electricity north west
Bringing energy to your door

Celsius
Customer Engagement Plan

30 June 2016

Celsius

CONTENTS

VERSION HISTORY

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REVIEW

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GLOSSARY

Abbreviation	Term
C_2C	Capacity to Customers
CEP	Customer engagement plan
CCC	Customer contact centre
CLASS	Customer Load Active System Services
DECC	Department of Energy and Climate Change
DNO	Distribution network operator
DPS	Data privacy statement
ECP	Engaged customer panel
EHP	Electric heat pump
ELT	Executive leadership team
FNSG	Future Networks steering group
GB	Great Britain
LCN Fund	Low Carbon Networks Fund
LCT	Low carbon technology
NIC	Network Innovation Competition
Ofgem	Office of Gas and Electricity Markets
PSR	Priority services register
RIIO-ED1	Electricity distribution price control 2015 to 2023
RIIO-ED2	Electricity distribution price control 2023 and beyond

FOREWORD

This report is part of the Electricity North West Celsius project, funded via the Office of Gas and Electricity Market's (Ofgem's) Network Innovation Competition (NIC).

Formal notification of selection for funding for the project was received on 30 November 2015 and the project is due for completion by 31 March 2020.

Celsius explores new ways of monitoring and managing the thermal capacity of assets at distribution substations so that capacity can be maximised and reinforcement costs minimised. The approach can be used by distribution network operators (DNOs) to prepare their networks to meet new requirements arising from the expected increase in the adoption of low carbon technologies (LCTs).

This document sets out how Electricity North West will engage with customers during the project and forms part of the project's dissemination.

1 EXECUTIVE SUMMARY

1.1 The Celsius project

The Celsius project is funded via Ofgem's NIC which replaced the Second Tier Low Carbon Networks Fund in the RIIO-ED1 funding mechanism.

Celsius is an innovative, cost-effective approach to managing potentially excessive temperatures at distribution substations, which may constrain the connection of low carbon technologies (LCTs). By delivering new solutions to manage these 'thermal pinch points', Celsius releases additional capacity from existing assets, reduces long-term costs for customers and avoids early asset replacement. Celsius will be the first application of a co-ordinated approach to managing the temperature of electrical assets in distribution substations in Great Britain (GB).

The project will enable DNOs to identify the internal operating temperatures of assets through a Thermal Ratings Tool, developed as part of this project using low cost external retrofit sensors. This information will allow DNOs to release the maximum capacity from the assets without degrading their health and reliability.

Celsius will also enhance the capacity of assets by demonstrating when and how to utilise a range of retrofit cooling techniques. Customer engagement will be undertaken to establish the acceptability of the retrofit cooling techniques and therefore their suitability for rolling out across GB.

It is envisaged that the Celsius method will enable DNOs to release capacity at a fraction of the cost of traditional reinforcement, reducing long-term costs for customers by maximising the use of existing assets and the avoidance of the unnecessary early replacement of assets.

This customer engagement plan (CEP) sets out how Electricity North West will engage with customers during the project. Active customer participation is integral to Celsius and will form an important part of the learning and development for future innovation projects.

1.2 Customer engagement in Celsius

To demonstrate the applicability of the Celsius method, a two-step intervention approach will be taken.

- Installation of temperature and load monitoring equipment at 520 distribution substations across the Electricity North West network. This represents 80% of the GB

substation population, enabling data to be collected across a range of environmental, load and seasonal factors
- The release of additional capacity through a range of retrofit cooling techniques, applied on 100 of the monitored distribution substations.

Celsius customer engagement activities are designed to deliver a comprehensive assessment of any customer impacts associated with the installation of retrofit cooling techniques at distribution substations. It will also assess how these vary by the technique applied, environmental factors and customer groups.

Four customer groups have been identified as being directly or indirectly involved in the Celsius project, and should therefore be actively engaged:

- Customers who will participate in engaged customer panel (ECP) focus groups
- Customers on the trial networks who will participate in the Celsius surveys
- Customers on the trial networks who will experience planned supply interruptions for the installation of the network equipment
- Other customers on trial networks not participating in the ECP or survey.

Some customers may be members of groups two and three.

1.2.1 Customers who will participate in the ECP

An ECP will be convened to test initial reactions to the various retrofit cooling techniques. The panel will also evaluate and guide the content of the proposed communication materials required to educate survey participants and how this information is presented.

Project partner, Impact Research, will be responsible for the recruitment of the ECP participants and delivery of the focus group meetings.

1.2.2 Customers on the trial networks participating in the Celsius survey

The key customer hypothesis of Celsius is that customers in the trial areas, who reside or operate businesses in close proximity to the distribution substations, will find the installation of retrofit cooling techniques as acceptable as traditional reinforcement.

To test this hypothesis, a customer survey will be carried out before and after the installation of retrofit cooling techniques, to elicit the perceptions and observations of customers in close proximity to the assets. The results of this customer feedback will be used to identify an acceptable level of disruption for each type of retrofit cooling technique.

A secondary hypothesis is that customers who are educated about the problem that Celsius is seeking to resolve and the benefit of the method, are significantly more likely to find it acceptable.

To test the secondary hypothesis, two versions of the survey instrument will be produced: one which includes communication material intended to educate customers about Celsius; and another without these supplementary materials.

A statistically robust and representative sample of 600 customers on Celsius trial networks will be recruited to participate in the baseline customer survey, before the installation of cooling technologies. This survey population will be split equally among customers who will receive the additional education materials about the project and those who will not. An equivalent number of surveys will be conducted post installation. This population will comprise customers that took part in the baseline survey and received information about the project, along with a sample of previously unengaged individuals.

Impact Research will be responsible for the recruitment of survey participants and administration of the survey.

1.2.3 Customers on the trial networks who will experience planned supply interruptions

There is a possibility that customers on certain Celsius trial networks may experience planned supply interruptions associated with the installation of essential monitoring equipment or cooling interventions. Electricity North West will take all practicable steps to install Celsius enabling technologies without the temporary isolation of customers' supplies. However, where this is unavoidable, these impacts will be managed through business as usual processes and all impacted customers will be provided with standard written notification prior to the planned supply interruptions, in accordance with Guaranteed Standards of Performance.

1.2.4 Customers on trial networks not participating in the ECP or survey

There will not be a general awareness campaign as part of Celsius for customers on the trial networks who are not taking part in the survey or ECP. The reasons for this approach are twofold:

- The retrofit cooling installations will have no impact on power quality for customers on and outside the trial networks. The only potential impacts of Celsius techniques on customers are visual or audible and these effects are only likely to affect customers with properties in close proximity to the asset. Only a small number of customers are likely to be impacted by planned supply interruptions associated with the installation of new technology and then only briefly. These customers will be notified individually, in accordance with Guaranteed Standards of Performance. Therefore, the potential impact is too small and too unlikely to justify the cost of a large scale campaign, which might unnecessarily cause concern to unaffected customers.
- A wider awareness campaign could sensitise the non-educated customer group required for testing the secondary hypothesis (that education affects the acceptability of retrofit cooling interventions).

