Capacity to Customers Knowledge Sharing Event

Wednesday, 17 April 2013

LCN Fund
Low Carbon Networks

electricity north west
Bringing energy to your door

electricity north west

Bringing energy to your door

Welcome and Introductions

Steve Cox

Future Networks Manager

Housekeeping

- Fire alarms – none planned
- Toilets
- Mobile phones – please switch off or to silent
- Break at 11.15
- Morning C_2C presentations due to finish at 12.15
- Lunch available from 12.15
- Afternoon C_2C presentations due to commence at 13.00 and the event is due to finish by 15.00

Today's agenda

- An introduction to Electricity North West and the low carbon challenge
- Introduction to C_2C
- Technical review
- Customer review
- Commercial review
- Next steps
- Questions and answers

Connecting the North West

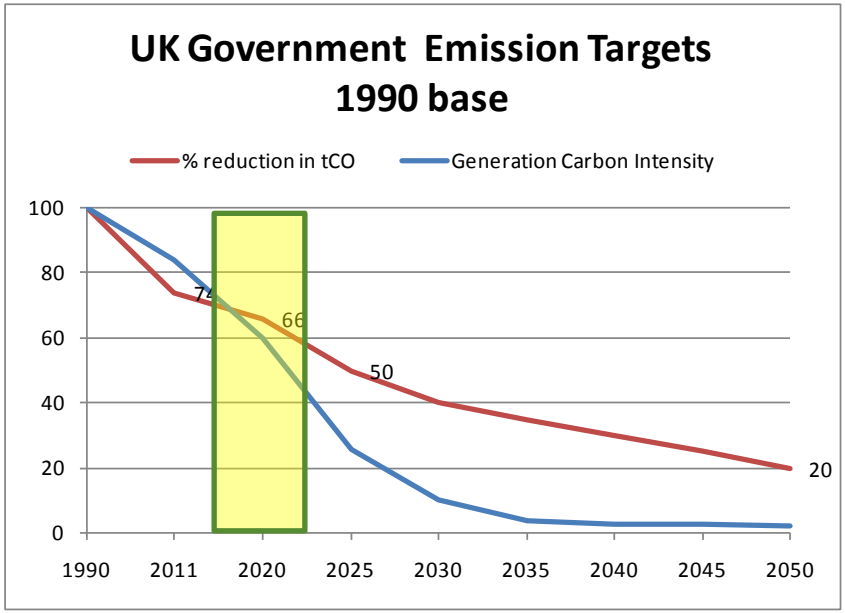
We're not a big multinational we serve only the North West

We distribute electricity to approximately 5 million people at 2.4 million domestic and Industrial locations consuming 25 terawatt hours of electricity annually

- £9bn of Network Assets
  - 58 000km of cable
  - 15 grid supply points
  - 96 bulk supply substations
  - 363 primary substations
  - 34 000 transforming points

UK energy challenges

- 2013 position 1/3rd electricity, 1/3rd gas, 1/3rd oil
- 2020 **34%** reduction in CO_2
  - 40% from wind / PV & new nuclear
  - 5% transport 120,000 EV / hybrid
  - 26M smart meters fitted
- 2050 **80%** reduction in CO_2
  - Doubling in electricity demand

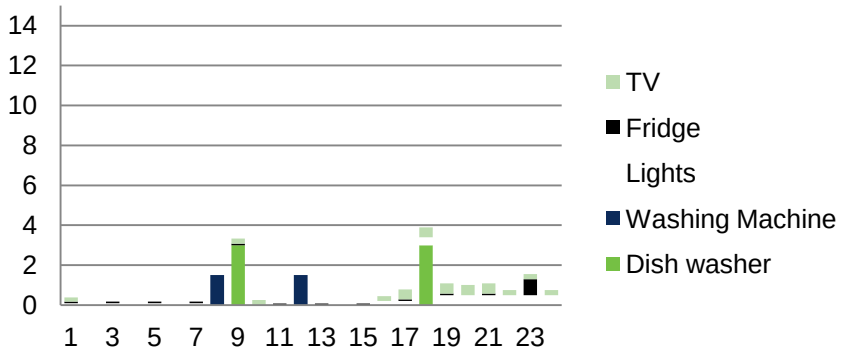


- RIIO-ED1
  - Traditional reinforcement unaffordable
  - DG represents the most immediate challenge
- Challenge to identify 'smart' ways of meeting customers' future needs:
  - **£30 million** RD&D investment programme
  - ~ 60 ongoing projects
  - New equipment and technologies for step change in customer service

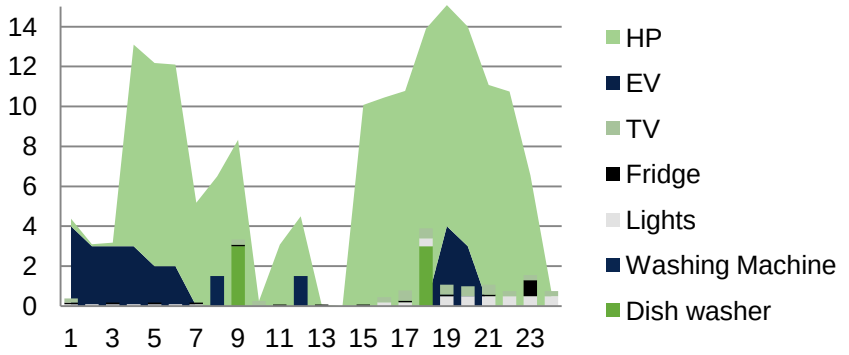
The scale of the challenge

	By 2035
Domestic demand	➢6GW even with optimal scheduling ➢Domestic ADMD 2kW – 14kW
Heating	Domestic heat pumps 350 000 fitted 8-10kW for 8 hours Additional >2 GW
Transport	31% UK12M vehicles will be EV/hybrid 720 000 domestic EVs 80 000 E-Vans 3-8kW for 8+ hours. 50kW fast chargers. Additional >2 GW Manchester >400MW
Generation	93% from renewable / carbon neutral sources 800 MW connected in last 18 months

Domestic demand profile 2012



Domestic demand profile 2025



Our smart grid development

- Electricity North West is leading work on developing **smart solutions** to our future challenges

- Our strategy is to deliver additional value from existing assets, and we have been awarded over £20 million of funding from the LCN Fund, for our two flagship projects:

LCN Fund
Low Carbon Networks

C2C **Capacity to Customers**

CLASS **Customer Load Active System Services**

electricity north west

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Introduction to C_2C

Craig McNicol

Future Networks Programme Manager

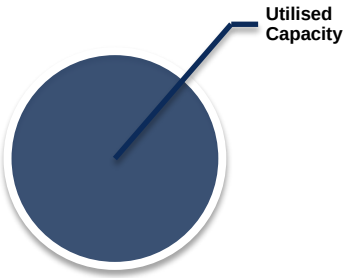
Victoria Turnham

Future Networks Engineer

Innovatively releasing Capacity to Customers

Capacity to Customers

Total available network capacity



Combining proven technology and new commercial contracts

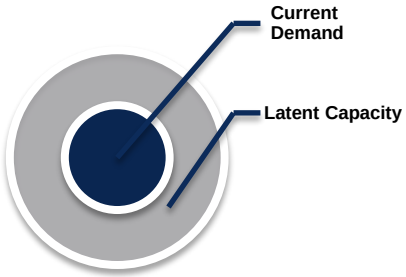
Allows us to release significant network capacity back to customers

Facilitating connection of new demand and generation without reinforcement

=

Technical innovation

Total available network capacity



Apply remote control equipment to the HV circuit and close the normal open point

Enhance network management software

This effectively doubles the available capacity of the circuit negating the need for traditional reinforcement

+

New commercial contracts

To retain customers' security of supply we will utilise innovative demand side response contracts

These contracts will allow us to control the consumption of customers on a circuit at the time of fault

Innovative, low risk and facilitates delivery of low carbon targets

C_2C challenge, outputs & benefits

Insufficient network capacity to satisfy growing demand	• High costs to customers • Significant environmental and social effects
Capacity to Customers project outputs	• Adaptive network control functionality • Demand response commercial templates • Customer segmentation report • New connections process • Overall customer feedback • Network data • Modelling / simulation outcomes • Recommended changes to P2/6
Customer benefits	• Financial benefits • Carbon benefits

Project timeline

Design and build

- Customer engagement plan and surveys ✓
- Commercial templates and processes ✓
- Aggregator tender process ✓
- Circuit selection ✓
- P2/6 derogation and consultation ✓
- Enhanced network management software ✓
- Equipment installation and commissioning ✓

Live trials

- Trial ‘go live’ ✓
- Recruit trial participants
- Power quality and losses modelling
- Carbon and economic impact assessments
- Continuously engage stakeholders
- Continuously engage with customers

Closedown

- Closedown report
- Project closedowns

We aim to create a template for implementation that other DNOs can learn from and use

The C_2C workstreams

Technical

- Circuit selection and methodology
- P2/6 derogation and consultation
- Software design and user acceptance testing
- Remote control commissioning
- Monitoring equipment commissioning
- Demand response capability tested

Customer

- Customer engagement plan
- Compile customer data
- Customer surveys
- Project website

Commercial

- New commercial templates
- New connections processes
- Price model development
- Recruitment of trial participants

