELECTRIC BGC LCNF			40,833.33	4,710,510.44 Cr
18MAR13	BGC	R B S-SP DISTRIBUT BGC LOW CARBON NETWORK			27,500.00	4,738,010.44 Cr
18MAR13	BGC	R B S-SP MANWEB BGC LOW CARBON NETWORK			39,166.67	4,777,177.11 Cr
10APR13	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00425		513,672.02		4,263,505.09 Cr
16MAY13	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00445		249,902.11		4,013,602.98 Cr
11JUN13	DR	ELECTRICITY NWL NO.4 PYMT TRANSFER 00461		202,350.07		3,811,252.91 Cr
12JUN13		Value of Credits (94)			6,845,798.20	
12JUN13		Value of Debits (14)		5,442,446.07		
12JUN13		Closing Ledger Balance				3,811,252.91 Cr
12JUN13		Closing Cleared Balance				3,811,252.91 Cr

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