The wider business will be notified about the project to ensure that any customer enquiries relating to Celsius are captured and managed appropriately. These will be evaluated to understand any impact on customers outside the trial networks. Further information on contact methods is provided in Section 8.2.

The results of the Celsius project could be utilised to deliver benefits to electricity customers throughout GB from the additional release of capacity, more quickly and at a lower cost than traditional reinforcement. Recognising these wider implications, the project team will make relevant information available in the public domain in a manner that is easy for customers to understand. The team will also share findings and project outcomes with key stakeholder groups.

1.3 Vulnerable customers

Electricity North West already maintains a priority services register (PSR) of customers who have special requirements or who may be vulnerable during a power outage. The register enables the company to provide prompt assistance to these customers if required.

Vulnerable customers, identified from the PSR, will be notified well in advance of the standard notification period before the installation of monitoring equipment or cooling technology involving a planned supply interruption.

The Celsius customer survey will include questions to assess whether any vulnerable customers reside at the property. These will help to identify any potential differences in perceptions held by this group compared to other customer segments.

1.4 Customer feedback

Customers will be able to provide feedback or raise queries with the Celsius project team through various channels. These include the Celsius website, which will have a simple contact form for that purpose; telephoning Electricity North West's customer contact centre (CCC); social media; email and a postal address for written correspondence. Details of these contact methods are provided in Section 8.2.

ECP and customer survey participants will also be able to contact the research provider, Impact Research, directly by email or telephone.

1.5 Customer safety

Celsius technologies and equipment will only be installed on the network: there will be no installation works at customer premises. The installation of all Celsius technologies will be in accordance with business as usual safe systems of work. It is therefore not envisaged that Celsius will introduce any safety risks to customers.

1.6 Customer consents

Consent will not be needed for the installation of equipment or any other intervention works at customer premises because the project does not involve any such activities.

Customers participating in the customer surveys or ECP will be fully informed about how their data will be used and shared. They will be asked to sign a consent form and, by doing so, will agree to their information being used for the specified purpose. Draft consent forms are included in

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Additional consent will be sought from customers before entering their premises for face-to-face interviews. The process for obtaining customer consent is outlined in Section 5.6 and explained in detail in the Celsius data privacy statement (DPS).

Any feedback received from customers, stakeholders and partners may be used to revise plans going forward in order to continually improve our customer engagement strategy.

2 THE CELSIUS PROJECT

2.1 Background and context

The Carbon Plan, published by the UK Government in 2011, describes the importance of moving to a low carbon economy and sets out how legally binding targets for the reduction of greenhouse gas emissions will be achieved. Over the course of RIIO-ED1 and RIIO-ED2, increasing numbers of customers will access the benefits that can be obtained through the electrification of heating and transport.

The anticipated adoption of LCTs will increase electricity demand on the network. Department of Energy and Climate Change (DECC) forecasts suggest that there may be up to a 60% increase in total electricity demand by 2050. Network capacity limits will be reached first at distribution substation level, where load diversity is lowest. Thermal constraints will therefore occur at some distribution substations sooner than others due to regional and socio-economic clustering of LCTs.

Network assets have a manufacturer-assigned capacity rating, expressed in amps, which indicates the maximum amount of current the asset can carry without damage or deterioration. These ratings ensure that networks can be operated safely, but they do not take account of other factors that can contribute to the heating of the asset such as seasonal variation and environmental conditions, which means that the equipment may not be used to its full thermal capacity.

DNOs have historically adopted a ‘fit and forget’ approach to managing electricity networks. However, if electrical load increases, so does the passage of current and the heat generated within network assets. When this exceeds the thermal capacity rating of the asset, the traditional approach is to replace it with new, higher capacity equipment. This entails significant capital investment, which customers pay for through their electricity bills.

The predicted increase in demand resulting from the adoption of LCTs means that the way assets are currently managed needs to be reviewed to ensure cost efficiency and capacity optimisation.

Electricity North West’s previous innovation project Smart Street examined new technologies and techniques to optimise network voltage and resolve power quality issues associated with the expected increase in demand. The Capacity to Customers (C2C) project also delivered new solutions for thermal constraints on higher voltage networks. Celsius builds on these projects, turning its focus to finding solutions to the problem of thermal constraints on distribution substations.

Celsius is funded by Ofgem’s NIC mechanism. The project is being delivered by Electricity North West in partnership with key industrial and academic partners and suppliers, namely Ricardo-AEA, Ash Wireless Electronics, Impact Research, UK Power Networks and the University of Southampton.

2.2 Celsius method

Celsius will develop an understanding of the operating temperatures of distribution substation assets, including transformers and cables, within a range of substation environments. The

project will also deliver alternative, innovative ways to optimise thermal capacity, leading to faster, cheaper responses to increasing demand from LCTs.

2.2.1 Retrofit thermal monitoring

Temperature and load measurements will be recorded at 520 distribution substations. These sites will be selected to be representative of the majority of GB distribution substations. The measurements will be utilised to evaluate the available capacity margins at each site. More detailed measurements, including internal temperature, will be taken from a subset of 21 distribution substations.

Measurements will be taken for a period of 12 months across a wide range of load profiles and types to ensure all seasonal variations, such as wind cooling, shade and sun glare, are captured. This measurement period will cover the typical winter peak[1] in load and the increase in ambient temperature during the summer. The data gathered will be analysed to explore the relationship between asset temperature, load and the surrounding environment. The outcome of the analysis will provide an understanding of the remaining thermal capacity that is available at each substation without further intervention.

Once this methodology is understood, it will be incorporated into a Thermal Ratings Tool which will improve network and asset management by optimising thermal capacity.

This activity will also inform a functional specification for a low cost monitoring solution which could be deployed at scale.

2.2.2 Retrofit cooling

The second stage of the Celsius trial involves the selection and demonstration of a range of retrofit cooling techniques that will be deployed at 100 of the monitored sites, to further release thermal capacity. Evaluation of retrofit cooling techniques for cables and transformers will result in a ‘buy order’ of cooling interventions for network operators to select.

A shortlist of potential techniques and technologies to cool or thermally manage assets will be identified and evaluated by the project team. These will include passive and active techniques such as painting transformers with heat reflective paint, new backfill material for cables and installing fans or extra fins on transformers.

A retrofit cooling workshop will be held to collaborate with DNOs, to ensure that all relevant options have been explored and the most appropriate retrofit cooling techniques are selected to trial.

Each cooling intervention will be installed at multiple sites, to provide a robust understanding of the applicability of each technology and its performance under different conditions and environments.

Once the cooling interventions are installed, the benefits will be quantified via an extended period of monitoring (12 months), allowing thermal behaviour to be compared with the baseline measurements taken in the initial monitoring phase of the trial. The output from this activity will be utilised to enhance the Thermal Ratings Tool, which will calculate the capacity gains arising from the application of each technique in different environments and operating conditions.

Celsius will test the following hypotheses:

[1] Analysis of peak loading at all Electricity North West primary substations for 2014/2015 corroborates that peak loading occurs in winter in nearly all cases (94%) and this is likely to be a higher proportion at distribution substation level.