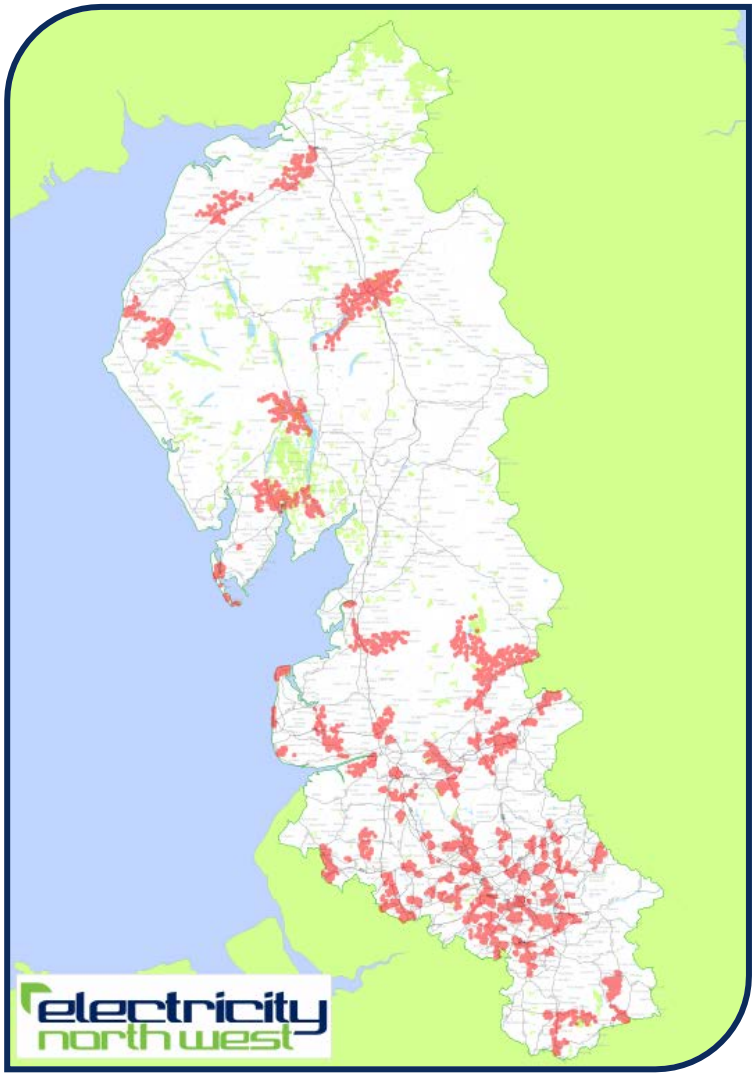
Learning and dissemination

- Six monthly project progress reports
- Presentations to industry conferences
- Newsletters/ white papers/trade magazines
- Project closedown reports

The C_2C trial area

- The trial area is all our **132 & 33kV network** and approximately 10% of our HV network
- C_2C will touch 382,000 customers
- To find out if a location is included in our HV trial area, more details can be found on our C_2C website

www.enwl.co.uk/c2c



Our project partners

electricity north west

npower

flexitricity
Unlocking smart grid revenue

ENERNOC

Impact Research

nationalgrid

PB 100 YEARS PARSONS BRINCKERHOFF

MANCHESTER 1824
The University of Manchester

University of Strathclyde

The C_2C concept

PRIMARY SUBSTATION

New customers

Reduced charge for connecting to the network

Existing customers

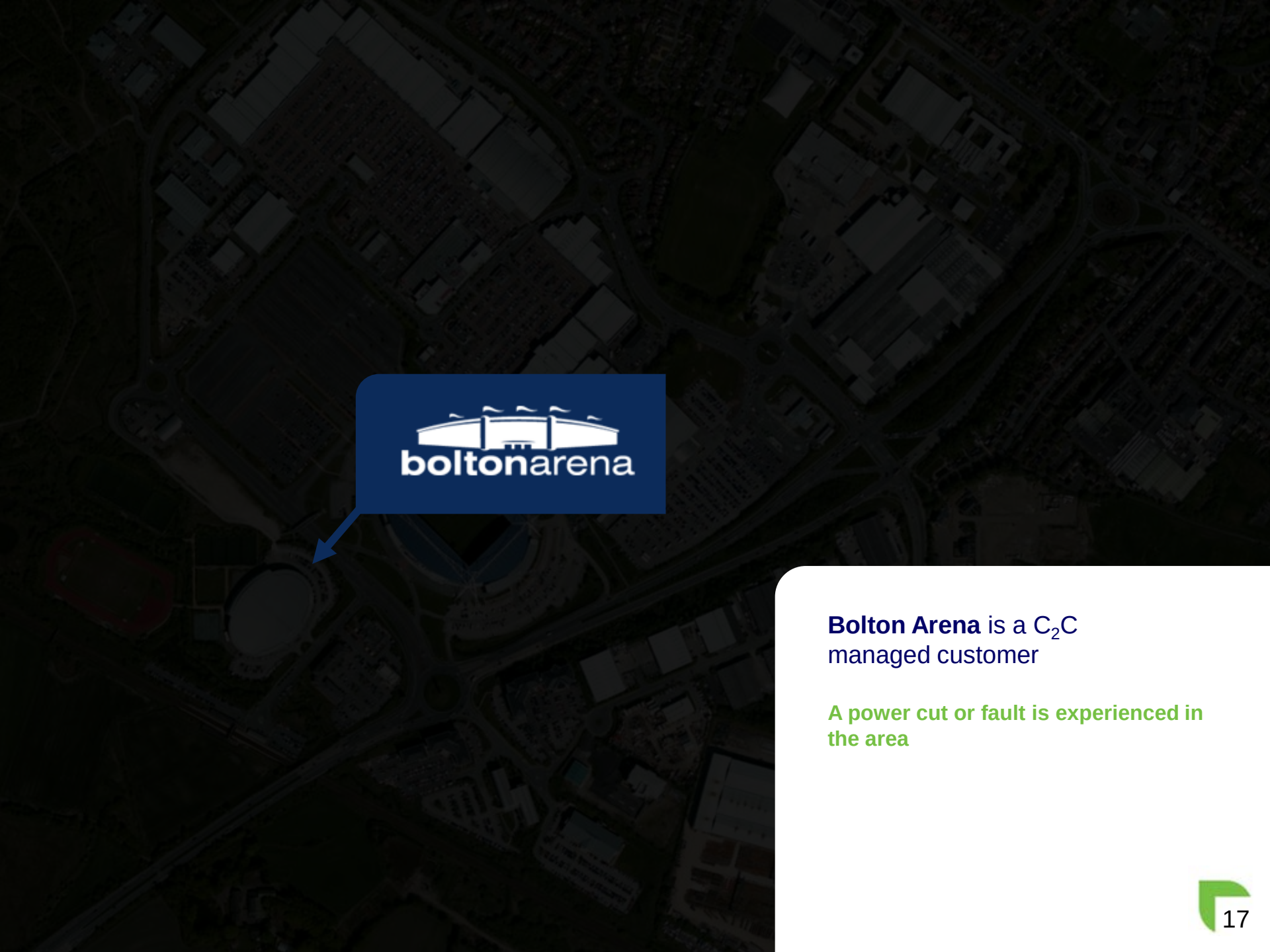
A variable revenue stream dependent upon level of flexibility

For both new and existing customers an opportunity to participate in an innovative trial that will generate learning for the future operation of distribution networks

A C_2C managed customers power supply will be as **reliable as usual**

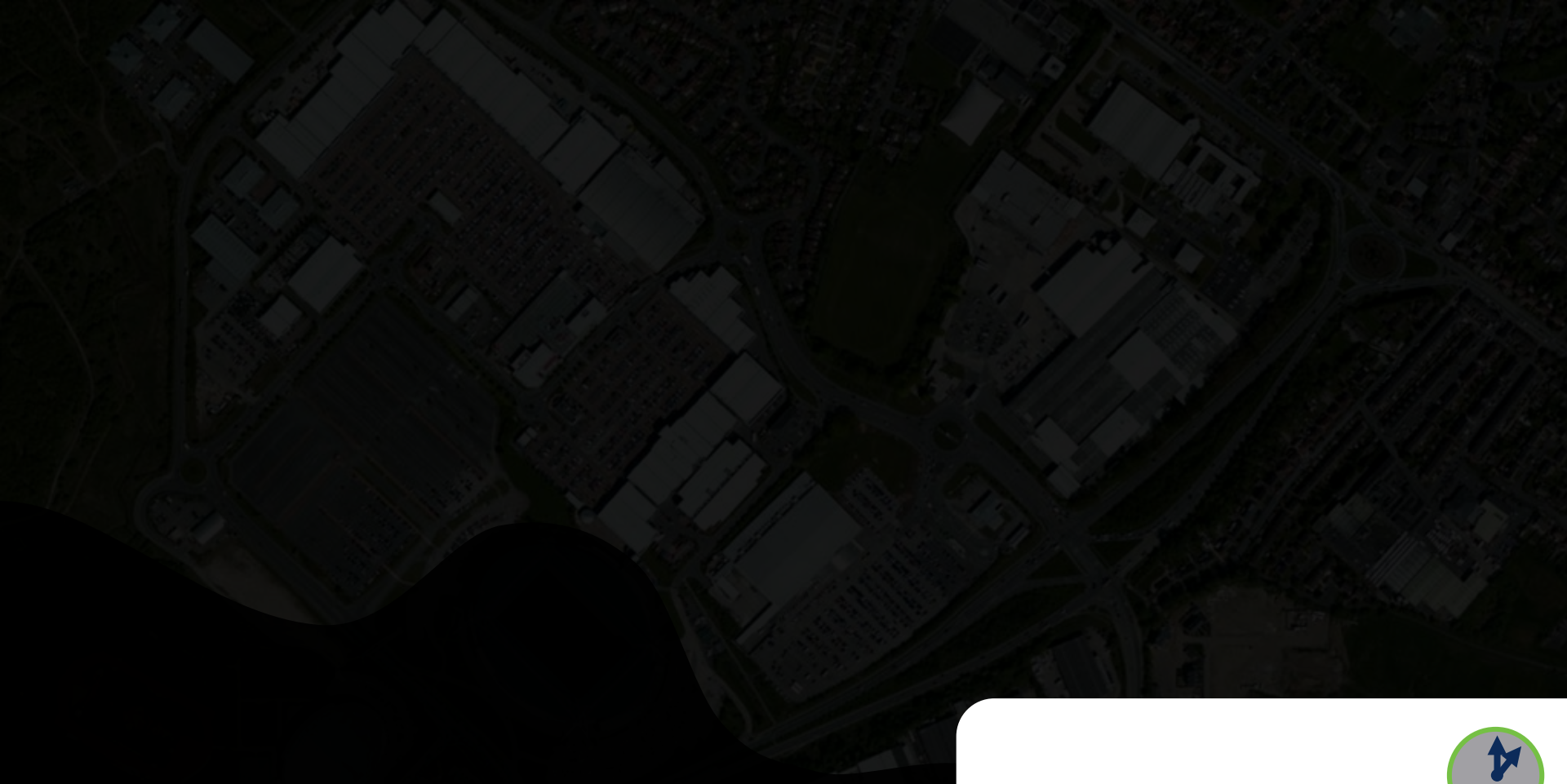
Power cuts or faults are infrequent, and may typically be experienced once every three years.

