



Respond

Engaged Customer Panel Lessons Learned Report

30 October 2015



RESPOND

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VERSION HISTORY

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GLOSSARY

AC	Alternating current
C ₂ C	Capacity to Customers (second tier ENWL project)
CEP	Customer engagement plan
CLASS	Customer Load Active System Services (second tier ENWL project)
CHP	Combined heat and power
DSR	Demand side response
DG	Distributed generators
DNO	Distribution network operator
DUoS	Distribution use of system
ECP	Engaged customer panel
EHV	Extra high voltage
ENWL	Electricity North West Limited
FAQ	Frequently asked questions
FCL service	Fault Current Limiting service
FLA tool	Fault Level Assessment tool
GB	Great Britain
HV	High voltage
HTML	Hyper Text Markup Language
I&C	Industrial and commercial
ICQS	Interviewer Quality Control Scheme
LCN Fund	Low Carbon Networks Fund
MRS	Market Research Society
NGET	National Grid Electricity Transmission
NMS	Network management system
Q&A	Question and answer
SDRC	Successful delivery requirement criteria
SSEG	Small scale embedded generators
STOR	Short-term operating reserve

1 FOREWORD

This report is submitted as part of the Electricity North West Respond second tier Low Carbon Networks Fund (LCN Fund) Project.

The Respond Project seeks to demonstrate the viability and effectiveness of near real time fault level assessment and adaptive mitigation techniques to overcome fault level challenges faced by distribution network operators (DNOs).

The analysis therein is derived from a customer engagement methodology submitted as part of the Respond customer engagement plan (CEP) which was designed by Electricity North West and its specialist market research provider, Impact Research. The key findings form part of the Project dissemination and specifically reference the learning from two phases of strategic qualitative market research carried out with an engaged customer panel (ECP).

A subsequent report will be published in May 2017 which will summarise the learning from a customer survey, developed as part of this process. The survey will test whether a viable market exists for a new commercial solution to the fault level problem and will determine the optimal price point thereby providing a route to market.

The proposed solution will require industrial and commercial (I&C) demand and generation customers to operate their equipment so that they can offer fault level mitigation services as part of a managed service agreement. The customer engagement will ascertain the prices at which customers are willing to engage in Fault Current Limiting service (FCL service) contracts and deliver new commercial templates for purchasing such a service.

Electricity North West welcomes this report and recommends it to all LCN Fund stakeholders. This report and related learning material has been published on the Project [website](#).

2 EXECUTIVE SUMMARY

2.1 Background and business objectives

As Great Britain (GB) moves to a low carbon future, demand for electricity is expected to increase significantly with some inevitable increase in fault levels on the distribution network. Respond is an innovative solution to managing 'fault current', the instantaneous surge of electrical energy which may occur under fault conditions.

Respond uses an intelligent Fault Level Assessment Tool to calculate potential fault current in near real time, in combination with two new technical solutions, and an innovative commercial concept: a provider-managed FCL service to be purchased by current and prospective customers with large alternating current (AC) rotating electrical equipment, such as generators and motors. The FCL service actively manages fault current, in the event of a fault, by remotely constraining the partner companies' generators or motors thereby reducing the flow of current onto the network.

A key premise of Respond is that the Method enables a market for the provision of a commercially viable FCL service. To assess the commercial appetite for this solution, a robust customer survey will be conducted to establish if customers' find the technique appealing and if so, at what price point. Following the customer survey and analysis, the Project team will seek up to five I&C demand and generation customers to trial the technical and commercial elements of the FCL service. The customer survey and the Trial are not restricted to pre-selected Trial sites.

The FCL service is the only Respond Method requiring customer validation, and is therefore the focus of this customer research.

2.2 Customer engagement objective

To test the appetite for "*the provision of a commercially viable FCL service*", a two stage programme of customer engagement was developed:

Initially, an ECP was convened to review and test both FCL service communication materials and a customer survey instrument. The analysis of this ECP addresses three key questions:

- Which materials are most effective in engaging customers about Respond?
- Which key components of the FCL service need to be communicated to customers?
- How can learning from the ECP be utilised effectively to design and implement a customer survey to test the Respond hypothesis?

The second stage will involve the administration of a customer survey, comprised of a representative cross-section of I&C demand and generation customers. The survey sample will be reflective of the customer base potentially able to provide a commercial FCL service.

The key findings from the ECP are documented in this report and include the customer engagement activities, methodology, analysis protocols and conclusions.

Conclusions from the ECP will be incorporated into Respond materials and will influence consultation communication with customers ensuring the Respond premise is described effectively and clearly for customers participating in the customer survey and subsequent FCL service Trial.

2.3 Research approach

Strategic qualitative research was undertaken with an ECP to identify customers' perceptions of Respond and the FCL service, as well as to establish how to best communicate the

project. The ECP was comprised of eight I&C demand or generation customers employed in relevant job roles at organisations potentially eligible to provide an FCL service.

Impact Research, a Respond Project Partner and independent market research agency, managed both the recruitment of the ECP and the moderation of the focus groups. All research was carried out according to the standards of the Market Research Society (MRS) Code of Conduct.

Initially, a 90 minute focus group introduced the Respond concept and obtained feedback on a range of communication materials. The panellists subsequently tested the online quantitative customer survey at their home or place of work. Finally, a 90 minute group discussion elicited feedback on the survey instrument and the revisions made to the communication materials.

This phased approach was part of a deliberate strategy to educate customers and understand their comprehension of Respond and the FCL service.

2.4 Summary of key findings

2.4.1 Which materials are most effective in engaging customers about Respond?

A range of communication material is required, with a breadth of technical complexity, to address the varying needs of customers and their differing business challenges. The range of materials evaluated by the ECP was deemed appropriate to satisfy these diverse requirements. A water analogy ([Appendix D](#)) served as a good introduction to the Project, especially for those without a technical or engineering background. The concept board was perceived as a valuable Project summary for those at board level. The FCL service video, once enhanced based on feedback at the first ECP meeting, was useful to disseminate the technical detail on a primary level.

A Project Frequently Asked Questions (FAQ) document ([Appendix E](#)) was produced to satisfy the ECP's desire for more detailed information concerning the FCL service specification and to aid survey recruitment.

There was a general appreciation among this I&C audience of whom Electricity North West are and how the electricity industry is structured. As such, this was included only at a basic level in communication materials.

2.4.2 Which key components of the FCL service need to be communicated to customers?

To maximise customer engagement, care should be taken to outline the objectives of the Respond customer survey in communication materials and distinctly differentiate it from a sales and marketing exercise.

There was some initial confusion between Respond and other commercial load shedding or demand side response (DSR) arrangements, and propositions such as short term operating reserve (STOR). To address this, a new document was produced that clearly defined Load Shedding, DSR and STOR. It was also emphasized across all communication materials that Respond is an entirely new commercial proposition.

Whilst there was a general acceptance of the need for active fault management, in response to scepticism towards the scale and urgency of the problem felt by the ECP, additional information was added around the predicted increase in small scale embedded generators (SSEG).

The ECP had an appetite for more detailed information about the FCL service and how it would work in practice, for example how many times a year motors or generators would be constrained, what motor size would be in scope, how the remote constraining of equipment

would be implemented etc. This level of detail was subsequently included in the Project FAQ, which the ECP perceived as a useful supplement to the video. The video itself was amended based on the feedback obtained at the first ECP meeting, with the visuals enhanced to more clearly indicate fluctuations in fault level on the network under different scenarios, and additional information included about why and when the FCL service would be activated.

In response to queries raised around levels of compensation and risk and network resilience, it was clarified in all communication materials that customers interested in taking part in an FCL service Trial would be engaged in detailed and comprehensive technical and commercial negotiations. Due to the inherent appeal of the financial rewards available, this benefit was referenced in all communication materials per se, though it was made explicit that the actual compensation level will be determined based on findings from the customer survey and one to one meetings between prospective Trial participants and Electricity North West.

2.4.3 How can the learning from the ECP be utilised effectively to design and implement a customer survey to test the Respond hypothesis?

The ECP provided crucial feedback about technical difficulties in accessing, navigating and being unable to complete the pilot survey. The survey was re-programmed in a more universally compatible Hyper Text Markup Language (HTML-5) and the ability for participants to pause the survey and re-enter at the point of exit, at a later date/time was incorporated. Two versions of the survey were produced, one with the FCL service video embedded and one without; the survey screener was modified to determine customers' IT capabilities when commencing the survey, allowing the selection of the most appropriate version.

The ECP also provided substantial, but mixed, feedback about the survey content, general understanding, appropriateness and clarity of some questions. Question language and placement in the survey was optimised to encourage completion. Superfluous questions were removed.

Although familiar with the Respond concept at the point of completing the pilot survey, the ECP felt unable or lacked the confidence to answer some of the survey questions posed regarding commercial components. Additional probing at the survey recruitment stage will now identify the most appropriate person to speak to in each organisation, so that they are able to provide a comprehensive and fully informed perspective or suggest an appropriate colleague to complete the survey and provide the desired commercial and/or technical perspective.