- Thermal characteristics of 520 substations can be used to build a reliable Thermal Ratings Tool for distribution substations across GB (trials and analysis workstream)
- Low cost sensors, attached to the exterior of an electrical asset, can be used to reliably establish the internal operating temperature and enable a Thermal Ratings Tool (trials and analysis workstream)
- Capacity can be released quickly and cheaply by understanding the thermal performance of the distribution substation (trials and analysis workstream)
- Further capacity gains can be achieved through low cost, retrofit cooling interventions (trials and analysis workstream)
- Celsius does not have a detrimental impact on asset health (trials and analysis workstream)
- Customers within the Celsius trial areas will find the implementation of innovative retrofit cooling techniques as acceptable as traditional reinforcement (customer workstream)
- Customers who are educated on the need for, and benefits of, Celsius are significantly more likely to find it acceptable (customer workstream).

2.3 The solution which will be enabled by solving the problem

Celsius will deliver:

- Reports detailing the enhanced understanding of asset temperature and its relationship with load and environmental factors
- Recommendations and tools for the implementation of Celsius to business as usual.

These recommendations and tools are expected to include:

- A functional specification for a reliable, low cost monitoring sensor pack for distribution substation assets, including cables and transformers
- A Thermal Ratings Tool that will calculate the capacity of an asset, based on measured external temperature values. This will allow a network operator to better understand the operating temperature of assets and when to deploy an intervention
- A range of retrofit cooling techniques to apply when the Thermal Ratings Tool indicates an intervention is required
- Studies to prove that the retrofit cooling techniques are acceptable to customers
- Proposed changes to *Engineering Recommendation P15 Transformer Loading Guide* and *Engineering Recommendation P17 Current Rating Guide for Distribution Cables*.

It is expected that Celsius will have positive implications for the design and operation of distribution networks in future years. The results of the project will potentially drive change in the following areas:

- Greater accuracy on the forecasts of interventions for load-related capital expenditure through utilisation of the Thermal Ratings Tool
- Reduced capital programme costs for load-related expenditure from a proven suite of retrofit cooling interventions
- New substation design standards for optimal thermal performance to reduce whole-life costs.

In summary, Celsius will enable network operators to release thermal capacity at a fraction of the cost of traditional reinforcement, reducing the overall costs of accommodating increased load. This will enable DNOs to respond more quickly to potential constraints arising from the connection of clusters of LCTs.

Following the successful completion of the trial and incorporation of the method into business as usual protocol, Celsius will maximise the value of the smart meter programme by using smart meter data, aggregated at a substation level, to indicate where to deploy the Celsius method.

3 HOW THE REQUIREMENTS OF THE GOVERNANCE DOCUMENT HAVE BEEN MET

3.1 The customer engagement plan

Section 8.10 of the Electricity Network Innovation Competition Governance Document version 2.1 sets out certain requirements for DNOs undertaking projects funded by the NIC.

Specifically, it requires the DNO to submit a plan to Ofgem, at least two months before initiating any form of customer engagement, explaining how it or any of its project partners will engage with relevant customers for the purposes of the project.

This CEP sets out the approach that Electricity North West will take to engage with customers who are affected by the Celsius project, either directly or indirectly. It provides a framework for all customer engagement that will be undertaken and sets out the activities and tools that Electricity North West and its partners will draw upon to maximise customer outcomes.

The remainder of this section outlines how the requirements of the governance document have been met and points to relevant later sections of the document, where appropriate, to avoid repetition.

3.2 Requirements for a communication strategy

The governance document requires DNOs to define a communication strategy that sets out:

a: 'Any proposed interaction with a Relevant Customer or premises of a Relevant Customer or proposed interruption to the supply of any Customer for the purposes of the Project, and how the Relevant Customer will be notified in advance'

This requirement is met:

Section 4 of this plan describes the trials that will be undertaken to test the Celsius approach.

Section 5 of this plan describes how survey and ECP participants will be engaged in the Celsius project.

Section 5.5 sets out how the Celsius project team will engage with an ECP (a focus group comprised of a cross-section of customers). The ECP will help to develop, test and refine communication materials to ensure that customers participating in the survey understand the subject matter and that the survey instrument achieves the required outcomes.

Section 5.6 explains how the Celsius project team will engage with survey participants.

Section 6.5 outlines the engagement strategy for Electricity North West customers who are not actively taking part in the research but who may be interested in the process or findings.

The Celsius techniques will be applied to the distribution network. As such, there will be no installation of equipment on customer premises. However, a small minority of customers in the trial areas may be impacted by planned supply interruptions associated with the installation of monitoring and/or cooling equipment at certain substations. The nature of these interruptions and the related customer communications is explained in Section 7.3.

b: 'Ongoing communications with the Relevant Customers involved in the Project'

Section 8 of this document sets out how the Celsius project team will engage with customers, stakeholders and other interested parties on an ongoing basis. This engagement will draw on various tools, including a range of educational/communication materials and simple, easily

understood survey instruments. Project information, updates and key documents will be published on the Celsius website and the ENA smarter networks portal.

c: 'Arrangements for responding to queries or complaints relating to the project from Relevant Customers'

Section 8.2 of this document outlines the various channels that customers can use to feedback their concerns or raise queries with the Celsius project team.

3.3 Requirements to provide information on priority services register customers

The governance document also requires DNOs to provide:

'Information on the PSR customers who will be involved in the project and how they will be appropriately treated'

Section 7.2 of this plan outlines how the Celsius project team will interact with customers on Electricity North West's PSR.

3.4 Requirement to provide details of any safety information that may be relevant

The governance document requires DNOs to detail:

'Any safety information that may be relevant to the project'

Celsius technologies and equipment will only be installed on the network; there will be no installation works at customer premises. The installation of all Celsius technologies will be in accordance with business as usual safe systems of work. It is therefore not envisaged that Celsius will introduce any safety risks to customers.

3.5 Requirement to provide details of any customer consents

The governance document requires DNOs to provide:

'Details of how any consents that may be required as part of the project will be obtained'

Consent will not be needed for the installation of equipment or any other intervention works at customer premises because the project does not include any such activities.

It is extremely unlikely that any of the interventions at substations will require wayleaves. However, the requirements of each site will be considered on an individual basis. Where any consent is required, the project team will liaise closely with the Electricity North West estates and wayleaves department and the landowner, prior to the installation of any new equipment falling outside the scope of the existing legal framework.

Section 5.6 sets out how consent will be obtained from customers who agree to participate in the ECP or customer surveys. Additional consent will be sought before entering a customer's premises for the purpose of a face-to-face interview, details of which are also outlined in Section 5.6.

Electricity North West and its project partner Impact Research will not visit the premises of any relevant customer for sales or marketing activities in connection with, in the context of, or otherwise under the guise of the project. Customers will only be approached for the purposes of genuine market research related to the Celsius project. Draft ECP and survey consent forms are provided in

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3.6 Requirement to ensure that the project does not impede the implementation of the smart meter rollout

The governance document requires DNOs to:

'Have regard to the implementation of the smart meter rollout to ensure that the Project does not impede the implementation in any way'

Celsius does not involve installation of equipment or any other intervention works at customer premises. Furthermore, there will not be a targeted awareness campaign to promote and/or raise awareness of the project among the general population, meaning that there is little, if any, risk that Celsius will impede the implementation of the smart meter rollout or cause any confusion between the two programmes.