So, what will happen during a fault?



Bolton Arena is a C_2C managed customer

A power cut or fault is experienced in the area



Within 3 minutes

Power restored to majority of customers in the area

Managed customer and some non-managed customers are still without power

1 hour

Typically following a HV fault, power is restored within 1 hour

All non-managed customers power is restored

8 hours

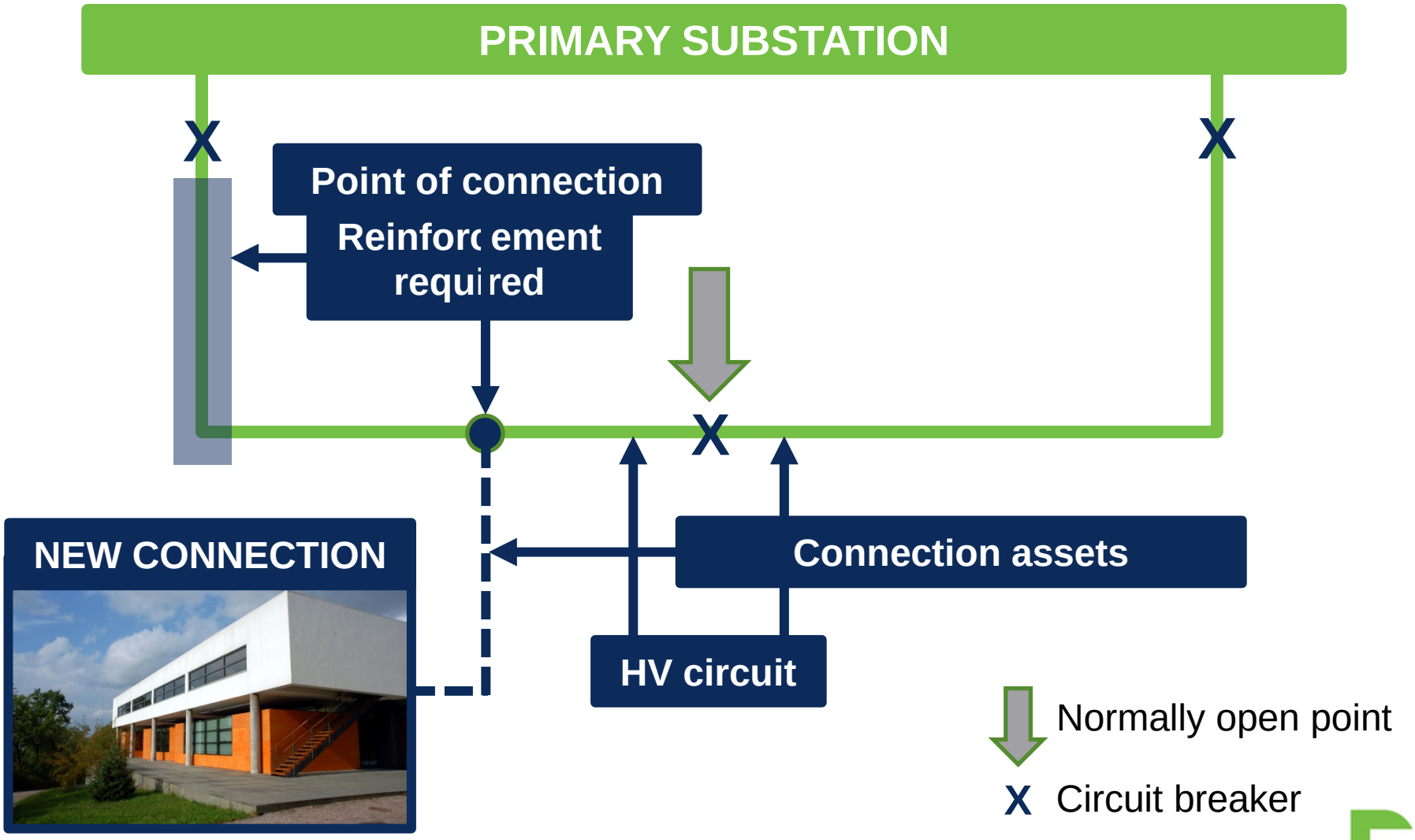
As a C_2C managed customer, the restoration of the non-essential power may be delayed up to a pre-agreed period of time

In this example all of Bolton Arena's load is non-essential and it has been restored within 8 hours

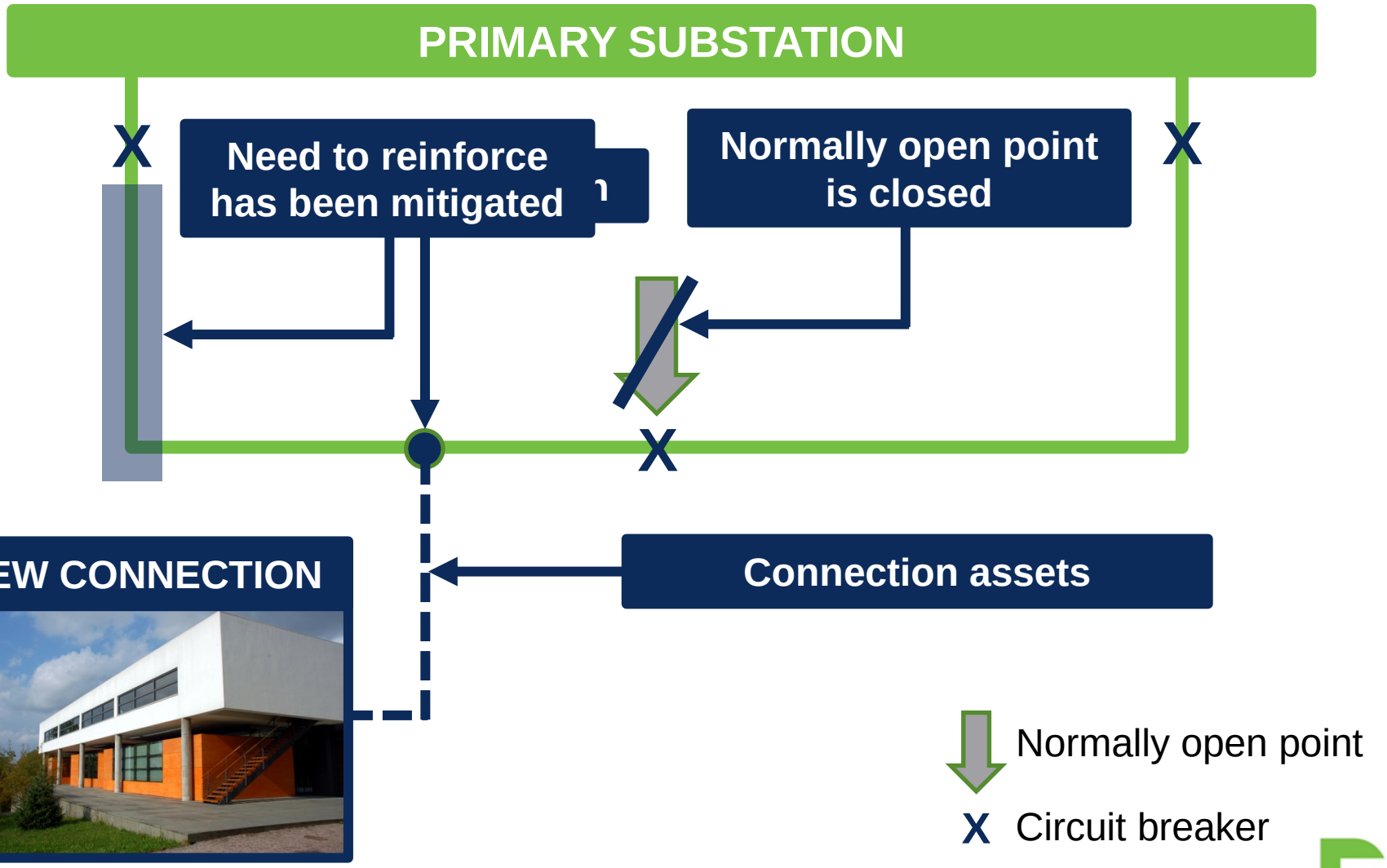
The C_2C proposition

- How can opting for a C_2C managed supply save our customers money on a new connection?
  - **No network reinforcement charges**
  - **Reduced connection asset costs**