2.4 Conclusions

The ECP concluded that there were an appropriate range of communication materials to satisfy the differing needs of stakeholders.

The Respond project was generally understood, particularly as conversation evolved and panellists were exposed to more information about Respond and the FCL service.

Revisions were made to communications material to:

- Clarify survey recruitment objectives
- Outline important details about how and when the FCL service would operate (Project FAQ and video)
- Address any potential areas of confusion (ie visuals used in the video and analogy).

Feedback on the survey instrument was valuable in optimising accessibility, content and comprehension.

The learning from the ECP has been exploited to enhance the survey recruitment materials, as well as the survey instrument itself, which will in turn provide the evidence required to test the commercial appetite for an FCL service.

3 BACKGROUND & OBJECTIVES

3.1 Project background

The Respond Project is funded by Ofgem's LCN Fund second tier funding mechanism. Electricity North West Limited received formal notification of selection for funding on 24 November 2014. The Project will run for 46 months, starting in January 2015 and finishing in October 2018.

As GB moves towards a low carbon future, demand for electricity is expected to increase significantly and this will inevitably increase fault levels on electricity distribution networks. The Respond Method seeks to introduce an innovative approach to managing fault current, the instantaneous surge of electrical energy which occurs under fault conditions. Respond is an innovative solution to that problem, which is faster and cheaper to apply than traditional reinforcement techniques, resulting in significant cost savings by maximising the use of existing assets to defer or prevent the need for reinforcement and speed up the connection of low carbon demand and generation.

Respond will deliver a Fault Level Assessment Tool which calculates potential fault current in near real time and then utilises one of three innovative techniques, two technical and one commercial, designed to manage fault current safely.

To demonstrate the applicability of the Respond Method, the two technical fault level mitigation techniques being trialled will be deployed at seven primary substations (high voltage (HV) 6.6kV and 11kV) and two bulk supply point substations (extra high voltage (EHV) 33kV) involving around 105,000 customers. These town and city locations will demonstrate the technical solution on networks with a differing range of characteristics and load patterns that include distributed generation. Additionally, substation type; age and protection category along with fault history and fault level was considered in the site selection criteria to ensure that the Trial results are representative of the GB population.

The third Respond technique being explored will test the commercial appetite for a managed FCL service purchased from connected and potential new customers with large AC rotating electrical equipment ie generators and motors.

Respond offers additional value to all distribution use of system (DUoS) customers by demonstrating that fault current can be managed a lower cost by maximising the use of existing assets and using new commercial techniques, thus allowing for significant cost savings from deferment or prevention of reinforcement. The solution will also speed up the connection of low carbon demand and generation. This concept is similar to the Capacity to Customers (C₂C) project which also tested the willingness of I&C demand and distributed generators (DG) customers to provide a service to Electricity North West.

3.2 Customer engagement objectives

The FCL service is the only Respond Method requiring customer validation, and is therefore the focus of our customer research. The Respond project seeks to prove one customer hypothesis which is critical to the Trial:

The Method enables a market for the provision of a FCL service.

To test this hypothesis, a range of customer engagement activities will be undertaken during the life of the Project. Key amongst these will be convening an ECP to test, review and refine

FCL service communications materials and the customer survey instrument. These materials will be utilised to establish the appetite among existing and potentially new I&C customers to engage in FCL service contracts and ascertain the price at which they are willing to engage. The survey will also be key in identifying customers who have expressed an interest in discussing and may subsequently agree to FCL service provision during the Trials phase, at an agreed price.

Throughout the Respond Project a number of learning outputs will be generated. The sharing of these outputs will allow any other DNO to quickly and effectively implement the Respond Solution.

The key customer learning outcomes are:

- **Customer engagement:** Respond will provide new information on how to best engage with customers for this service and share with the DNO community the most effective route to market for these new commercial arrangements. This learning will help frame propositions to both new connections customers and existing customers and will inform how DNOs can best include customers in the running of the network.
- **FCL service price and contracts:** Respond will test the willingness of customers to engage in FCL service contracts. During the customer survey the Project team will establish the appetite among new and existing customers to engage in fault current limiting contracts and will also ascertain the prices at which customers are willing to engage. Respond will deliver new commercial templates for purchasing FCL service agreements.

This report disseminates the key findings from the ECP meetings and their implications for the subsequent phases of customer engagement.

3.3 Customer impact

Large AC electrical machines such as motors or generators can contribute significantly to fault current. The Respond Method will trial the rapid disconnection of such machines when a network fault occurs to reduce the network fault current. In common with the technical solutions, the network management system (NMS) will communicate with the protection system (circuit breaker) but on a customer's AC machine and set it to automatically disconnect should a fault occur. Where possible, the Adaptive Protection for electrical machines will use the existing AC machine's protection and trip the customer's motor or generator circuit breaker to enable the FCL service. The Fault Level Assessment Tool and NMS will instruct the protection to enable its setting at times of higher fault level to ensure that the contribution from the machine is disconnected only in the event of a fault occurring at those times.

The FCL service managed agreement will allow Electricity North West to remotely and rapidly constrain large AC machines operated by I&C customers who agree to provide the managed service. Disconnecting the generator or motor for just a few minutes, in the event of a network fault, when fault level is high, will remove its contribution to fault level and allow Electricity North West to manage fault current safely. Where a customer agrees to provide a FCL service, it will be necessary to install new technology on customers' equipment in their premises.

The operation of new fault level mitigation equipment will have no impact on the quality or reliability of supply to the wider customers on the Trial circuits.

3.4 Objectives met

Research activities undertaken within the remit of the ECP were considered to be successful. The engagement identified the most effective method of communicating Respond in a simple manner to customers and assisted in optimising the survey instrument.

The table below shows how criteria one and two of the Successful Delivery Reward Criteria (SDRC) have been met during the course of the Project to date.

Figure 3.1: SDRC customer engagement requirements of the Respond Project

Criterion	Required Evidence	Actual Evidence
1. Develop the customer engagement plan and data privacy statement	1. Send the customer engagement plan and data privacy statement to Ofgem by June 2015;	1a. Customer engagement plan 1b. Data privacy statement
2. Design, create and test the customer survey materials using an ECP	2. Deliver ECP workshop by September 2015, lessons learned from testing customer survey materials incorporated into survey and all survey materials published on the Respond website by October 2015	
3. Deliver the customer survey and report findings	3. Publish customer survey report and information for customer evaluation of FCL service provision on Respond website by May 2017	
4. Develop appropriate commercial arrangements and contract templates for FCL service	4. Publish contract templates for FCL service with new and existing customers and commercial arrangements learning by May 2018	

4 CUSTOMER ENGAGEMENT METHODOLOGY

This section of the report provides information on the customer engagement methodology employed to test the hypothesis referred to in section 3.

The research approach referenced within this document was submitted as part of Electricity North West's Respond CEP which was published on the [Respond website](#) on 17 June 2015.

4.1 Qualitative and quantitative research methods

A mixture of qualitative and quantitative research methods will produce the evidence required to evaluate the customer hypothesis.

Qualitative research is primarily exploratory by nature and employed to acquire an understanding of underlying reasons, opinions, and motivations. It provides insights into a problem or helps to develop ideas or hypotheses for potential quantitative research. Quantitative research is a more logical and data-led approach which provides a measure of customers' perceptions from a statistical and numerical point of view.

This report is principally focused on the qualitative stage of research whereby an ECP was convened. However the materials evaluated by the ECP were also designed to assist with the execution of the quantitative stage.

4.2 Objectives of the ECP meetings

The overall objective of the ECP was to test Respond communication materials to maximise their effectiveness, suitability, applicability and to ensure that the Method was described in an understandable manner. Any learning generated from this exercise would be particularly pertinent to customers taking part in the customer survey and subsequent FCL service Trial.

The primary objective of the communication material is to support a customer survey in explaining Respond and more specifically the FCL service, in an effective and engaging manner, and to summarise eligibility criteria for the Trial.

A key learning from convening ECPs in previous second tier LCN Fund Projects C₂C, Customer Load Active System Services (CLASS) and Smart Street was that a staged and gradual approach to sharing information and testing the communication materials will enable the Project’s messages and outcomes to reach the target audience effectively. To adequately test communication materials an exploratory methodology was required that would elicit a deeper understanding of customers’ perceptions of Respond.

A professional, independent moderator asked the ECP semi-structured questions linked to a pre-defined list of discussion topics. This format gave the moderator the flexibility to question participants further on issues arising through open discussion which fostered the natural evolution of the ECP’s understanding of the Respond technique and its likely benefit to customers.

The first stage of the ECP consisted of a 90 minute focus group discussion designed to introduce Electricity North West and Respond followed by a review of draft communication materials. Following this initial meeting, panellists were asked to test a pilot version of the online customer survey in their own time, in line with how the actual customer survey will be administered.