4 THE CELSIUS TRIALS

Celsius will gather and assess data across a range of environmental, load and seasonal factors on 520 distribution substations, selected from Electricity North West's asset base, which are considered representative of 80% of the GB substation population. This will incorporate enough examples of each main substation type and environment, so that each can be understood.

Retrofit cooling trials will be demonstrated on 100 of these substations. This will provide a sufficiently robust sample of sites to trial cooling interventions and evaluate the Celsius method on distribution substations representative of the majority across GB, thus ensuring that Celsius is widely applicable.

Celsius will explore thermal management of existing network assets in the following ways:

- **Understanding thermal constraints**: development of a methodology to accurately identify the thermal capacity of a range of distribution substations and the asset rating of plant, assessing environment and load characteristics to unlock latent capacity.
- **Addressing thermal constraints**: Evaluate how retrofit cooling technology can be harnessed to provide low cost alternatives to reinforcement in a manner which is acceptable to customers.

The initial stage of the Celsius trial will involve the selection of suitable sites, feasibility studies and screening. This will be followed by the installation of monitoring equipment at 51 pole-mounted and 469 ground-mounted distribution substations between October 2016 and March 2017. This equipment will robustly capture load, temperature, environmental data and other characteristics that may impact the thermal behaviour of assets. To ensure that the full load curve and seasonal effects are captured, the retrofit thermal monitoring trial (step 1) will continue for a period of 12 months post-installation and will be conducted between October 2016 and March 2018.

An evaluation of retrofit cooling technologies will also be carried out during the trial (step 2). Selected technologies will be installed at 100 of the trial sites between January 2018 and June 2018. Monitoring data will be collected for a minimum period of 12 months following the deployment of retrofit cooling techniques. Evaluation of these techniques is due to take place between January 2018 and June 2019.

A description of the Celsius trials is given below: the trials specifically related to retrofit cooling are Trials 2, 4 and 6:

Figure 4.1: Description of Celsius trials

Trial	Thermal management of the distribution network
Trial 1	Retrofit thermal monitoring of pole-mounted transformers
Trial 2	Retrofit thermal monitoring and cooling intervention for pole-mounted transformers
Trial 3	Retrofit thermal monitoring of ground-mounted transformers
Trial 4	Retrofit thermal monitoring and cooling intervention for ground-mounted transformers
Trial 5	Retrofit thermal monitoring of LV cable
Trial 6	Retrofit thermal monitoring and cooling intervention for LV cable

The specific trial sites will be selected during the project and will be based on a methodology developed between Ricardo-AEA and Electricity North West.

In order to maximise the use of equipment already funded and installed during the Low Voltage Network Solutions load monitoring trials, a previous First Tier Low Carbon Networks (LCN) Fund project, the site selection methodology will begin by assessing the suitability of substations containing monitoring equipment deployed as part of that project. Suitable sites will be included in the trial site selection and equipment will be redeployed, where possible, from sites that do not conform to the selection criteria.

Substations included as part of the Second Tier LCN funded Smart Street project will not be considered in the site selection methodology. The Smart Street techniques are currently being trialled on six primary substations and 38 related distribution substations across three areas of Electricity North West's network, representing approximately 67,000 customers. In these areas customer engagement has included a general awareness campaign for directly and indirectly affected customers and the wider community. Therefore, it is not appropriate to conduct further trials or engagement regarding Celsius in parallel with Smart Street because of the risk of causing confusion to customers.

5 CUSTOMER ENGAGEMENT IN CELSIUS

The primary customer-related hypothesis is that:

Customers within the Celsius trial areas will find the implementation of innovative retrofit cooling techniques as acceptable as traditional reinforcement.

The secondary customer-related hypothesis is that:

Customers who are educated on the need for and benefits of Celsius are significantly more likely to find it acceptable.

A range of customer engagement activities will be undertaken to test these hypotheses. Key among these will be two phases of customer surveys.

Some of the surveys will align with the sequence of the trials outlined in Section 4. The surveys will elicit perceived audible and/or visual changes, to assets where retrofit cooling techniques have been deployed, from customers who live or work nearby.

The Celsius project builds on the learning from previous innovation projects on thermal ratings and will generate additional learning in a number of key areas. These will be of particular interest to other DNOs, Ofgem and DECC. The project team will share relevant learning from Celsius with stakeholders in addition to specific customer and stakeholder engagement activities.

5.1 Customer engagement activities

This CEP sets out the approach and activities that will be undertaken to engage customers and stakeholders throughout the project. The plan covers the following:

- Establishing which customers need to be engaged
- Implementing engagement plans
- Planning customer selection and the approach for focus group and customer survey participation
- Bringing customers into the project
- Keeping customers engaged in the project
- Managing customers' enquiries
- Incorporating learning from Electricity North West's other customer survey activities.

5.2 Project partners and suppliers

Electricity North West selected four project partners and one project supplier based on their knowledge and experience in issues related to Celsius. These organisations share Electricity North West's commitment to maximising customer participation and awareness, and will ensure that this guides all installation and implementation work. They are:

- Ricardo-AEA (project partner)
- Ash Wireless Electronics (project partner)
- UK Power Networks (project partner)
- Impact Research (project partner)
- University of Southampton (project supplier).

Impact Research will provide dedicated support to the Celsius project in implementing the ECP, developing and implementing customer surveys, analysing and disseminating the results.

Impact Research has extensive experience in customer engagement in the utilities industry and, more specifically, on Second Tier LCN Fund, NIC and NIA projects. It will draw on this to support the project in maximising positive outcomes from the various customer engagement activities.

5.3 Continued quality assurance of customer engagement outcomes during the project

The Celsius project is supported internally by Electricity North West's executive leadership team (ELT) and the future networks steering group (FNSG), which is comprised of members of the ELT and oversees the company's future grid activities. The FNSG will have ultimate oversight of the project's strategic direction and will receive regular updates on its progress.

A Celsius project steering group has been established. This is comprised of representatives from all project partners and will guide the strategic direction of Celsius. This will include reviewing and guiding project activities and deliverables to ensure that they are of the quality required and align with the Celsius vision.

DNOs and other parties with a vested interest in Celsius will also be engaged to maximise outcomes.

The project will be undertaken in accordance with Electricity North West's governance and project management approach. This will ensure that the deliverables are of the highest quality and that any deviation is quickly rectified.

5.4 Feedback and review

In accordance with Sections 8.10 to 8.15 of the *Electricity Network Innovation Competition Governance Document version 2.1*, this CEP and a DPS will be submitted to Ofgem to

comply with customer protection requirements. These documents specify how Electricity North West and its project partners will interact with, or impact upon, relevant customers where any form of engagement is undertaken as part of the project.

This CEP is a starting point for communication with customers that may occur throughout the Celsius project. No engagement of any kind will take place with relevant customers, in relation to this project, until both the CEP and DPS have received formal approval from Ofgem.