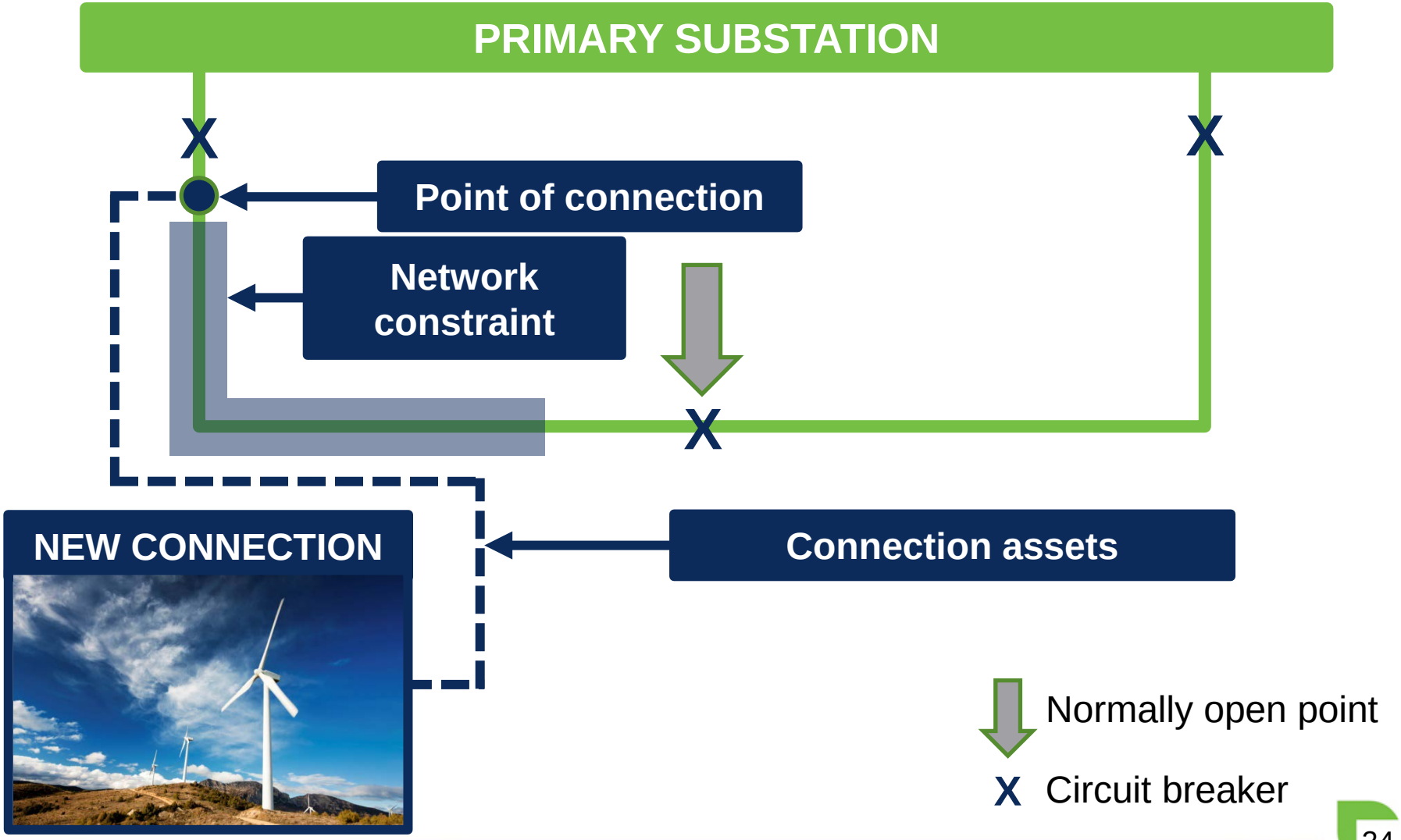
No network reinforcement - standard



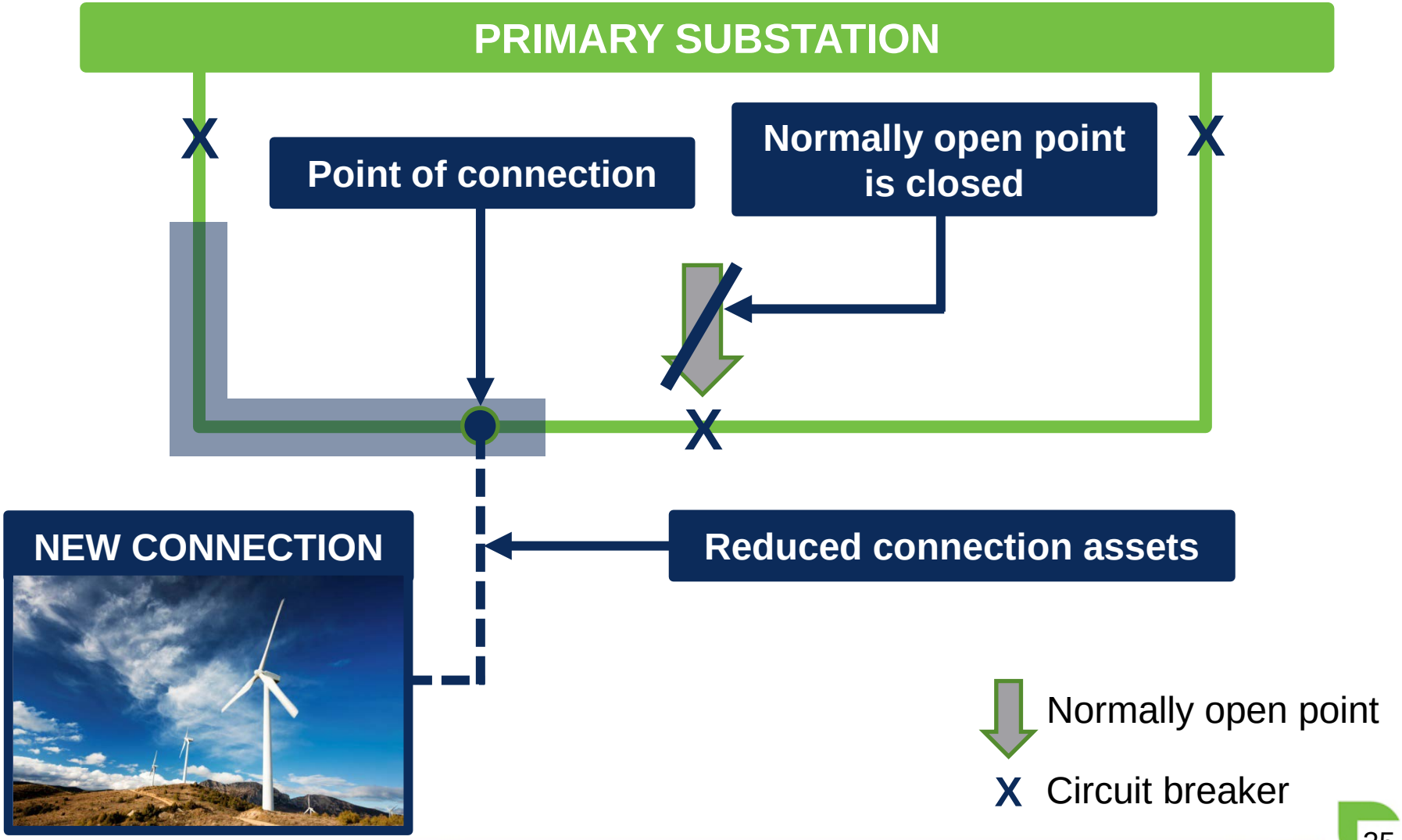
No network reinforcement - C_2C



Reduced connection assets - standard



Reduced connection assets - C_2C



In summary…

Customer benefits

New customers

Reduced charge for connecting to the network

Existing customers

A variable revenue stream dependent upon level of flexibility

Network operator benefits

Network operators in the future

- It introduces greater choice into the new connection market
- Allows the timing of network investments to be better considered

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Questions & Answers

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Technical Review

Paul Turner

Future Networks Technical Delivery Manager

Victoria Turnham

Future Networks Engineer

Our key objectives

Technology development And implementation

Delivery of key technology components required to enable a demand response from our customers