Feedback from the first group discussion was used to enhance the communication materials. The enhanced materials were then re-presented to the group during the second 90 minute focus group discussion, to identify if there had been an improvement in their clarity and quality. Panellists also provided valuable feedback on the customer survey instrument at this second group discussion, highlighting any technical issues encountered, difficulties in comprehension and potential areas missing from the question set.

The key objectives and learning for each of the ECP meetings are listed in Figure 4.1.

Figure 4.1: Objective of each ECP meeting

ECP meeting	Research objective
ECP meeting one	<p>Which materials are most effective in engaging customers about Respond? Which key components of the FCL service need to be communicated to customers?</p> <ul style="list-style-type: none"> ● Introduce Electricity North West, Respond and establish customer perceptions and understanding of the concept. ● Ascertain the most effective way of communicating Respond to customers by appraising the following communication materials: <ul style="list-style-type: none"> ○ Respond question and answer (Q&A) sheet ○ Problem statement ○ FCL service video ○ Analogy ○ Concept board.
ECP meeting two	<p>How can learning from the ECP be utilised effectively to design and implement a customer survey to test the Respond hypothesis?</p> <ul style="list-style-type: none"> ● Feedback on the draft customer survey ● Re-evaluate communication material(s) optimised after ECP meeting one

4.3 Membership of the ECP

The ECP comprised of a cross-section of eight I&C demand and generation customers representing a range of industry sectors who were from organisations with sites based in close proximity to the ECP meeting venue in Greater Manchester.

The operation of new fault level mitigation equipment will have no impact on the quality or reliability of supply to domestic customers. As such and given that Respond is a technically complex Project, there was no direct engagement necessary with domestic customers.

I&C participants were selected to reflect the target customer base and were therefore employed in relevant senior technical and commercial roles from organisations that could potentially meet the criteria to provide a commercial FCL service. Characteristically this meant that the organisation already owned or operated generators or motors with a capacity between 500kW and 15MW or a combination of asynchronous motors connected to a common circuit breaker within this range. These customers' operational sites were also fed by networks between 6.6kV to 33kV. Participants had responsibility for managing, maintaining or financing the electrical equipment of interest and were asked to represent the views of their organisation as accurately as possible during the ECP.

Due to the relatively small proportion of I&C organisations in the North West region likely to meet the eligibility criteria for the FCL service and the exploratory nature of the research objectives, it was sufficient to convene just one group of customers. Greater Manchester was selected as a convenient central meeting point and customers meeting the above criteria were identified from Electricity North West's records and asked to take part. Only customers that were available and willing to take part in both ECP meetings were recruited due to the importance of appraising the evolving communication materials in a subsequent meeting.

The recruitment of the ECP and moderation of focus groups was conducted by Impact Research, an independent market research agency. All research was carried out in accordance with the professional standards set out in the MRS Code of Conduct.

4.4 Frequency of meetings and attendance

The ECP met face to face on two separate occasions between September and October 2015. In-depth feedback on evolving Respond communication materials was provided at both sessions.

Figure 4.2: ECP meeting dates

Meeting	Date
ECP meeting one	16 September 2015
ECP meeting two	7 October 2015

The meetings lasted approximately 90 minutes each, and were facilitated by an accredited Interviewer Quality Control Scheme (ICQS) qualitative moderator.

Based on typical market research protocol, it was anticipated that across the two meetings the attrition rate of customers no longer wishing to participate would be approximately 10%. Therefore ten customers were recruited to take part in each ECP meeting, on the basis that eight would participate. This allowed sufficient mitigation for non-attendance.

In between the two face-to-face meetings panellists completed a pilot version of the quantitative online customer survey in their own time.

4.5 Incentivisation

Customers were offered a cash incentive of £70 for attending each ECP meeting. This incentivisation level was recommended by Impact Research, based on its previous experience of customer recruitment in similar activities. Customers were required to sign a claim form to document receipt of the payments and could elect to make an equivalent donation to a registered charity of their choice, if preferred.

In addition, panellists who completed the pilot survey received an additional £25 incentive, in the form of a shopping voucher or charitable donation (in line with the incentive available to respondents in the main quantitative survey).

4.6 Required modifications to the planned approach during the course of the Project

No changes were required to the planned approach.

5 KEY FINDINGS

This section of the report disseminates the key findings of the ECP, as summarised in the executive summary (section 2.4), with greater granularity.

The analysis answers three key questions:

- Which materials are most effective in engaging customers about Respond?
- Which key components of the FCL service need to be communicated to customers?
- How can the learning from the ECP be utilised effectively to design and implement a customer survey to test the Respond hypothesis?

Feedback regarding the communication materials is summarised via a number of key insights, followed by any action taken as a result of the consultation.

5.1 Which materials are most effective in engaging customers about Respond?

This sub-section of the key findings disseminates the lessons learned during the first ECP meeting convened to elicit customers' general understanding of the Respond concept using communication/stimulus materials designed for this purpose. It lists the most effective of the various materials shared with customers and outlines how and why they improved customer understanding of the Project.

5.1.1 A FAQ document serves as a useful explanation of Electricity North West's role as a DNO and will support engagement with customers outside of its footprint

Insight

In Electricity North West's previous second tier LCN Fund Projects, CLASS, C₂C and Smart Street, a key learning outcome was that participants, particularly domestic customers, were unfamiliar with Electricity North West and struggled to understand the role of the DNO in the electricity industry. This obstacle initially required a comprehensive briefing exercise to explain the identity and role of Electricity North West. Only then were participants able to understand the challenges facing the energy sector and fully comprehend Project awareness material. A Q&A leaflet format was used in previous Projects to provide information about Electricity North West and the structure of the electricity industry. This was issued to participants prior to the first ECP meetings.

The Respond ECP were sent a similar Q&A briefing document prior to the initial meeting. However, by comparison with previous project ECPs, they appeared to be much more familiar and comfortable with the content in terms of:

- Electricity North West's role and responsibility
- How DNOs differ from National Grid Electricity Transmission (NGET) and electricity suppliers
- Challenges faced by the energy sector in a low carbon future, why the Respond Project was needed and how it could make more effective use of existing assets/ infrastructure.

Action

The level of detail provided in the standalone Q&A document (Appendix 8.2) was considered superfluous for I&C customers employed in senior/ technical roles, already aware of issues around the security of supply to their respective organisations. Given the need to capitalise from customers' review of communication materials and maintain interest in the Respond Project, a more concise summary of the background information was considered more prudent. In common with the strategy adopted for the CLASS survey, a Project FAQ document was subsequently drafted which provided pertinent summary information.

The Project FAQ is expected to serve as a useful briefing document during the early stages of customer survey recruitment and was therefore designed to enhance customers' understanding of the FCL service concept by providing information about the scope of the Project. It also clarified that the survey is open to all relevant customers in GB, but explains why the live Trial is restricted to customers operating within the North West.

A supplementary document provided information to reassure the ECP and potential survey participants that the customer engagement exercise is genuine, explained the nature of the market research and differentiated it from direct marketing.

5.1.2 FCL service communication materials must include an appropriate amount of technical detail

Insight

The majority of ECP participants were technically minded, from mechanical or electrical engineering backgrounds, with responsibility for managing, maintaining or financing large AC electrical equipment within their respective organisations.

The mechanical engineering contingent generally grasped the FCL service concept, but felt that the information provided was too complex and commented that it was likely to have been written by an electrical engineer. The implication of this observation was the risk of overestimating what other I&C customers, from non-electrical engineering roles, might typically understand.

Encouragingly, as the conversation evolved, general understanding of the FCL service increased in this group. Observing the natural flow of conversation between participants and the terminology they used to interpret the Respond concept aided the refinement and development of communication materials (refer to section 5.2 for further details of the changes made to communication materials).

Conversely, the electrical engineers in the group felt the information presented was insufficient and asked more specific questions regarding how the FCL technology would work when the constraint on equipment was activated and the mechanics of how their equipment might be constrained remotely.

The overwhelming concern, which was common to all participants, was that of risk to equipment and general security of supply. The panel reached a consensus that more informative material regarding both network resilience and how the technology will work is required to allow informed responses and placate risk-averse organisations.

Action

Information in communication materials needs to be pitched appropriately to facilitate effective engagement and stimulate participation in the customer survey and potentially the subsequent Trial. There is a need for a range of communication materials, which balance the varying levels of technical complexity required by a diverse range of organisations represented by employees from differing technical and commercial backgrounds.

Customer information requirements are likely to be influenced by the nature of their business, specific processes along with their exposure to attitude to risk. The organisations processes and protocol in negotiating new commercial agreements is also likely to be influential, in addition to the individuals own experience, expertise and educational preferences. Consequently, the Project team's decision to not adopt a 'one size fits all' approach for educating customers about a technically complicated concept like Respond was validated.

The broad range of communication materials evaluated by the ECP was deemed appropriate to satisfy the differing requirements of the target audience, with the caveat that improvements were made to provide greater clarity, avoid misconceptions and address unanswered questions. It was acknowledged that this would be achieved by agreeing elements of the FCL service which should be highlighted in the communication material (section 5.2).