The following sections briefly summarise the communication strategies that are proposed throughout the project. Impact Research will adhere to this CEP and its basic principles. However, there may be a need to review the plan as the project progresses to reflect feedback and lessons learned.

Celsius will develop survey instruments and associated educational materials to provide information and context to customers actively engaged in this research. This information will be published on the Celsius website and made available to customers. Specific customer groups will be engaged as follows:

Customers

The Celsius team will seek feedback from customers on trial networks to establish perception and acceptability of changes to, or emanating from, distribution substations where retrofit cooling techniques have been deployed. These changes may include audible effects and/or visual observations. Customers will be able to use a range of methods, as specified in Section 8.2, to contact the project team. The project team may use the results of the feedback to amend processes.

Vulnerable customers

Electricity North West maintains a PSR of customers who have special requirements or who may be vulnerable during a power outage. This register enables the company to provide extra services to vulnerable customers along with assistance and support if required.

The Celsius project is not expected to have any adverse impacts on vulnerable customers. Vulnerable customers already registered on the PSR will not be targeted specifically for participation in the ECP or customer surveys. However, all customers, including those registered on the PSR, participating in Celsius customer research will be able to contact the project team using the methods outlined in Section 8.2.

Questions will be included in the survey to assess whether any vulnerable customers reside at the property. This question set will help the project team to understand any potential differences in perceptions held by this group compared to other customer segments.

Other vulnerable customers, not currently registered on the PSR, may be identified during the research as a result of information supplied voluntarily. These survey participants will be provided with information about the PSR and details of how to register via Electricity North West or their electricity supplier, if they consider they are eligible.

DNOs and other key stakeholders and interested parties

Electricity North West will work with Impact Research to disseminate the outcomes of the project and seek feedback from interested parties identified during the course of the research.

The project team will provide regular updates on the Celsius website. They will share project outcomes with DNOs and other key stakeholders and interested parties. All interested parties will be able to contact the project team with any enquiries about the research, via the communication channels outlined in Section 8.2.

Stakeholder consultation

Electricity North West has consulted all Celsius project partners and relevant internal departments during the development of this project. This consultation has informed the production of this engagement plan. The FNSG was also engaged during the bid preparation process and will continue to receive project updates throughout the delivery stage.

The project team will be available to answer questions from these stakeholders throughout the life of the project.

Project steering group

The project steering group will review and guide the project's activities, deliverables and objectives and set the strategic direction.

5.5 Engaged customer panel

An ECP will be convened in advance of the customer survey. The ECP's members will reflect the demographic profile of Electricity North West's customer base. This approach was used successfully in Electricity North West's previous Second Tier LCN Fund projects to explore complex concepts and encourage informed discussions. It is envisaged that ECP members will be recruited by telephone using customer data provided by Electricity North West. Electricity North West will provide Impact Research with a limited amount of personal data (addresses and contact details) derived from the MPAN database to facilitate ECP recruitment.

The ECP will be utilised to test and refine educational information that will be presented to selected participants as part of a suite of materials during the customer survey. These communication materials will be important in aiding customers' understanding of the retrofit cooling interventions. The materials will give equal weight to developing participants' understanding of traditional reinforcement (against which acceptance of the new techniques will be measured) and of the retrofit cooling interventions.

Electricity North West will work with Impact Research to determine the communication materials required to educate selected survey participants and agree how these are presented. This could include, but will not be limited to, a video, the Celsius website, a customer leaflet, a letter, visual stimuli and a frequently asked questions document.

Engagement with the ECP will maximise the effectiveness and clarity of the education materials.

An appropriate financial incentive will be offered to all customers who participate in the ECP.

5.6 Customer survey

Celsius will include a programme of customer surveys before (baseline) and after (test) the various cooling techniques are installed and made operational during the trials, as described in Section 4. Customers on the trial networks will be targeted for participation in the surveys based on their property's proximity to substations where the cooling techniques are deployed, because it is possible that these customers might notice audible and/or visual changes to the assets. The test survey will seek to understand the impact of such changes.

The customers on Celsius trial networks who are surveyed will form a statistically robust and representative sample. The survey sample will be split into three aggregate regions: urban, dense urban and rural. This is an important element of the Celsius engagement given the different environments in which the substations are located.

The baseline survey will be conducted with customers on the trial networks before the retrofit cooling techniques are applied. The data collected from the baseline will serve as a benchmark with which to compare the results of the test survey, conducted after the cooling interventions have been applied, allowing any change in perception to be measured.

Two versions of the baseline and test survey will be produced: one which includes additional communication material intended to educate customers about the need for Celsius and the benefits of the method; and another version without this educational material. Customer engagement will evaluate the hypothesis linking the investment in education to an increased acceptability of Celsius.

A total of 600 customers will be surveyed in the baseline measurement before the retrofit cooling trials begin in January 2018. Of these, 300 will be conducted with customers who have been exposed to the additional educational materials.

A further 600 test surveys will be completed on a rolling basis during the 18-month trial period ending in June 2019. Of these, 450 respondents will be new to the engagement with no prior education or involvement in the Celsius project.

Impact Research aims to re-survey 150 of the 300 customers who took part in the baseline survey and who were exposed to the additional educational materials. The proposed iterative re-engagement activity relies on customers agreeing and being available to take part on a second occasion. In the event of original baseline participants being unavailable or unwilling to take part in the second survey, Impact Research will achieve as many interviews as possible from the original survey population. Additional survey customers, not previously exposed to the supplementary materials, will then be educated to achieve a sufficient sample of pre-educated customers for analysis purposes.

An appropriate financial incentive will be offered to all customers who complete the customer survey.

The survey will be administered either face-to-face or via a computer aided telephone interview. Customers will predominantly respond to the survey face-to-face. This method has multiple benefits, in particular, professionally trained and accredited interviewers are able to clarify the participant's questions, and it is easier to access customers in close proximity to specific distribution substations. Face-to-face interviews also facilitate the use of audio-visual stimuli so that customers can see images or hear sound clips demonstrating the various retrofit cooling techniques where necessary.

Customer consent will be sought before entering any premises to conduct a face-to-face interview. This will be in the form of an introductory question, asking the customer to confirm that they are happy to be engaged for the purpose of participation in Celsius research. If verbal consent is granted, and the customer indicates they are happy for the interviewer to enter their premises, a signature will be obtained at that point.

Customers who agree to participate in the survey will be fully informed about how their data will be used and shared before taking part, irrespective of the initial contact method. They will also be advised that their personal data will not be included or shown in any customer survey analysis. Participants will be asked to sign a consent form and by doing so, will agree to their information being used for the stated purpose. A draft of the consent form is provided in

APPENDIX B. This process is defined in further detail in the DPS.

Potential impacts on vulnerable customers will be kept to a minimum throughout the Celsius project. Interviewers will be briefed about PSR services available to customers and how to register so that they can provide this information to survey participants when appropriate. Details of how to contact the Celsius project team with any queries or concerns will also be provided. The survey materials will include similar information.