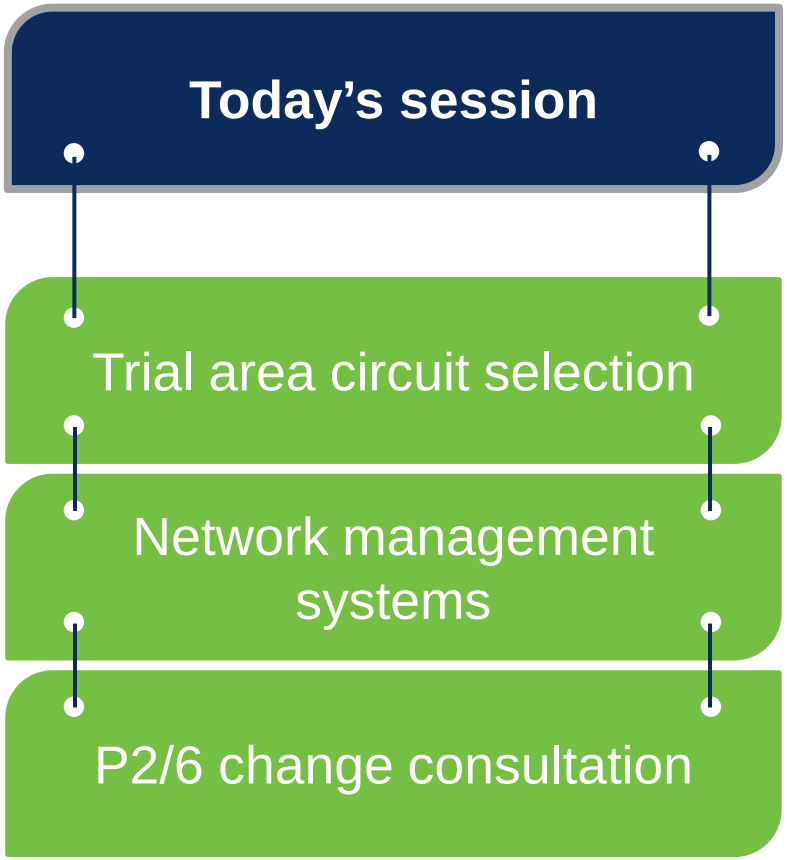
Today's session

Network monitoring And analysis

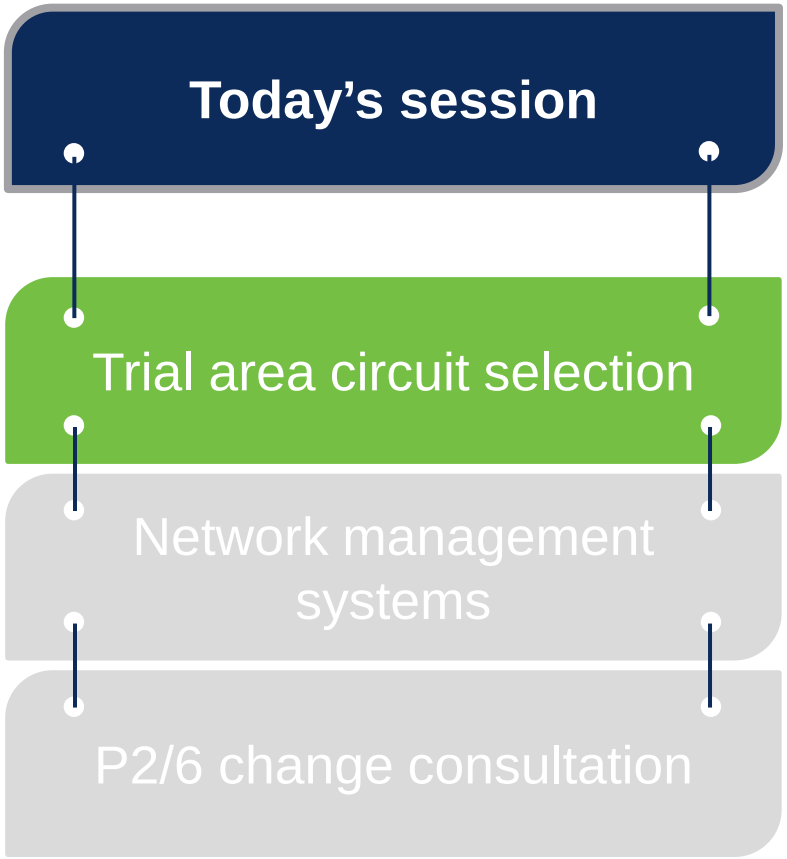
Determine the network benefits of the closed ring method

For future dissemination

Technical review



Technical review



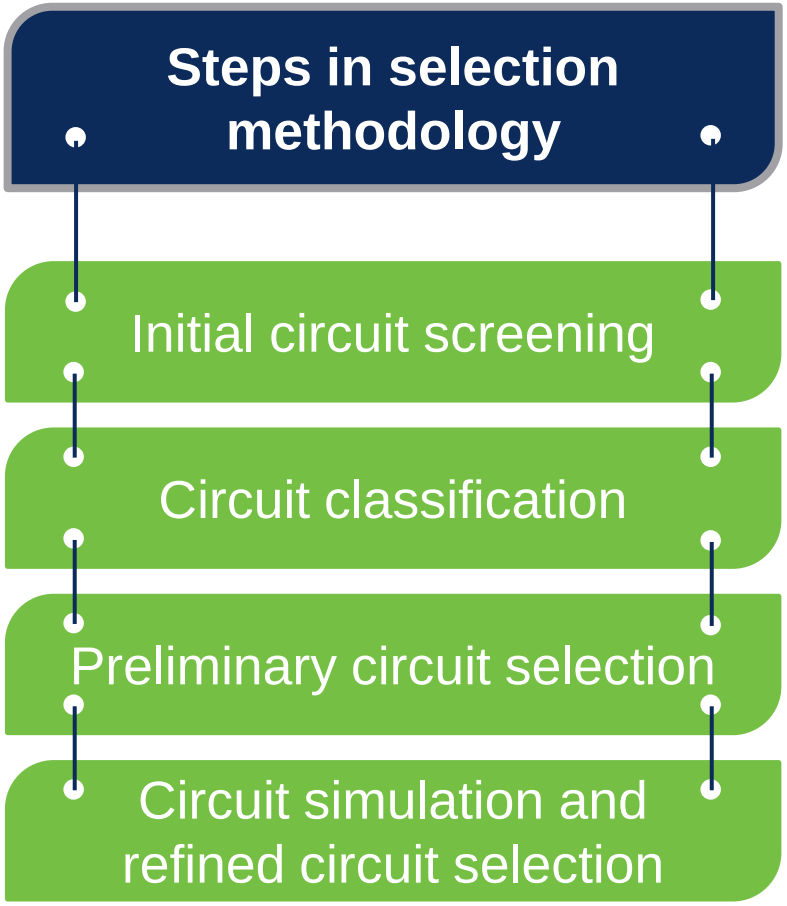
Trial area circuit selection

Selection requirements

- 180 closed rings
- 20 high fault radial

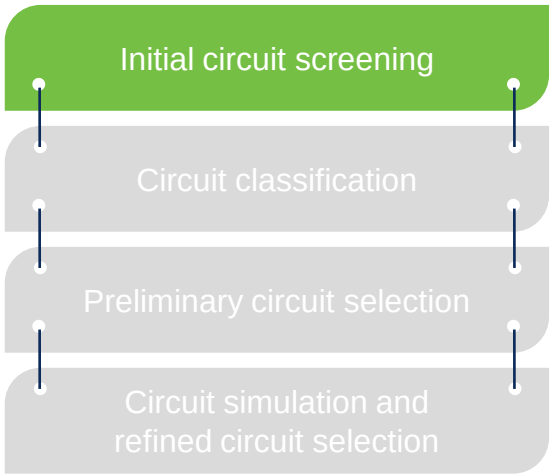
Representative cross section of HV network

Adverse effect on competition



Trial area circuit selection

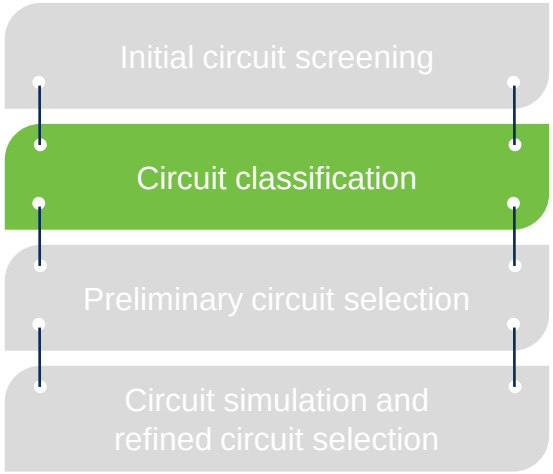
- New customer incentive is dependent on the need for reinforcement
- Objective of initial screening to therefore identify out of the 3600 HV circuits those with a higher likelihood of attracting a new C_2C connection
- Screened based on:
  - Circuit loading
  - Connection activity
- This stage only required for the trial, not necessary for full network roll out



Trial area circuit selection

- Circuits selected for trial need to be representative of our system and other GB networks

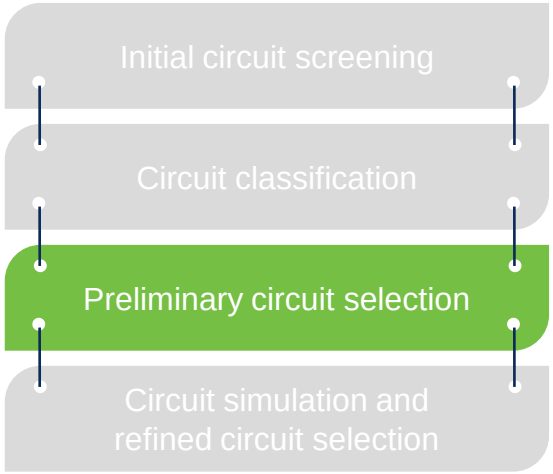
- All circuit classified according to:
  - Voltage levels
  - Circuit types
  - Circuit reliability



Trial area circuit selection

- To ensure technical suitability for trial

- Criteria for selection:
  - Circuit topology
  - Type of switchgear
  - Use of hand charged springs
  - System operations

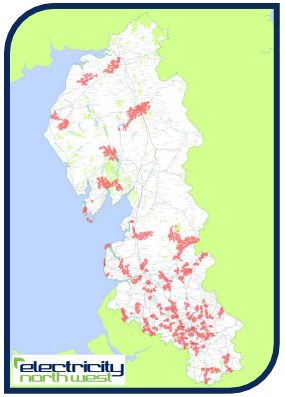


Trial area circuit selection

- Network planning tool used to issues arising from closing of two radial circuits

- Final circuit selection:
  - 153 closed rings
  - 27 open rings
  - 20 radials
  - 8 spare rings

- Representative mix of circuit types across the geographic area of our system and hence a representative mix of customer types