The ECP also made valid suggestions regarding the order in which communication materials are shared with other customers, to explain the concept as effectively as possible and avoid confusion. The analogy, which likened the electricity distribution network to that of the water network, was regarded as valuable in simply explaining fault current, particularly to participants without a background in electrical engineering. Given the effectiveness of the analogy, the ECP recommended that it is introduced to other customers early in the engagement process.

A concept board succinctly summarised the problem statement, how the FCL service attempts to address that Problem and why customers should care ('what's in it for me?'). Presenting new concepts in this format is an established method in market research for eliciting actionable feedback. The concept board was also positively evaluated by the ECP as a useful one page summary of the Respond Project for those needing just a high level overview. Participants considered the concept board to be an important document for communicating the concept more widely within their own organisation, for instance at board level.

In its initial format, the FCL service video was not sufficiently clear to the ECP, caused some confusion and generated a number of questions, including:

- What type of equipment would be disconnected under a FCL service agreement?
- How often would the FCL service result in the disconnection of supply or equipment and for how long?
- What would be required in terms of on-site installation?

The complex nature of text and graphics contained within the video was generally found to be confusing. The speed at which the information was delivered throughout the video was considered too quick to digest in light of the complexities of the subject matter. However, the ECP agreed that with some targeted improvements, the FCL service video had the potential to effectively demonstrate the complicated technical concept, providing a good visual alternative to the proposed Project FAQ. It was generally accepted that the suggested refinements would also better illustrate the more technical aspects of the technique and achieve greater understanding than might be accomplished by a written document, in addition to highlighting the benefits of taking part.

5.2 Which key components of the FCL service need to be communicated to customers?

This sub-section of the key findings appraises the effectiveness of specific elements of information contained with the various communication materials. The focus of this appraisal is to determine the elements that assisted or hindered the explanation of the FCL service to customers. It outlines what actions were taken as a result of the customer consultation.

5.2.1 Participants should be reminded of the genuine nature of the customer consultation exercise to avoid it being interpreted as a pure sales and marketing exercise

Insight

The ECP's general perception, which was either pre-conceived or formed early on in the engagement process, was that the Respond communication materials were designed to fulfil a sales and marketing objective, as opposed to a pure research function. The purpose of the customer survey was not immediately apparent to the participant or indeed what the benefits of an FCL service would be to the customers' respective organisation and the wider target I&C community of HV connected customers. The consensus amongst the ECP was that the financial benefits would be the key motivator to sign up; therefore further detail was required on the likely payment structure.

Action

Communication materials were amended to provide more specific detail about what would be required from customers during the various stages of engagement. Survey materials were revised to repeatedly emphasise the genuine nature of the market research and the strategic importance of the customer consultation exercise. The aim of the customer survey was clarified (to understand customers' appetite, across a range of I&C sectors, for the FCL service; and to establish the price point at which the FCL service is attractive and viable). The revised materials provide far greater clarity and reassurance that this customer engagement exercise will enable Electricity North West to formulate new commercial templates for purchasing a FCL service and identify industries where the technique might be more favourably received than others.

5.2.2 The FCL service must be clearly differentiated against other commercial load shedding/demand side response (DSR) arrangements

Insight

The ECP initially confused the FCL service concept with other commercial load shedding, DSR and STOR arrangements:

"Reading through this [survey FAQ] I was guessing it is similar to STOR but slightly different"

"I understand this to just be an extension of STOR basically. STOR's been around a number of years".

Some members of the ECP reported having previously been involved in discussions about concepts similar to the FCL service, confusing the technique for other demand side or balancing services. Similar feedback was received from a small number of customers, following publication of newsletters, confirming the need to provide additional clarity.

Action

The Project team had underestimated the general confusion amongst customers around the various commercial services available in the electricity sector to balance supply and demand, and ensure the security and quality of supply. As such, the Project FAQ was modified to

clarify that the FCL service is a new and unique commercial concept, which differs from other commercial arrangements that might be known to customers, such as DSR; STOR; Energy Storage and the Capacity Market. A brief explanation was included about each of the various commercial arrangements to highlight the difference and alleviate confusion. The Project FAQ and survey instrument were also refined to emphasise that customers would not previously have been asked to complete a questionnaire by Electricity North West, or any other company, about Respond and more specifically the FCL service.

It is recognised that organisations outside Electricity North West's footprint might potentially have been approached or surveyed about DSR/STOR etc. by their DNO, NGET or a DSR Aggregator. As such, this was referenced in the communication materials to further reduce the potential risk of confusing the FCL service with other unrelated arrangements previously discussed with third parties.

This briefing document will be included as a hyperlink in other materials accessible online including the customer survey.

5.2.3 Demonstrating the likely causes and impact of fault level in the short term is helpful in conveying and convincing customers of the need for Respond

Insight

A problem statement 'show card' (Appendix 8.2) was designed to educate the ECP about how active fault level management would speed up the connection of low carbon demand and generation, and at a lower cost than traditional reinforcement.

Participants generally understood the problem statement. However, the projected investment required to meet anticipated future electricity demand incited some scepticism linked to an understanding that there have been significant increases in the efficiency of modern equipment and manufacturing processes in recent years. The panellists also referred to the measures that their respective organisations are taking to reduce electricity consumption and their carbon footprint year on year, from replacing heavy plant equipment with more efficient alternatives through to installing LED lighting. Based on personal experience, under current conditions, the ECP considered that the problem statement might be exaggerating the scale of the future challenge.

The ECP participants also collectively felt that Electricity North West and the GB electricity industry as a whole should make a greater effort to work together to address these challenges; failing to fully understand that increased industry costs would be reflected in higher DUoS charges and ultimately significantly more expensive bills:

"You need to be careful it's not a classic isolation thing. The UK isolation. Like you were saying, the other DNOs are doing something else. We should be working together on one solution. Just like local authorities on recycling. Everyone does their own thing".

Action

The text on the show card was optimised in response to scepticism around the scale and urgency of the problem outlined in the statement. This document was also changed to emphasise that 'fault level' will become much more of a significant problem in forthcoming years as more SSEG's are connected to meet the UK's demand for affordable electricity. Consequently, the need for DNOs to find more efficient ways of utilising existing assets to enable customers to quickly and cost effectively connect generation to the network was highlighted.

5.2.4 Fault management is best explained to customers in the context of fault level and scenarios demonstrating when the FCL service could be used

Insight

The range of stimulus materials presented to the ECP sought to avoid the use of jargon and language that might be unfamiliar. The technical background of the participants meant that they typically had some understanding of 'fault current' and this significantly assisted the moderator in conveying the fault conditions under which the FCL service would be applied.

"It's the level of current that could occur if a fault occurs".

However, some phraseology, commonly used in the electricity industry was clearly confusing to the ECP, such as 'Fault Management'. The misunderstanding of this term generated some debate which highlighted confusion about how a FCL service would be implemented. Participants initially failed to grasp that the technique would constrain only specific pieces of electrical equipment, as opposed to the sites entire electricity supply. This element of the discussion underlined that the original communication materials had not only failed to adequately explain what would be constrained but by what means this would be achieved and for what purpose.

"It says 'when a fault occurs, all sources of generation connected to the electricity network contribute to the fault current.' So that to me is saying you're not looking at tripping off people using heavy loads. You're looking to trip off people who are generating to the grid. Is that not right?"

"At the end of the day, they'd say they will only turn off just for a few minutes because it's contributing to the fault. But when switching it back on, it may continue contributing to the fault. So are you then going to keep switching to try and mend the problem?"

Concerns were raised regarding the clarity of the graphics used in the video, specifically those which demonstrated the fault level scenarios under which the FCL service would be activated. The ECP also considered the video's dialogue was too fast given the complexities of the subject matter.

Whilst the simple water analogy ([Appendix D](#)) was positively received, the supplementary information, in the form of stills taken from the video was felt to confuse the message. Changes were suggested to help clarify how the stills could better illustrate the difference between the present fault scenario and a future scenario, when fault current is managed through activation of the FCL service.

Action

All materials were amended to clearly explain and fully define any unfamiliar terms. As the materials will be published online, appropriate links were included to pertinent supportive material when there was a need for supplementary information.

The Project FAQ document was enhanced to better explain terms such as fault management, fault current and fault level. It also provided much clearer and more detailed information about the network conditions under which the FCL service would be activated.

Notably, it was critical to convey to the reader that the FCL service would only affect customers who had entered into a managed agreement with Electricity North West and the refined document also contained more granular detail about various other aspects of the FCL service that the ECP felt was lacking (see section 5.2.5 for further information).