The baseline survey is expected to take approximately 30 minutes (with additional education included) or 25 minutes (without additional education). A survey of this length is sufficient to attain the research objectives but is not too onerous for customers to complete and will thus maximise potential participation among all customer segments. Both versions of the survey will include questions to elicit the respondents' awareness of Electricity North West, general awareness and observations of nearby network assets (eg distribution substations), attitudes towards changes to the assets or the structure of the substation housing the asset. The survey will capture the key drivers and barriers to acceptance of change.

The test survey is expected to take approximately 25 minutes to complete (with additional education included) or 15 minutes (without). Both versions of the survey will include questions concerning unprompted and prompted observations of changes to nearby assets (eg distribution substations) and the acceptability of those changes.

5.7 Incorporating learning from previous customer engagement

The techniques that will be used to engage with customers during this project draw heavily on previous Electricity North West customer engagement activities, some of which have already been described. Based on this experience, the project team is confident that it can successfully introduce relevant information, which will enable the ECP to make an informed evaluation of project materials.

The survey instrument will be piloted with a small group of previously unengaged customers before the main customer survey. This approach is a direct learning from previous customer engagement projects and will lead to the final survey instrument being sufficiently robust to accurately measure customer acceptance.

The insight developed from previous experience in this sector will ensure that the questions presented in the survey will support the most accurate method of measuring customer acceptance of a range of retrofit cooling techniques in different environmental settings.

6 CELSIUS CUSTOMER GROUPS

Four customer groups have been identified as being directly or indirectly involved in the Celsius project, and therefore must be actively engaged. These customer groups are defined below.

6.1 Customers participating in the ECP

An ECP will be convened in advance of a targeted survey and will play a key role in the development of Celsius communication materials, required to educate half of the participants taking part in the customer survey. These materials will be guided by the ECP to maximise their suitability, applicability and ease of understanding.

ECP panellists will be customers from within Electricity North West's operating region but are unlikely to be on the Celsius trial networks.

6.2 Customers on the trial networks participating in the Celsius surveys

A total of 1,200 surveys will be completed among a demographically representative sample of customers served by Celsius trial networks. Survey recruitment will be based on the

proximity of properties to the distribution substations where retrofit cooling techniques have been applied.

In total, 600 baseline surveys will be conducted with residential and business customers from premises in close proximity to the trial distribution substations, before the retrofit cooling interventions are applied. The data collected from the baseline will serve as a benchmark with which to compare the results of the test customer survey, conducted after the cooling technologies have been installed. Half of the baseline survey population will be provided with additional education about the Celsius method.

After the retrofit cooling techniques have been applied, a test survey will be conducted with 600 customers. Of these, 450 respondents will have no prior education or involvement in the project. The remaining 150 participants will be educated on the need for and benefits of Celsius.

The project team will utilise various tools to ensure that survey participants remain engaged throughout the exercise. These will include a piloted survey instrument, which is easy to understand and administer, along with a financial incentive.

6.3 Customers on the trial networks who will experience supply interruptions

There is a possibility that customers on some Celsius trial networks, including those participating in surveys, may experience planned supply interruptions associated with the installation of essential monitoring equipment or cooling interventions.

The maximum duration of these interruptions will not exceed eight hours and the number of customers affected will be minimal. In the case of internal monitoring, installations will occur at 21 substations. The retrofit cooling trials will be demonstrated on 100 substations but only a subset of these may require an interruption.

Electricity North West will take all practicable steps to install Celsius enabling technologies without the temporary isolation of customers' supplies. However, where this is unavoidable, these impacts will be managed through business as usual processes and all impacted customers will be provided with standard written notification before the planned supply interruptions, in accordance with Guaranteed Standards of Performance.

6.4 Customers on the trial networks not participating in the ECP or survey

Customers on Celsius trial networks who are not actively involved in Celsius customer engagement will not be made aware of the project through any form of targeted awareness campaign. A small number of these customers may be affected by planned supply interruptions associated with the installation of monitoring and cooling technologies; however, all practicable steps will be taken to maintain supply. Where planned supply interruptions are unavoidable, customers will be contacted individually, in accordance with Guaranteed Standards of Performance.

6.5 Other electricity customers

The challenges arising from increasing electricity demand have implications for all electricity customers in GB. Celsius delivers customer benefits in the form of additional capacity headroom for LCT connections, facilitation of lower cost, faster LCT connections and lower distribution network operating costs. This means lower bills for customers in the future by reducing the costs associated with traditional network reinforcement.

Recognising these wider implications, the project team will disseminate relevant information in a manner that is easily understandable to customers and by sharing findings and project outcomes with key groups. The following communication methods will include:

- **The Celsius website:** The website will provide a library of published materials and other resources relating to the project

- **Social media:** Social media channels such as Twitter, Linked In and You Tube will be used as appropriate to promote learning from the project
- **Knowledge-sharing with consumer groups**: Learning and outcomes will be shared with organisations that have a specific interest in consumer and energy issues. These will include Ofgem, DECC and the Energy Networks Association
- **Internal communications channels***:* An overview of the Celsius project and the outcomes of the research will be shared periodically with the wider Electricity North West community via the internal company magazine, intranet and the Celsius website.

7 COMMUNICATION AND VULNERABLE CUSTOMERS

7.1 Celsius partner customer engagement principles

Celsius project partners bring existing customer engagement and management experience to the project. These project partners will adhere to the following key principles:

- Project partners responsible for any form of customer contact will ensure that their codes of practice include guidance on appropriate customer contact. This includes making it clear to customers that the contact relates to the Celsius project. As a minimum requirement, they will provide clear information about the objectives and applications of the Celsius research in which they are participating.
- Clear information on the aims and objectives of the contact will be provided.
- Information on data protection will be provided.
- Project partners with access to customer data gathered for Celsius will sign an agreement to ensure this data is not used for any purpose other than in relation to the Celsius project. Electricity North West's data security manager takes responsibility for all aspects of data privacy within the Celsius project.
- Where project partners have other relationships with customers participating in Celsius research which are outside of the project, the partners will make it clear in customer communications whether their communication relates to the Celsius project or the wider relationship.
- Any customer considering participation in the Celsius ECP or surveys will receive clear information about what that participation will involve, details of who to contact if they have queries or complaints and who will have access to their data.
- Any customer agreeing to participate in Celsius will receive sufficient information to enable them to understand what will be expected of them and the purpose and scope of the programme.
- When collecting data, project partners will be transparent about why they are collecting the data and how it will be used, stored and accessed. (A detailed approach for managing personal data is set out in the DPS.)

7.2 Vulnerable customers

Electricity North West appreciates that some of its customers have additional requirements due to disability, being elderly, having a chronic illness or other form of vulnerability. The company has a strong history of promoting safety and security at the homes of these vulnerable customers. Among other things, the company maintains a PSR of customers who have special requirements or who may be vulnerable during a power outage. The register enables the company to provide appropriate assistance to these customers where required.

Vulnerable customers will not be actively targeted for participation in the ECP or survey. If a vulnerable customer participates in the research, any information they provide about their vulnerability will be on a voluntary basis and any such information will only be used at an aggregated level for analysis.

Vulnerable customers participating in the survey will be contacted face-to-face initially and will be able to take part in the survey in their own homes at a convenient time as outlined in

Section 5.6. However, they will be offered an alternative computer aided telephone interview at a convenient time.