Initial circuit screening

Circuit classification

Preliminary circuit selection

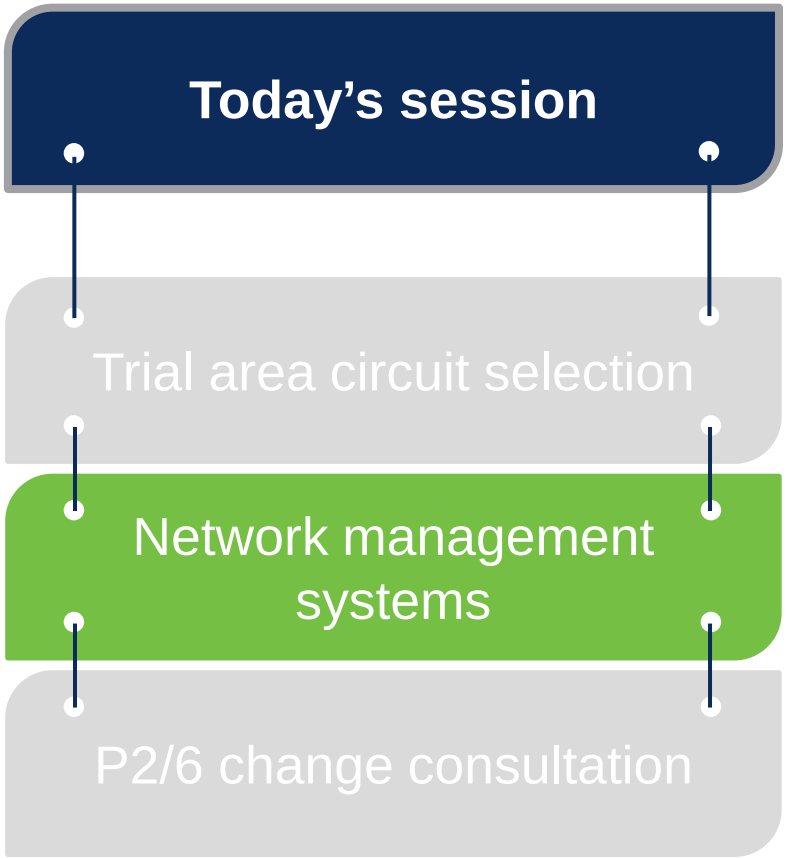
Circuit simulation and refined circuit selection

Trial area circuit selection

- For trial only
  - Initial screening had a greater than expected impact which resulted in the initial selection criteria being relaxed
  - Low fault level criteria for closed ring circuits limited very rural circuit selection

- For trial and wider C_2C application
  - Circuits with hand charge springs originally discounted for closed rings due to reduced restoration, selected in open ring configuration so as not to discount a sizeable population from the C_2C
  - Open ring configuration would allow rings to interconnect between primaries increasing the number of potential C_2C circuits

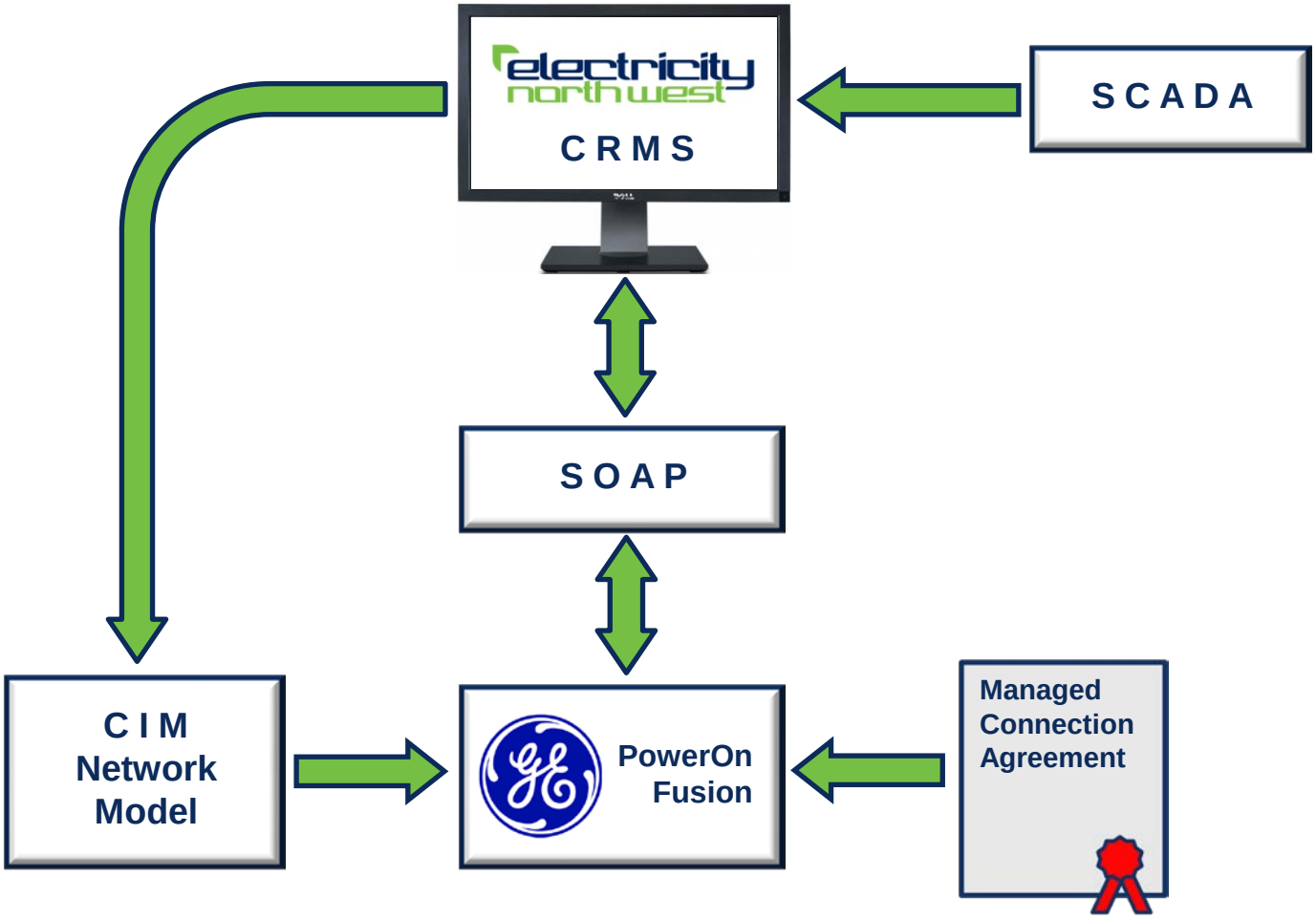
Technical review



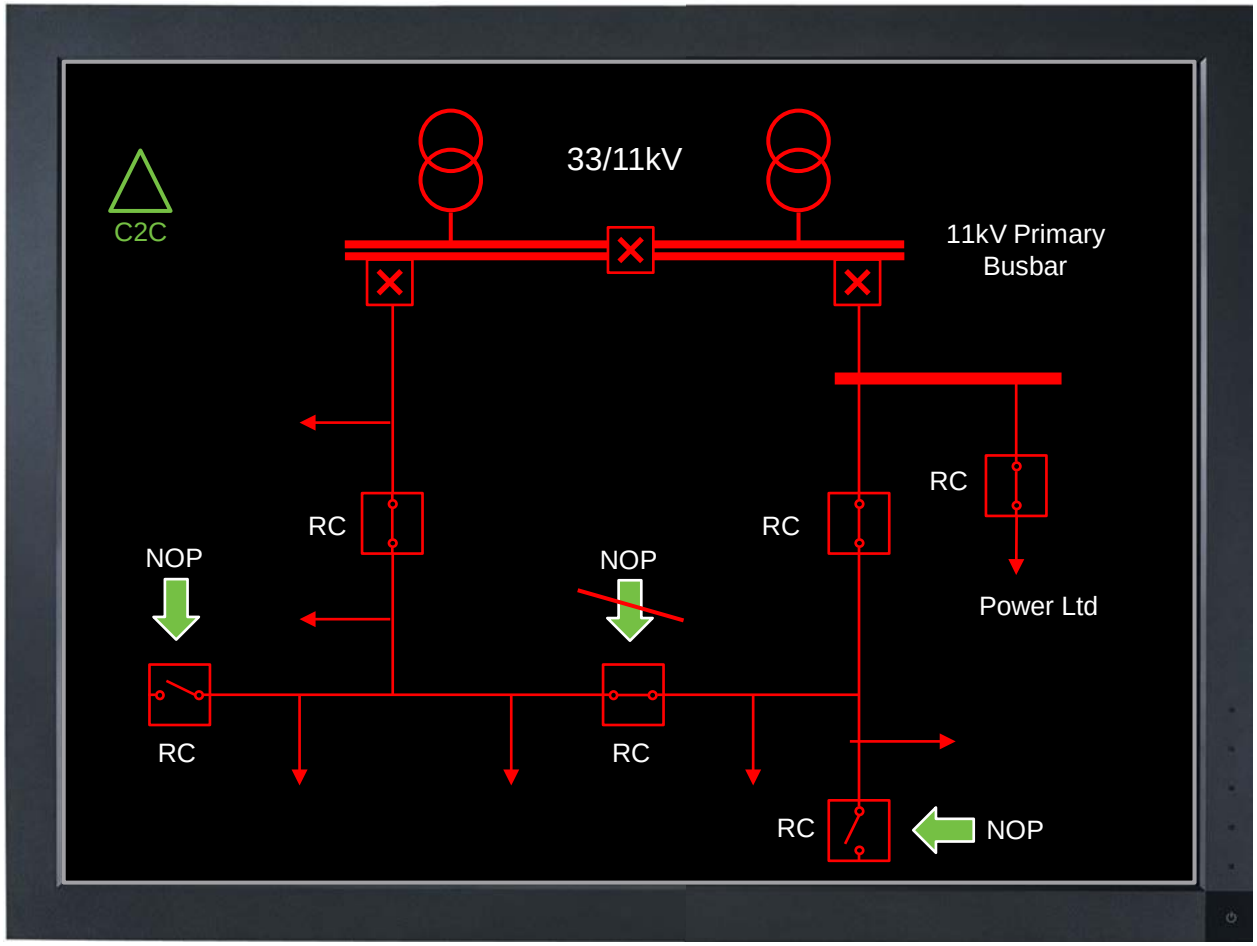
Managing the network

- C_2C function split between GE's Power on Fusion (PoF) and Electricity North West's CRMS network management systems
- Customer database (PoF)
- Automated restoration (CRMS)
- Switching plan (PoF)
- Initial requirements - interfaces with weekly refresh, 24 hours reload and real time updates