The visuals included in the video and the analogy were enhanced to aid comprehension. Clearer animation, labelling and use of colour was used to depict how the FCL service would operate as follows:

- Labels were added to the diagrams to more clearly identify the electricity assets and customers' plant represented (ie National Grid power station, Electricity North West substation, Combined Heat and Power plant (CHP), circuit breakers and separate load and generation sources in the factory)
- A colour coded dial was included to help illustrate fault level on the network. This demonstrated how increased generation and demand will raise fault level and therefore affect the way fault current would be managed by both traditional reinforcement and the FCL service
- Additional animation helped better demonstrate the flow of both 'normal current' and fault current
- The visuals were improved to more clearly demonstrate the absence of current /loss of supply on the represented network, which had previously been confusing to the ECP
- Directional arrows representing the flow of current were removed from the visuals and replaced with clearer images illustrating the flow of normal current and the constraint of fault current from generators and motors in a factory, on activation of the FCL service.

The video narration was also revisited to help explain the problem and technique more simply and succinctly.

5.2.5 When the Respond concept has been understood customers require more detailed information about the type of equipment of interest, the technology and compensation levels

Insight

The ECP perceived the communication material to be too generic, lacking specific detail required to a) fully understand how the FCL service agreement would work in practise b) make informed decisions about whether the technique might be appropriate for their organisation. The panellists felt the materials failed to address some fundamental principles including:

- For what length of time would generators or motors be remotely shut down? What does a 'few minutes' mean?
- How many times a year would generators or motors be shut down?
- The mechanism for restarting equipment
- What would the indicative payment be?

Communication materials, notably the Project FAQ were amended to address these points in response to the feedback.

Interestingly the FCL service attributes which were of most interest to participants, such as the frequency and duration of constraints and financial benefits, were already considered as key components in the pricing matrix, designed to establish the price point. This implies that customers are quick to identify the key components of prospective commercial templates. ECP feedback also demonstrates that customers expectation of incentives/payments need to be effectively managed in future commercial negotiations, given the substantial level of payment they suggested their respective organisation would require before considering this type of commercial arrangement.

"What's going to be the financial benefits for the company? With this, I'd find it difficult to go to board members and say 'I think we should go ahead with this. We'll try and support it.' Why? Why are you spending so much time on that? It'd be difficult".

"Once you know the figure – just let's say it's a hundred thousand pounds for the year. As a business, you can make a decision either if you've got one generator that starts coughing, well for seventy grand or for a hundred grand or two hundred grand, I can get another generator. Within two years it pays for itself. So you can make a decision then, can't you? But while it's a bit woolly, you can't possibly answer the question".

Action

Additional information concerning risk, reward and frequency was included in the Project FAQ document to address each of the specific queries. The document was also changed to provide far clearer statements explaining that equipment would be constrained for a **maximum of 10 minutes** (rather than a few minutes) and a **maximum of 4 times a year** (rather than a few times a year), unless the fault is directly affecting their part of their network. The FAQ explained that under these circumstances, supply to the whole site would be interrupted and normal restoration/fault repair time would apply.

The customer survey instrument will include a pricing methodology designed to establish the optimal payment that customers require to consider entering into a managed FCL service agreement.

The level of compensation offered to FCL service Trial participants during the live Trial phase of the Project will vary and will be influenced by factors including:

- The maximum generation capacity of the largest generator and/ or the maximum demand capacity of the largest asynchronous motor/ largest set of asynchronous motors connected to a common circuit breaker
- Preference for pay per event of contract vs a guaranteed annual retainer fee
- Any cap on number of contract uses per year
- Length of contract.

The pricing structure for the FCL service Trial will largely be determined by analysis of the customer survey along with subsequent detailed negotiations with specific customers. As such it was not appropriate to publish the indicative payment structure being tested in the communication materials. However, mindful that the financial rewards associated with the technique were likely to be influential in generating customer interest, it was appropriate to explain that organisations would financially benefit from the FCL service. This was referenced by a simple and generic statement, sufficient to stimulate curiosity in the concept.

Eligibility

Insight

ECP feedback highlighted a lack of clarity regarding the type of organisation that may be eligible to take part in a FCL service agreement and the type of equipment an organisation needed to operate to meet the criteria. The ECP specifically queried:

- Would an FCL service agreement apply to generators or 'users' (consumers/demand/load customers) or both?
- What motor size is in scope? The communication materials shared at the initial ECP referred to 'large generators and motors' without any context to define what constitutes 'large'.

Establishing the target audience (ie role within the organisation) for the communication materials/survey; using clear explanations and appropriate language is crucial to nurture interest. Otherwise, there is a risk that the customer will perceive the FCL service as irrelevant to their organisation and disengage.

It is also important to mirror the language used by the ECP to prevent confusion, for example 'demand' customers were referred to as 'users' by the ECP members.

Action

The primary objective of the communication material is to support the customer survey in explaining Respond and more specifically, the FCL service, in an effective and engaging manner, and to summarise eligibility criteria. Therefore, the parameters of what constitutes a

large motor or generator were more clearly defined in all the communication materials with more lengthy but clearer text (any generator or motor between 500kW to 15MW or a combination of asynchronous motors connected to a common circuit breaker, fed by HV networks between 6.6kV to 33kV).

The language used in all communication materials was reviewed and tailored to reflect of the ECP. For example, demand customers were defined in the Project FAQ as users/consumers of electricity supplied from the public distribution network.

Risk

Insight

Risk and relinquishing control of motors/generators by allowing Electricity North West to independently trip the circuit breaker was a significant concern for ECP members. In order to clarify the mechanics of the technique and dispel misconceptions/incorrect assumptions more clarity was sought by the ECP to better understand how the remote constraint of equipment might work and impact their respective organisation:

- Would the technique isolate specific machinery?
- Could different sections of organisations' processes be shut down in a phased manner?
- Could there be parameters set by the customer as to when it would (and would not) be acceptable for machinery to be shut down?

There was also a degree of uncertainty about what, if any, the impact would be on customers' machinery if they were to participate in an FCL service:

- Would there be a requirement to install new equipment, who would be responsible for this technology and what would the financial implications be to the organisation?
- Would Electricity North West need to schedule a site visit to install the equipment?
- What would the impact be, if any, on existing warranties held for specific equipment and who would service the equipment in the future?

Action

The Project FAQ was updated to outline the installation works likely to be required at customers' sites. The document also clearly specified that a FCL service agreement would involve relinquishing some control over specific equipment to Electricity North West, who would, under certain network conditions, have contractually agreed consent and ability to remotely turn off the specific motor/generator defined in the agreement. It explained equipment would be switched off instantaneously and without any prior notice or consultation. The Project FAQ also clarified that it would not be possible for organisations taking part in the Trial to restrict activation of the constraint to specific times of the day or week.

The Project FAQ clarified the specific technical arrangements regarding the installation of new technology and the mechanism to activate the FCL service will differ from site to site, explaining that these considerations will be subject to lengthy technical and commercial negotiations, specific to individual customer's needs.

Risk and resilience

Insight

It was apparent that the ECP's focus was predominantly centred around issues pertaining to risk and resilience, once they had achieved:

- a reasonable understanding of the ‘fault level’ problem that Respond, specifically the FCL service, is seeking to solve
- an appreciation of how the technique works
- the commercial benefits of participation.

“Risk is the biggest thing. Risk to business. Everything comes with a risk so if they’re going to put this on our site, what could be the shortfall of it?”

Action

It was recognised by the ECP and Project team alike that communication materials alone are unlikely to sufficiently provide customers the reassurances around risk that they require prior to completing the survey. Following the survey, lengthy commercial discussions will take place with customers, who meet the requisite criteria and express an interest in taking part in the FCL service Trial. Specific concerns around risk and resilience will form a critical part of the negotiation and due diligence process.

However, based on ECP feedback, it was considered important to include a section in the Project FAQ regarding risk and resilience to acknowledge these concerns at a high level and allow future survey respondents to make considered decisions when completing the questionnaire.

Generic information was therefore included to reassure respondents and meet the objectives of the survey, which emphasised that specific considerations around risk would be addressed with individual customers taking part in the Trial. This section also acknowledged that the FCL service might not be appropriate for certain organisations and industry sectors, where potential impact on operation or processes presented an unacceptable risk. The document explained that the market research would capitalise on these findings to establish which I&C sectors are more open to the technique as a viable and financially beneficial concept.

5.3 How can the learning from the ECP be utilised effectively to design and implement a customer survey to test the Respond hypothesis?

After the first face to face discussion, panellists were asked to complete an electronically administered pilot of the quantitative customer survey. The second focus group meeting sought to establish the view of the ECP in relation to ease of completing the survey and document any technical issues encountered in electronically navigating the instrument. Critically, feedback was elicited to determine panellists’ understanding of the questions presented, their appropriateness and any barriers to the respondent’s ability to provide answers. Other factors discussed were the order of questions, length of survey and quality of supportive materials embedded within the instrument. This section of the report summarises the key insights derived from this consultation and documents the resulting amendments, made to improve the survey’s content, to maximise learning outcomes and the accuracy of results. This section also specifies the changes made before the survey’s launch to improve a) ease of electronically accessing the questionnaire; b) *efficiency in navigating through the screens*.

5.3.1 Technical issues

Insight

It is standard practise within the market research industry to ensure that the survey experience provided to participants is as seamless as possible, to enhance response rates and preserve goodwill. The Respond customer survey experience was evaluated by the ECP to mitigate against any technical problems or incompatibilities which might cause customers additional time, effort, and consequently have a negative impact on survey completion rates.