Appropriate measures will be adopted in all engagement with vulnerable customers to ensure that the project is suitably introduced, its aims fully explained and, critically, that these customers perceive no undue pressure to participate in any element of the research. A full suite of supportive and explanatory information will be produced and made available in alternative formats such as audio, large print, Braille or minority languages on request.

It is expected that some vulnerable customers who are not currently registered on the PSR may be identified in the survey from their responses to questions. These will be included in the aggregated subgroup analysis. These individuals will also be provided with information about the PSR and details of how to register via their supplier or Electricity North West, should they feel they are eligible and express an interest in doing so.

Throughout the Celsius project any potential effects on vulnerable customers will be kept to a minimum. Interviewers will have access to details of PSR services available to customers and details of how to contact the Celsius project team with any queries or concerns. Survey materials will include similar information.

If an enquiry or complaint is received from a PSR or vulnerable customer regarding any aspect of the Celsius project, the project team will investigate and resolve the enquiry as a matter of urgency. Response times will be a maximum of ten working days, in line with Electricity North West's standard practice.

7.3 Customer planned interruptions

The Celsius project will require enabling technologies to be installed on the trial networks. Following trial network selection, each distribution substation will be assessed to establish if the intervention can be installed on live assets, without the need for a planned supply interruption. Every effort will be made to avoid supply interruptions by back-feeding supplies from an adjacent substation, live working or connecting a generator for the duration of the installation. However, this may not be possible for the installation of the internal monitoring sensors and retrofit thermal monitoring on pole-mounted transformers. Therefore, planned supply interruptions may be unavoidable in a small number of cases. In the event of an interruption, the number of customers affected is anticipated to be minimal and the maximum impact of these planned interruptions will be no longer than eight hours.

If it is necessary to interrupt customer supplies during the installation of Celsius technologies, a planned shutdown will be arranged and customers will receive written notification, in accordance with Guaranteed Standards of Performance. Vulnerable customers, identified from the PSR, will be notified well in advance of the standard notification period.

Protection from incentive penalties will be requested where it is not possible or practical to provide a temporary, alternative supply to customers, where installations necessitate planned supply interruptions. The anticipated value of the penalty is in the region of £99,104 based on 2015/2016 prices and the average number of customers connected to pole-mounted and ground-mounted transformers in the scope of the project.

8 CUSTOMER STRATEGY AND CUSTOMER RELATIONS

8.1 Customer strategy

Celsius will require targeted communications with the four directly or indirectly involved groups of customers outlined in Section 6. The underlying communications strategy will be to:

- Engage with these customers on an ongoing basis throughout the project to ensure that the customer experience remains a positive one
- Consider the needs of any vulnerable customers, identified on the PSR, or by any other means, affected by the project
- Consider the needs of customers during planned supply interruptions and work to mitigate impacts.

Electricity North West understands that without the support and buy-in of all customer segments outlined in this CEP, the research will not fully meet its objectives. The project team is therefore committed to ensuring that the customer journey is a good and positive experience, which is essential for the successful delivery of the project.

8.2 Customer relations

Customers and stakeholders who require further information about the Celsius project can access this in the following ways:

Celsius website and social media

Project information will be available on the Celsius website upon its launch in July 2016. This will act as the hub for all information relating to the project. It will be used as a platform to disseminate project materials including trial networks, customer activities and project literature. The website will also contain contact details for the project team. If a customer is unable to find an answer to a specific issue, a 'contact us' function will allow them to submit their query so that a representative from the project team can respond directly to the customer.

Enquiries

Celsius will provide a number of communication channels to ensure customers find it simple to raise any questions or concerns at a time convenient for them using the following channels:

Telephone

Electricity North West's CCC provides a contact service for customers, which is continuously staffed and operates 24 hours a day on 0800 195 4141. There is a dedicated interactive voice response option available for all smart grid and low carbon enquiries.

Social media

Electricity North West holds Twitter and Facebook accounts and can provide updates or responses to customer enquiries via these channels.

Written correspondence

The Celsius project team will handle written enquiries from customers and stakeholders sent to the following address:

Celsius project team
Technology House
Frederick Road
Salford
M6 6AP

Alternatively, customers can email queries or requests for further information to the project team at futurenetworks@enwl.co.uk.

Response times will be in line with Electricity North West's standard practice, ie a maximum period of ten working days.

Information for interested parties

The Celsius website will be updated with relevant information and learning outcomes from the project, which will be shared with stakeholders and other interested parties throughout the project.

Alternative formats

All customer information about the Celsius project will be available in alternative formats such as large print, audio, Braille or minority languages on request.

8.3 Communication plan – Celsius research participants

The range of tools that will be used to engage and communicate with Celsius research participants has been outlined in Section **Error! Reference source not found.**.

Once the Celsius research methodology has been finalised, it will be subject to peer review by an external third party before the pilot survey. This will ensure its robustness and applicability to achieve the required outcomes.

8.4 Customer enquiries and feedback

The customer research will provide a mechanism for obtaining feedback about Celsius and customer perception. The range of tools that will be used to facilitate and obtain customer feedback is outlined in Section 6.

The methods of communication available for customers to make enquires is set out in Section 8.2.

The CCC and wider business will be educated about the Celsius project and a process will be implemented to capture and record all queries or concerns raised by customers relating to this research. This will ensure that any enquiries or complaints are handled promptly and appropriately, and resolved to the satisfaction of the customer. It is anticipated that customer enquiries will be resolved during the initial contact. However, those which are not resolved at the first point of contact will be managed directly by the Celsius project team.

Should customers report a noticeable effect or dissatisfaction attributed to the implementation of retrofit cooling techniques in their local area, the matter will be investigated immediately and thoroughly by the Celsius project team and potential solutions explored to attain a mutually agreeable resolution. In the unlikely event that a resolution to a complaint is not achievable, Electricity North West may consider halting or changing the particular cooling intervention proposed for that specific site.

8.5 Feedback from DNOs, project partners and interested parties

The Celsius customer engagement process will result in lessons learned about how to engage customers effectively, adding to the learning from previous projects. It is anticipated that key stakeholders such as Ofgem and DECC will take a keen interest in the research findings.

As part of learning and dissemination activities, lessons and outcomes will be shared with other industry stakeholders and interested parties, including other DNOs, industry groups, academic institutions, local authorities and customers.

All partners and stakeholder groups will be invited to provide feedback on the dissemination of customer engagement learning outcomes. This feedback may be used to revise plans throughout the project life in order to continually improve the engagement strategy. The Celsius project team will consult Ofgem in advance of any significant changes to the original approach.

9 CONCLUSIONS AND NEXT STEPS

This CEP sets out the Celsius approach for communication and engagement with customers throughout the project. All project partners will adhere to the plan and the basic principles outlined.

APPENDIX C summarises the Celsius customer engagement activities outlined in this plan and their associated timings.

There will be ongoing learning as the project progresses and the plan will therefore be reviewed regularly to reflect any feedback and adapt to lessons learned. Ofgem will be consulted before any significant changes are made to the plan.