Architecture



Our C_2C network management system



Architecture

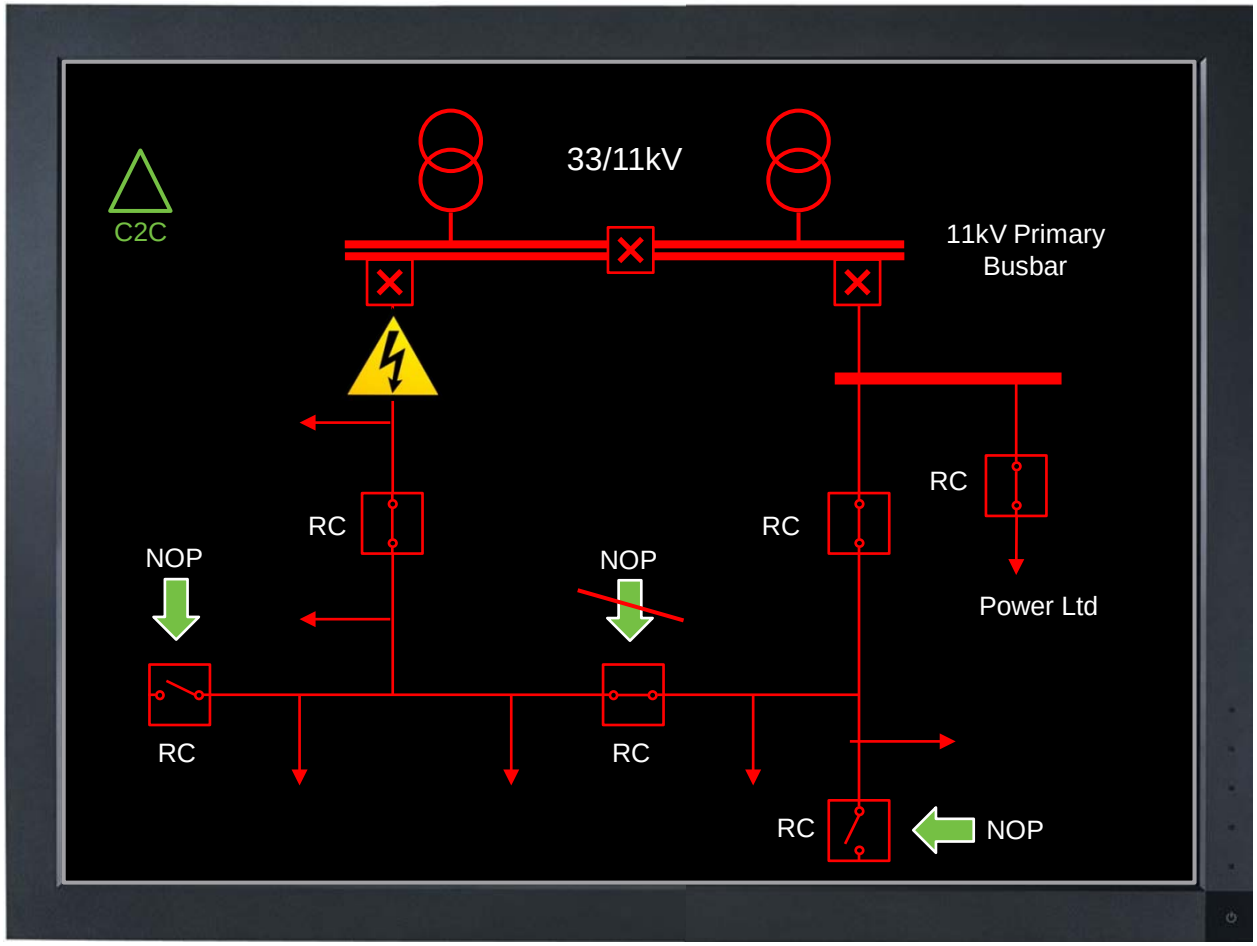
Our C_2C network management system

Power Limited

C_2C events per year	2
Maximum duration per event	8 hours
Protected date	1 on 10/08/2013
Protected day and time	Friday, 09:00 - 17:00
C_2C event start time	15 minutes
Current events per year	0