The ECP reported having experienced some technical difficulties in completing the survey. A minority of panellists were completely unable to access the electronic survey, due to their respective organisations internal firewalls and security protocols. Others reported problems in progressing through the survey to its completion, due to web browser incompatibilities.

“Some incompatibilities. It wouldn’t run properly. I had to refresh it and restart it and it was being patronising saying ‘don’t refresh your browser’.”

Feedback indicated that the survey was easier to complete on a personal computer eg a laptop than other smart devices on which it had been tested, including iPads and an iPhone.

The video, was recognised as an important medium for providing comprehensive information about the FCL service in a visual, engaging and understandable format. However, embedding the video within the survey instrument was questioned by the ECP who expressed concerns about the ability to a) open the survey containing an embedded video b) view/stream the video, given restrictive company IT security policies.

Panellists who attempted to re-access a partially completed survey expressed frustration that they were returned to the start, having to revisit previously answered questions. The ECP also expressed irritation at the inability to scroll back and amend an answer to a previous question.

Action

To rectify the majority of the technical problems experienced by the panellists, the survey was re-programmed in HTML-5; an alternative to Adobe Flash, which is compatible with a wider range of devices, including Apple.

A modification was made to enable customers who had partially completed the survey to recommence at the point of exit, without returning to the beginning.

Two versions of the survey were produced to address compatibility and IT security concerns regarding the FCL service video. One contained the embedded video and one without. customers’ ability to stream videos at their place of work will be established at the survey recruitment stage. Those employed in organisations with restrictive IT systems will be provided with a separate link to the video, which has been uploaded onto YouTube, enabling them to access it on a different device or at an alternative location.

A backward button was **not** added to the survey as this enables customers to manipulate or amend earlier responses based on information in subsequent questions. It is conventional market research practice to order questions, eliciting perceptions tactically, to obtain unbiased responses that may be influenced by information provided at a later stage. Allowing participants to move back and forth whilst completing the survey also increases the potential risk of data capture errors.

5.3.2 Survey length

Insight

Impact Research recommended that the optimum duration of the survey is 20 minutes, which based on its extensive experience, balances the acquisition of relevant information, from thorough questioning, with the avoidance of the survey being too onerous to complete. In practise the ECP reported that the survey took substantially longer than 20 minutes to complete, and considered that the indicative timescale stated at the start was misleading. This response was anticipated during the initial pilot and is likely to have been influenced by; technical issues encountered, some participants completing the survey in multiple sittings; the length of the embedded FCL service video and the ‘contract trade- off’ exercise, which entails the evaluation of 12 separate pairs of FCL service contracts.

The contract trade-off section of the survey presented the respondent with a choice between a pair of contracts containing a range of variables. These variables included: the level of financial reward; the method of calculating the payment (ie per event versus a guaranteed annual payment, regardless of the number of events (constraints to equipment)); contract length, in years; and the maximum number of events (constraints to equipment) per year.

All scenarios were based on the constraint of equipment for a fixed duration of ten minutes. This represents the maximum period of constraint required by Electricity North West, irrespective of the respondents potential 'down time' which is expected to differ significantly between different customers and industry types.

Respondents were asked to select the most appealing of each contract pair, with the aim of the data collected being used to determine:

- An appropriate price point
- Provide an understanding of which contract components are the fundamental drivers in the propensity to select variable FCL service contracts

The ECP collectively reported that this section of the survey was onerous to complete and stated that their expectations had not been sufficiently managed by specifying how many scenarios they would be shown.

Panellists also reported that the progress bar, displayed on each screen of the pilot survey to indicate advancement, moved forward at a very slow rate. There was a concern that this may have an adverse impact on customers' engagement and result in them abandoning the survey, if it was perceived as too long/time consuming to complete.

Action

Questions were labelled numerically, replacing the alphanumerical format applied in the pilot, which meant little to respondents. The total number of questions included in the customer survey was stated in the introductory text. The length of the modified survey was reviewed during the second pilot of the instrument and a more accurate indicator of the time taken to complete has been included in the introductory text of the final survey and supplementary recruitment materials.

The progress bar was removed from the survey instrument. However, in light of comments concerning the length of the contract trade-off section and a need to set appropriate expectations, a similar progression bar was added specifically to this section of the survey. This enables respondents to track their advancement through the task and indicates which of 12 contract scenarios they are currently viewing. (section 5.3.4).

In order to adequately set expectations, the task will also be preceded with additional explanatory text, highlighting the number of paired scenarios which will be presented to participants.

The volume of contract scenarios was maintained at 12. This number was necessary to ensure a design which will provide a statistically robust measure, meeting the requirement of the survey, to reliably test the appetite for the provision of a commercially viable FCL service.

5.3.3 Survey comprehension

Insight

The ECP expressed concern that without an appropriate level of education, akin to that provided to the panellists themselves, other customers may find it difficult to comprehend the more technical elements of Respond, specifically the FCL service, and struggle to complete the survey. Notably, the panel considered this might impact on a respondent's ability to rate the likely uptake of an FCL service by their organisation.

Despite feeling comfortable with the concept of an FCL service, some members of the ECP felt unequipped to answer specific questions which required a greater commercial perspective. There was a general consensus amongst the engineering contingent that it may be sensible to pitch the commercially focused questions towards customers operating at a director level within their respective organisations as opposed to engineering/maintenance managers.

“It’s a mix, isn’t it? There’s some questions that engineers need to answer and you’ve also got some questions that the financially responsible have got to answer”

“Bearing in mind that you’re talking about one plant of a large company, it just felt that I was guessing what the main directors would be saying. The financial directors might give completely different answers”

Action

Customers who are recruited to take part in the survey will need to be shown appropriate supportive materials to ensure they are sufficiently briefed and can contextualise survey questions.

The analogy, Project FAQ and concept board were added to the ‘Introducing the Respond proposition’ section of the survey to provide sufficiently detailed background information for customers to digest, when presented with the subject matter for the first time.

Additional probing at the survey recruitment stage will identify if there is a need for more than one person from within the customers’ respective organisation to complete the survey in order to provide a fully informed organisational perspective, for example a technical expert and a financial decision maker. This inclusive recruitment approach will ensure sufficient data is captured to determine the appetite and price point for an FCL service amongst a representative sample of the target market.

5.3.4 Survey content

Taking action to remove sources of confusion

Insight

Best practise market research protocols dictate that survey instruments should be intuitive to use, enabling customers to provide accurate responses at each question.

The ECP reported some areas of confusion, either with interpreting the question or entering the appropriate response. One such example was a sliding rating scale and cursor which allowed participants to indicate the proportion of time that their generators/motors are typically operating for, as an overall percentage. This was perceived as ambiguous, failing to differentiate between organisations with 24 hour operations and those with an eight hour shift for example.

Panellists were also asked to select the top three barriers and risks concerning the Respond initiative from a pre-defined list. The ECP stated that the requirement to ‘drag’ the top three risks into a rank order was not immediately obvious, and the limit imposed on selecting three barriers was deemed too restrictive.

Both MW and kW were referenced interchangeably in different parts of the pilot survey leading to logical feedback that the units of measurement should be consistent throughout the survey, to prevent any uncertainty or erroneous data capture. Furthermore, a minority of panellists reported they were prevented from entering the correct demand or generation capacity (in kW) of their specific motor/generator or a set of connected motors. This problem resulted in subsequent information in the contract trade-off, which is critical to the survey output, being inaccurate.

“If you think what that says at the end, point five megawatts and 15 megawatts, something with fifteen megawatts is going to put fifteen thousand in that and I tried eleven thousand and it was too big a number. So I just crossed all the noughts off and just put 11, but then when I got onto that, I just thought to myself ‘oh, it’s not right now””

During the recruitment of the ECP, the panellists were asked to supply information about the size/capacity of their respective organisation’s motors/generation. Similarly, prior to the live surveys, a screening exercise will capture this information from potential respondents, ensuring only those meeting the requisite criteria are approached to complete the survey. A generic reference to this information was used in the survey, to provide useful context when completing the contract trade-off exercise. However, this reference caused some concern amongst the ECP, who queried the source of the data.

“It says ‘you have previously told us that your organisation has its own electricity generation capability or CHB combining power motor on-site with a capability of point five megawatts and 15 megawatts’. Where has that information come from”?

The question asking for details of any existing DSR or STOR arrangements was also flagged as an area of potential confusion, especially for those less familiar with such commercial arrangements.

Action

Rating scales were amended and language revised to provide clarity in the areas misunderstood or unclear to the ECP. For example the number of *hours* in a 24 hour period that the relevant equipment is operating will be quantified, in addition to capturing the proportion of that time that it operates at full capacity.

In the question designed to elicit customers’ perceptions of barriers/risks to their company of signing up to the new FCL service, the number of responses allowed was increased. Customers will be able to select five barriers/risks, rather than the previous limit of three. Clearer instructions will also assist respondents in completing this question, explaining their selection from the pre-defined list should be dragged into a ranked position and sorted by the degree of risk.