In line with the vision of the NIC, all outputs and learning from customer engagement activities will be made available to other DNOs. Specifically, all communication materials developed in the project will be publicised on the Celsius website. All relevant learning will be shared at Celsius learning events, through trade magazines and in other appropriate forums.

10 APPENDICES

APPENDIX A: CUSTOMER ENGAGEMENT CONSENT FORM

You may find the following questions and answers helpful in understanding what data will be collected from you and how it will be used. **Please read this information and indicate your consent at the bottom of the form.**

Who is Impact Research?

Impact Research is an independent market research agency whose registered address is 3 The Quintet, Churchfield Road, Walton on Thames, Surrey, KT12 2TZ.

What is the purpose of market research?

Market research attempts to generate understanding and knowledge about customer behaviour within it, by gaining information (data) from specific samples of customers and extrapolating results to the population as a whole.

Market research is scientifically-conducted research where the identity of respondents, and all personal data they give to the researchers, are kept fully confidential, and cannot be disclosed or used, for any non-research purpose.

Market research is not a commercial communication or a selling opportunity. Market research has no interest in the individual identity of respondents.

What data will you collect from me?

You will be asked to provide Impact Research with your contact details so that we are able to confirm your attendance at the focus group meetings.

You will also be asked to take part in two group discussions and share your perception, attitudes and behaviour with respect to the electricity supply at your property.

How will data be collected and stored?

The group discussion or interview you take part in will be:

- Audio recorded
- Video recorded
- Observed by people in the room/from another room/location.

Will data be shared with third parties?

The Data Protection Act requires that Impact Research collects and uses the information you provide to it in a manner that respects and protects your confidentiality. Your personal details (name, address, phone number) will not be disclosed to any other third parties without your permission.

In most cases the audio and video recordings will be heard/watched and the transcription read **only by the transcriber and researchers from Impact Research** for research purposes. Excerpts from the transcripts or tapes may be used to illustrate the research findings. This will always be done in a way to protect your identity (eg comments will not be attributed to you personally).

The tapes will not be used for non-research purposes, such as direct sales activities. The tapes will be dated and deleted, at the latest, two years after the research is completed.

In exceptional cases the audio tape will be listened to/the transcription read/the video tape watched by employees at Electricity North West working on this project. Anyone from Electricity North West who reads the transcript or listens to/watches the audio/video tape will sign an undertaking that they will respect the anonymity of those taking part. Any other

material or information generated by you, such as ideas written down on paper, will be subject to the same strict controls.

We would like to ask your permission to use soundbites and/or video footage from the group discussions at industry learning events about this project. This may range from anonymised sounds bites of what people at the groups were saying to actual clips from the video recording.

You will not be identified by name or by the name of the company you work for. It will not be possible to protect the anonymity of those who can be seen or heard in the video footage eg by blurring out people's faces.

The tapes will not be used for commercial purposes, such as promotion or direct sales activities. Are you happy for us to use:

Audio clips of your comments	Yes	No
Video clips of your comments	Yes	No

I am happy to have the feedback I give through participating attributed to me so that Electricity North West are aware that I have taken part in this market research.

Please circle: YES/NO

I am happy for Impact Research to get in touch with me again in the future to discuss the service I receive from Electricity North West for market research purposes.

Please circle: YES/NO

I am happy for my data to be passed to Electricity North West in order that they can discuss with me any aspect of my electricity supply in the future.

Please circle: YES/NO

I agree that after the above explanation, I was given the option not to take part in the engaged customer panel, if I had any reservations.

Name ..... Signed .....

Date.....

APPENDIX B: CUSTOMER SURVEY CONSENT FORM

You may find the following questions and answers helpful in understanding what data will be collected from you and how it will be used. **Please read this information and indicate your consent at the bottom of the form.**

Who is Impact Research?

Impact Research is an independent market research agency whose registered address is 3 The Quintet, Churchfield Road, Walton on Thames, Surrey, KT12 2TZ.

What is the purpose of market research?

Market research attempts to generate understanding and knowledge about customer behaviour within it, by gaining information (data) from specific samples of customers and extrapolating results to the population as a whole.

Market research is scientifically-conducted research where the identity of respondents, and all personal data they give to the researchers, are kept fully confidential, and cannot be disclosed or used, for any non-research purpose.

Market research is not a commercial communication or a selling opportunity. Market research has no interest in the individual identity of respondents.

What data will you collect from me?

You will be asked to provide Impact Research with your contact details so that we are able to re-contact you. We will only ever re-contact you for specific purpose(s), should you agree to them at the end of this form.

You will also be asked to provide us with details about your household, such as the number of people living in your household. Any answer you give will be treated in confidence in accordance with the Code of Conduct of the Market Research Society. This means that all of the information we collect will be used for research purposes only.

You will also be asked if you, or anyone in your household have a disability, medical equipment in your household, mobility problems, are seriously ill or have visual or hearing impairment. This sensitive personal data is asked to understand if customers falling into any of these categories have different dependency or perceptions regarding their electricity supply. You will have the opportunity to opt out of answering questions of this nature.

Should you, or anyone in your household, have a disability, medical equipment, mobility problems or are seriously ill or have visual or hearing impairment, we shall, with your permission, record this in our database, but we will not require you to disclose specific details such as the type of illness, medical equipment or medical history.

How will data be collected and stored?

Data will be collected via a customer survey, administered by a professional interviewer, using an electronic device. The data will be stored in a secure restricted access database and not locally on the device.

Will data be shared with third parties?

The Data Protection Act requires that Impact Research collects and uses the information you provide to it in a manner that respects and protects your confidentiality.

Your personal data (such as name, address, phone number) will not be disclosed to any other third parties without your permission. Research data will not be personally attributed to individuals and shared with third parties without their explicit permission to do so.

Informed consent

I am happy to have the feedback I give through participating attributed to me so that Electricity North West are aware that I have taken part in this market research.

Please circle: YES/NO

I am happy for Impact Research to get in touch with me again in the future to discuss the service I receive from Electricity North West for market research purposes.

Please circle: YES/NO

I am happy for my data to be passed to Electricity North West in order that they can discuss with me any aspect of my electricity supply in the future.

Please circle: YES/NO

I agree that after the above explanation, I was given the option not to take part in the customer survey, if I had any reservations. I also agree that I authorised an interviewer to conduct the interview in my own property.

Name ..... Signed .....

Date.....

APPENDIX C: TIMETABLE OF CUSTOMER SUCCESSFUL DELIVERY REWARD CRITERIA (SDRCS)

When	Criterion	Required evidence
June 2016	Develop customer engagement plan and data privacy statement	Send customer engagement plan and data privacy statement to Ofgem
July 2017	Design, create and test customer communication materials using a customer focus group	Deliver customer focus group workshop
December 2017		Publish lessons learned from testing customer communication materials on Celsius website
September 2019	Deliver the customer surveys and report the findings	Publish customer survey report quantifying the acceptability of innovative retrofit cooling techniques on the Celsius website
		Publish additional customer survey analysis evaluating the change, if any, on the acceptability of innovative retrofit cooling techniques by educating customers, on the Celsius website