The survey instrument was also modified so that both units of electrical measurement were presented simultaneously in kW and MW throughout, to avoid any potential for misunderstanding. Restrictions to the maximum capacity size that could be entered were removed and respondents will be able to choose to submit their answer in either kW or MW, with a prompt for them to review their answer before proceeding.

Explanatory text was also added to clearly outline where customer’s capacity data had been sourced (see question example below):

When you agreed to take part in this survey you told us that your organisation (or the organisation that you provide an electricity service for) has its own electricity generation capability or a CHP (Combined Heat and Power) plant and/or a rotating motor or combination of motors, with a capacity of between 0.5MW (500kW) and 15MW (15,000kW).

An optional pop up screen, providing full definitions of commercial Load Shedding/DSR STOR and other commercial contracts was added to assist those in need of additional clarification at this question.

Explaining the need to collect specific data

Insight

Whilst the questions pertaining to ‘Information about your organisation’ were generally found to be easy to complete, panellists questioned the need for this level of granularity.

Some minor amendments were suggested to certain questions in the survey, to allow for more flexible responses, particularly in the customer profiling section (ie the ability to select multiple industry sectors or type of organisation – public sector, private sector, charity).

Action

Additional explanatory text was added to assure customers of the relevance of questions about their organisations, outlining how this data will enable Electricity North West to identify the industry sectors most responsive to the Respond concept.

Answer codes were revised to reflect the potential diversity of each organisation, with the option of selecting multiple responses permitted where necessary.

Simplifying the survey where appropriate

Insight

The concept board, a one page summary of the Respond Project, was embedded in the pilot survey and customers were asked to use an interactive tool to indicate specific words in the text, which they found appealing, then explain why. Similarly they were asked to repeat the exercise to highlight the elements within the concept board that they found unappealing. The ECP expressed both confusion and frustration regarding the use of this interactive tool. The text was considered too small; there was no means of sufficiently enlarging the image; there was confusion about how to complete the exercise (“*do you drag and drop?*”). It was also not explained or obvious that this task was split over two screens, the first to elicit appealing features and the second, the unappealing elements.

“Yeah, I’d actually started putting appealing and unappealing on the slide and then when I got to the second one, I realised I had to put the unappealing on there, but you couldn’t go back”.

The ECP also felt that this task was difficult to complete and questioned the value of responses, which were largely subjective.

“I really couldn’t make my mind up which way to highlight. You’ve got Save the Whale and then this for the future, but then on the other hand.... I pitched it... The HR desk is next to my office at work and I get her view on things, because she’s totally non-engineering and she couldn’t really... I said what would you do in this situation with these questions and her view was completely opposite to mine.”

The interactive tool is a valuable market research technique, used to identifying positive and negative elements around certain propositions/concepts/products. However, ECP feedback suggested that this technique was not necessarily suitable for testing the appeal of the FCL service, and inappropriate for the target I&C audience, who did not require help in articulating the elements of the concept that interested their organisations. The technique was also thought to unnecessarily extend the length of the survey

Action

Due to the concerns expressed by the ECP about the concept board evaluation task and the absence of valuable and quantifiable output, the task was omitted. This served to considerably reduce the length of the survey.

The concept board was retained purely as an educational tool to supplement the analogy and the information supplied in the Project FAQ. The image was also magnified to fill the whole screen, allowing it to be easily read.

Establishing company policy

Insight

The term of the contract (in years) was included as an element in the FCL service contract trade-off exercise. The ECP highlighted the contract term as a potential barrier to providing a fully considered response, when choosing from a pair of differing contracts. A minority stated that they always selected the contract with the shortest term, irrespective of the other contract variables (ie price per event/maximum number of constraints per year). The reason for this choice was influenced by company policy, preventing new commercial contracts exceeding a two year term.

Action

Analysis of the pilot data indicated a range of complex decision making behaviour from the ECP when the contract trade-off exercise was completed. No single attribute, including contract length, was the universally dominant driver of decision making at this early stage of engagement. Therefore, the term remained valuable as a potential contract differentiator. However, the maximum contract term of four years was amended and presented as a variable of between one and three years, in line with suggestions of the ECP.

A supplementary question was also added at the end of the contract trade-off exercise specifically asking if the customer's responses had been influenced by their company's policy regarding the maximum term of new commercial contracts. Responses to this question will assist Electricity North West in identifying if contract term is a potential barrier to the uptake of Respond and assist in considering the suitability of bespoke commercial arrangements to circumvent such a barrier.

6 SUMMARY OF KEY FINDINGS

The ECP provided an essential forum to attain relevant, constructive and independent feedback on the content, relevance and comprehension of Electricity North West's initial drafts of the Respond communication materials. It also provided the most appropriate platform to test the draft survey instrument on a representative group of customers.

Although several learning outcomes from previous Projects such as C₂C and CLASS were considered in the preparation of Respond engagement activities, it was valuable to obtain feedback directly from the target technical audience comprised predominantly of mechanical and electrical engineers. The learning taken forward from this exercise and executed in the form of optimised communication materials and refined survey instrument will be critical in the success of the forthcoming stages of customer engagement.

Communication material was amended in direct response to the ECP's observations. This enabled the key features of the FCL service to be clearly explained and pitched with an appropriate level of technical detail, to maximise engagement amongst the target customer group. The panellists raised a number of pertinent questions, particularly around the practicalities of how the FCL service would operate and what payment structure would be in place. These were addressed via amends to draft communication materials and the production of a new document, the Respond Project FAQ. Subsequent testing of selected communication material at the second ECP meeting confirmed that they were of an appropriate and significantly improved quality, suitable for engagement with customers and other relevant stakeholders.

The survey instrument was also refined following feedback from the ECP, with significant improvements made to its content, the wording of questions and technical accessibility.

The importance of obtaining customer feedback among the relevant audience when developing information materials and the suitability of an ECP as a format for facilitating this consultation should not be underestimated.

7 LESSONS LEARNED FOR FUTURE INNOVATION PROJECTS

This section of the report disseminates the key lessons learned from conducting the Respond ECP. The lessons specifically focus on describing how Electricity North West and other stakeholders can capitalise on the learning outcomes from this process to support future challenges that might be faced in similar types of customer engagement.

The lessons learned are as follows:

7.1 The ECP is an effective forum for testing a range of complex communication materials and a survey instrument

The conversational nature of focus groups meant that participants could share their understanding and sensitivity about the concept, the communication/educational materials provided and any questions posed. This facilitated constructive debate about possible improvements, for example changing the order, instructions and wording of some questions in the survey and refining possible answer codes in others.

The ECP was influential in the development of a Project FAQ, designed to assist respondents in completing the survey by providing detailed Project information and answering common questions.

Piloting the quantitative survey instrument with the ECP provided valuable learning and is recommended for future innovation Projects where applicable. It is advisable for this method to be employed in parallel with piloting the survey via the intended means of data collection eg administering the survey online.

The desired successful outcome from developing a comprehensive range of communication materials, designed to support a survey, can be effectively tested and refined by a suitable ECP. Independent and unbiased feedback from a representative customer base is fundamental in tailoring materials to meet the diverse requirements of different target customers with differing roles, responsibilities and backgrounds. Engagement resulting from this process is cost effective in maximising the learning opportunities from a suitable and robust survey instrument, paving the way for a considered appraisal of any new concept by its target audience and introducing an effective route to market.

7.2 It is advisable to produce, test and refine a range of communication materials with a breadth of technical complexity to satisfy varying stakeholder needs

The ECP identified that a range of communication materials, differing in technical complexity and level of detail, would be required to disseminate important components of Respond to key stakeholders within their respective organisations.

The analogy was a useful simple introductory tool, understood by all. The concept board was a succinct and effective overview, potentially most suited for those at board or director level, summarising: the fault level problem that Respond sought to remedy; how the commercial solution would work; the benefits of taking part and the key features of the FCL service. The Project FAQ and video provided the level of detail required by those from a technical or engineering background.

Optimising the effectiveness of communication materials is critical in maximising the learning opportunity from customer engagement when developing new commercial concepts. Future projects should anticipate this and validate the range and pitch of supportive information needed to educate and address the varying requirements of different

customers/organisations from a diverse range of technical backgrounds, requiring general to much more complex, granular information.

7.3 Sufficient time should be scheduled within an ECP format to capture valuable feedback on any quantitative survey instruments

An ECP is not a conventional method for piloting a survey instrument; however, the technique proved to be an effective means of optimising the survey before it was used on a much larger scale to test the commercial appetite for the FCL service technique.

A previous second tier LCN Fund Project, CLASS, tested a quantitative customer survey in a face to face focus group setting, using a paper version of the instrument. This was completed and then discussed during the meeting. The Respond pilot survey was completed online by panellists independently and in their own time, before attending the second focus group meeting. This approach mirrored how the actual customer survey will be conducted when it is launched on 30 October 2015.

Piloting the Respond survey instrument with the ECP in their own work or home environment, on a variety of different electronic devices, provided valuable insight into the survey experience. Technical difficulties arising when accessing and navigating through the electronic survey were identified and rectified.

The ECP provided substantive and constructive feedback regarding both the survey's content and comprehension, which was discussed at the second ECP meeting. A significant proportion of this meeting was allocated to reviewing the survey instrument but was insufficient in light of the complexity of this research. Participants debated their perceptions and understanding of the survey with each other and discussed possible improvements. Whilst this debate positively influenced the refinement of the survey instrument, it limited the available time to review the supportive communication materials that had been amended following feedback from the first ECP meeting.

Piloting customer surveys via the method they will be administered (eg telephone, face to face or online) is recommended for future innovation Projects, the value of which was demonstrated by this exercise. However, sufficient discussion time should be incorporated into the ECP schedule for full and comprehensive feedback discussions.

The desired successful outcome of dedicating more time to reviewing survey instruments within an ECP format is the enhanced suitability of the evolving instrument in achieving its objective ie testing the appetite for the provision of a commercially viable FCL service.

7.4 Consideration should be given to recruiting an appropriate cross section of respondents. able to effectively represent their organisations, when participating in the customer engagement

The Respond ECP was comprised of customers with a predominantly technical or engineering background. Whilst they were able to fully complete the technical aspects of the customer survey pilot, they felt unequipped or less confident in their ability to answer some of the commercially focused questions.

Future innovations projects, which involve engagement with I&C audiences, should give special consideration to the type and role of customers recruited for any qualitative and quantitative research. This is especially pertinent when there is a need for both technical and commercial perspectives. To accommodate this, flexibility should be integral to any screening instrument, with referrals permitted within organisations to ensure the identification of the most appropriate customer.

This learning will result in the increased accuracy of responses from customers from the appropriate questions being asked of the correct people, ensuring the insight derived from the data is credible and actionable.

7.5 Early testing of any visual prompts or stimuli to be included in Project videos may be beneficial

It was recognised early in customer engagement planning activities that some survey respondents were likely to find the FCL service technique difficult to understand and would benefit from a visual demonstration of how the concept works and critically, how it might affect their organisation. A brief overview of the FCL service forms part of the Project's main 'Introduction to Respond' [animation](#), which explains how Respond technology will address the fault level problem. However, the level of information provided in this video was not considered sufficient to adequately support the survey.

The significant costs of commissioning a separate corporate video were outside the scope of this customer engagement activity. The Project team therefore produced a Power Point based movie file, specific to the FCL service, which explains the technique in greater detail than the main Respond video.

The ECP provided positive feedback regarding the FCL service video and considered it to be an appropriate platform for disseminating technical information in a clear, simple and visual manner. However, when first presented, in its original format, panellists found some of the text and graphics overly complex and confusing, which detracted from their comprehension of the FCL service.

The changes made to improve the visuals, and enhancements to the content and quality of the narration were well received. The need for visual materials to support customer engagement activities in future projects should be considered earlier and the costs and timescale associated with producing suitable materials anticipated. This learning will allow visual supportive material to be introduced earlier in the engagement process and used more effectively for education/ recruitment purposes. The requirement for, and the content of, customer specific videos for future projects might be tested using an ECP at an earlier stage in the engagement process. Sufficient time would be required to produce a suitable video before reconvening the ECP to test and evaluate its effectiveness.

A successful outcome from engaging customers earlier on in the development of visual prompts or stimuli might be the improved return on investment demonstrated through enhanced customer buy-in and understanding of communication materials.

7.6 Obtain participants' explicit consent for the use of audio/visual soundbites in dissemination activities

After the completion of the ECP sessions the members were retrospectively asked to provide consent for the use of sound bites/video clips obtained during the previous focus group meetings. These are an engaging means of demonstrating the outcomes and intrinsic value of the ECP, particularly for future dissemination events.

The use of videos/sound bites is an additional (non-research related) activity which requires the explicit permission of customers for their audio/visual data to be used for specific dissemination purposes.

Planning for this output proactively in future innovation projects and acquiring participants' consent as part of the ECP recruitment process would be the most cost effective and efficient means of facilitating the activity.

Interviews with selected participants could also be scheduled to take place at the focus group venue, if required.

8 CONCLUSIONS AND NEXT STEPS

This report sets out the key findings from the strategic qualitative market research conducted with the Respond ECP in September and October 2015.

The ECP reiterated the importance of having a range of communication materials to address the varying needs of key customers and stakeholders. Information was refined in line with the constructive feedback received, specifically in relation to the level of technical detail and granularity of information required about the FCL service concept. A new Project FAQ document was developed to address the concerns or misconceptions aired by the ECP, and aid the recruitment of survey participants. The Respond video was enhanced with improved visuals incorporated to clearly depict how the FCL service would be applied under certain network conditions.

The survey instrument was optimised to aid the respondents' comprehension of the question set to ensure the instrument was suitable to test the Project hypothesis.

The resulting communication materials were clear, informative and engaging.

A second pilot of the amended customer survey was conducted in October 2015 among a previously unengaged group of I&C customers, and final enhancements made before the actual customer survey phase of the Trial.

The quantitative customer survey will launch in October 2015. The survey will test whether the Respond Method identifies a market for a new commercial solution to the fault level problem.

In line with the vision of the LCN Fund, all outputs and learning acquired from Respond customer engagement activities will be made available to other DNOs. Specifically, all communication materials developed will be publicised on the [Respond website](#). There will be on-going learning and dissemination as the Project progresses via Respond learning events, trade magazines and in other appropriate forums.

A subsequent report will be published in May 2017 which will summarise the learning from the quantitative customer survey.

9 APPENDICES

Electricity North West and the Respond Project were introduced to the ECP during its first meeting, in order to establish initial perceptions and understanding of the FCL service concept.

A range of communication materials were tested to establish the most effective way of communicating Respond to customers. The materials evaluated included:

- Respond question and answer (Q&A) sheet
- Problem statement
- Video
- Analogy
- Concept board

The consultation provided an opportunity to discuss specific changes that would enhance the communication materials, before being finally reviewed by the panel during a subsequent meeting. Amongst the communication materials, the video required the most significant changes; however, minor improvements were made to all materials.

Between the two meetings, the ECP tested the online customer survey; this provided valuable feedback discussed during the second meeting regarding its accessibility, comprehension, length and usability. Finally, the survey questions were refined to improve usability, clarity and accuracy of the data obtained.

A copy of the customer survey instrument, including the improvements made can be found in [Appendix A](#).

The ECP reconsidered the following communication materials which had been optimised or developed after the first meeting:

- Revised video
- Revised analogy
- New project FAQ

The final versions of key documents such as the communication materials referenced above can be found in the appendices using the links below:

[Appendix A: Customer survey pilot](#)

[Appendix B: Screening questionnaire for ECP recruitment](#)

[Appendix C: Customer survey FAQ](#)

[Appendix D: ECP materials](#) (problem statement, analogy and concept board)

[Appendix E: Project FAQ](#)

[Appendix F: Video](#)

Appendix H: Terms of reference

The recruitment of the ECP and moderation of focus groups was conducted by Impact Research, an independent market research agency. All research was carried out in accordance with the professional standards set out in the MRS Code of Conduct.

ECP members were all I&C customers with responsibility for operating, managing, maintaining and/or financing electrical machinery, specifically large motors and CHP plants.

Panellists committed to attend two focus groups, each lasting 90 minutes and to take part in an online pilot survey. Each panellist was rewarded with an incentive of £140 for attending both focus groups and panellists' who completed the online survey received a £25 voucher or charitable donation.

A total of eight panellists attended each face to face discussion and completed the online survey.

The list of physical components required to replicate this activity is shown below:

- Database of customers suspected to meet the requisite criteria
- Recruitment criteria
- Recruitment questionnaire
- Customer consent form
- Discussion guide
- Q&A briefing document
- Survey FAQ document
- Project FAQ
- Communication Show cards

- Video and stills
- Concept analogy
- Concept board
- Survey instrument
- Focus group venue
- Transcripts and audio recordings
- Project website

The knowledge required to replicate the outcome of this activity is as follows:

- Knowledge of Respond and FCL service
- Knowledge of various methods of recruiting and maintaining sufficient participants for ECP
- Knowledge of market research methodology and execution
- Knowledge of qualitative research methods required to produce the physical components listed above for recruitment, design, moderation, analysis and reporting
- Knowledge of quantitative research methods required to produce the survey instrument and FAQs.
- Knowledge of IT systems to produce the physical components above for recruitment, design, analysis and reporting.

The anticipated business as usual costs are in the region of

- | | |
|--|---------|
| • Conducting an ECP (recruitment and facilitation of up to 10 customers taking part in two focus groups) | £10,000 |
| • Incentivisation (two focus groups and two survey pilots) | £5,300 |
| • Producing a FCL service video | £1,200 |
| • Project website | £10,000 |
| • Customer survey total (design, development, test and roll out) | £78,000 |