Architecture

Our C_2C network management system

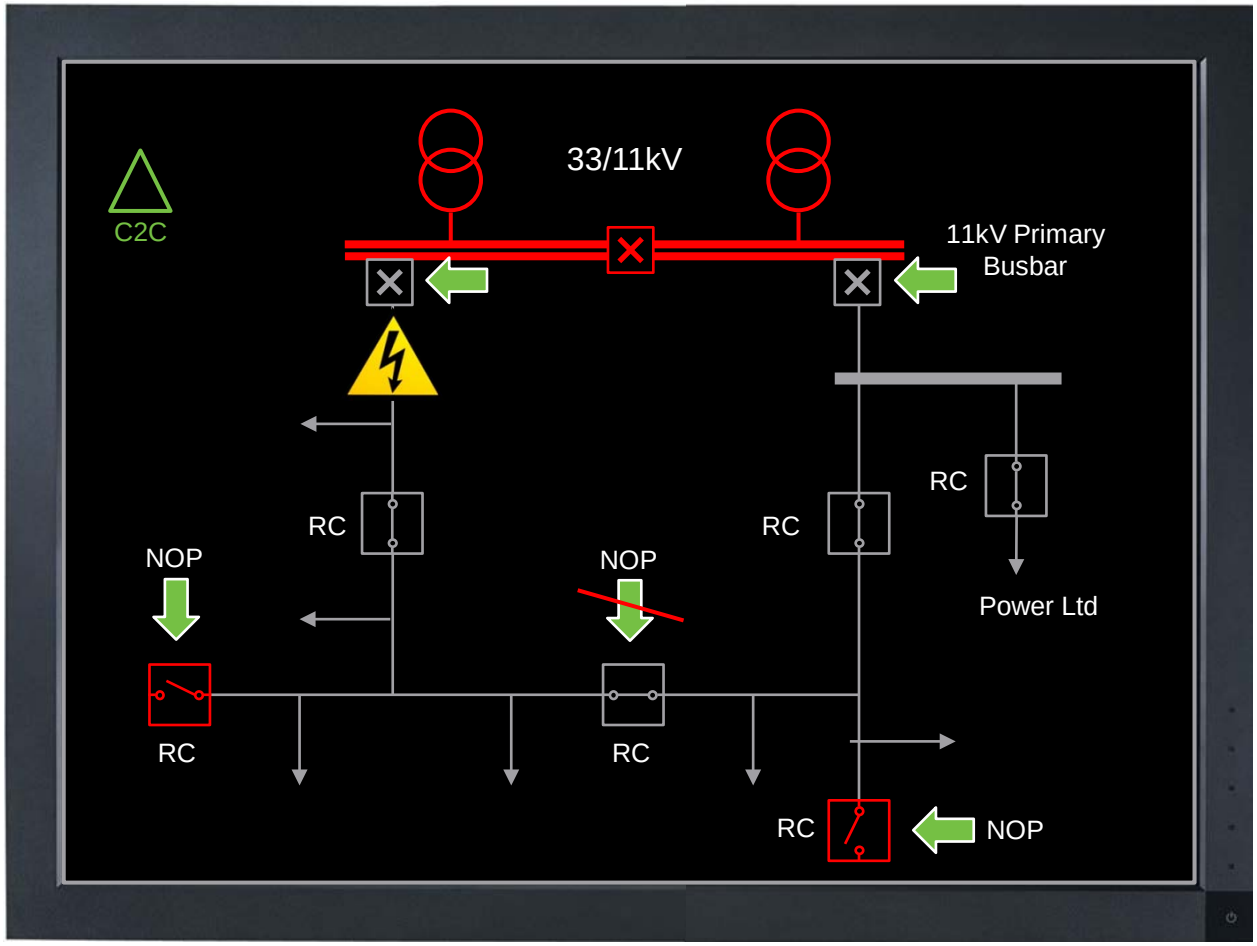


Architecture

CRMS

Fault time

Our C_2C network management system



Architecture

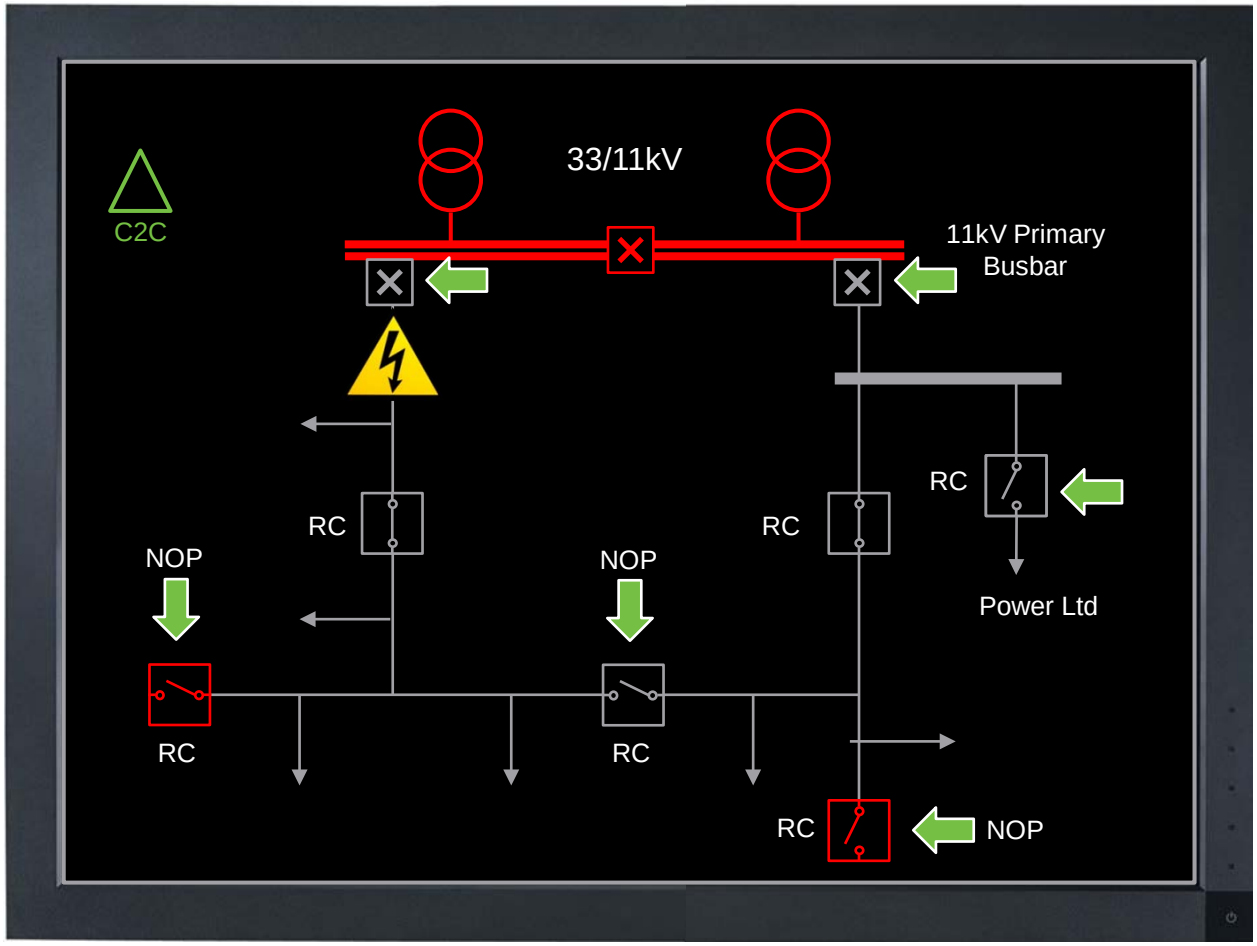
PowerOn Fusion

CRMS

Fault time

≤ 1 minute

Our C_2C network management system



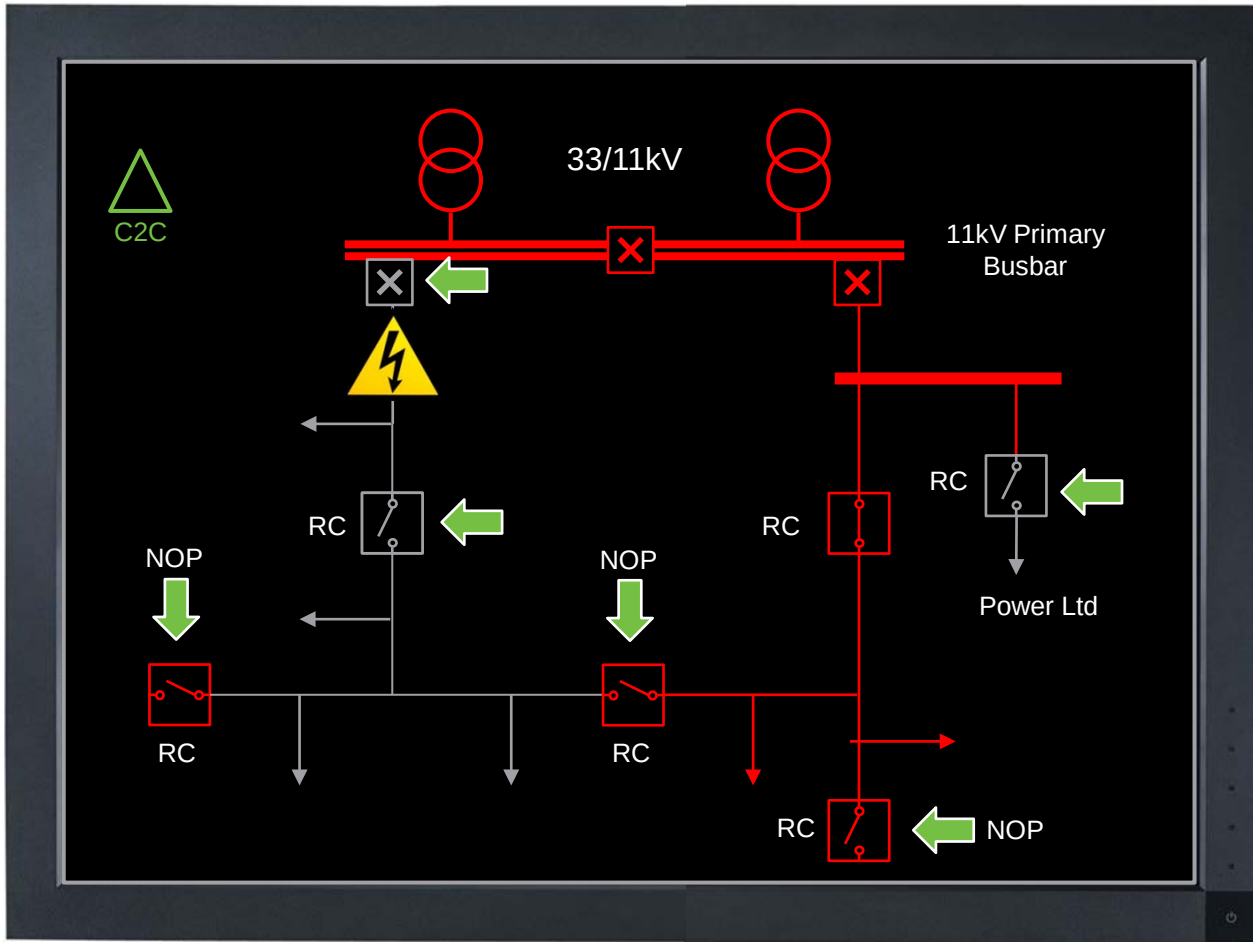
Architecture

CRMS

Fault time

≤ 1 minute

Our C_2C network management system

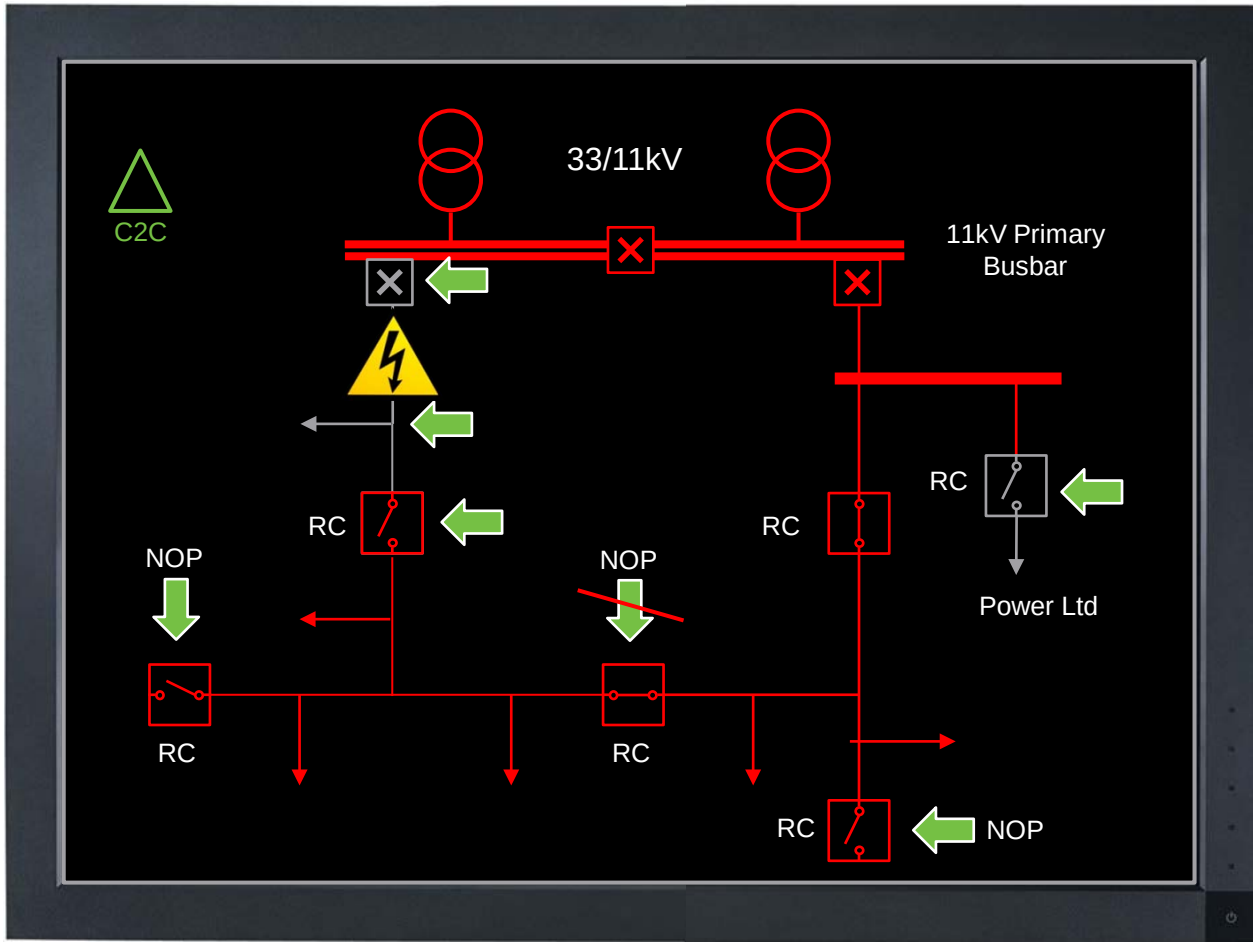


Architecture

Fault time

1 minute

Our C_2C network management system



Architecture

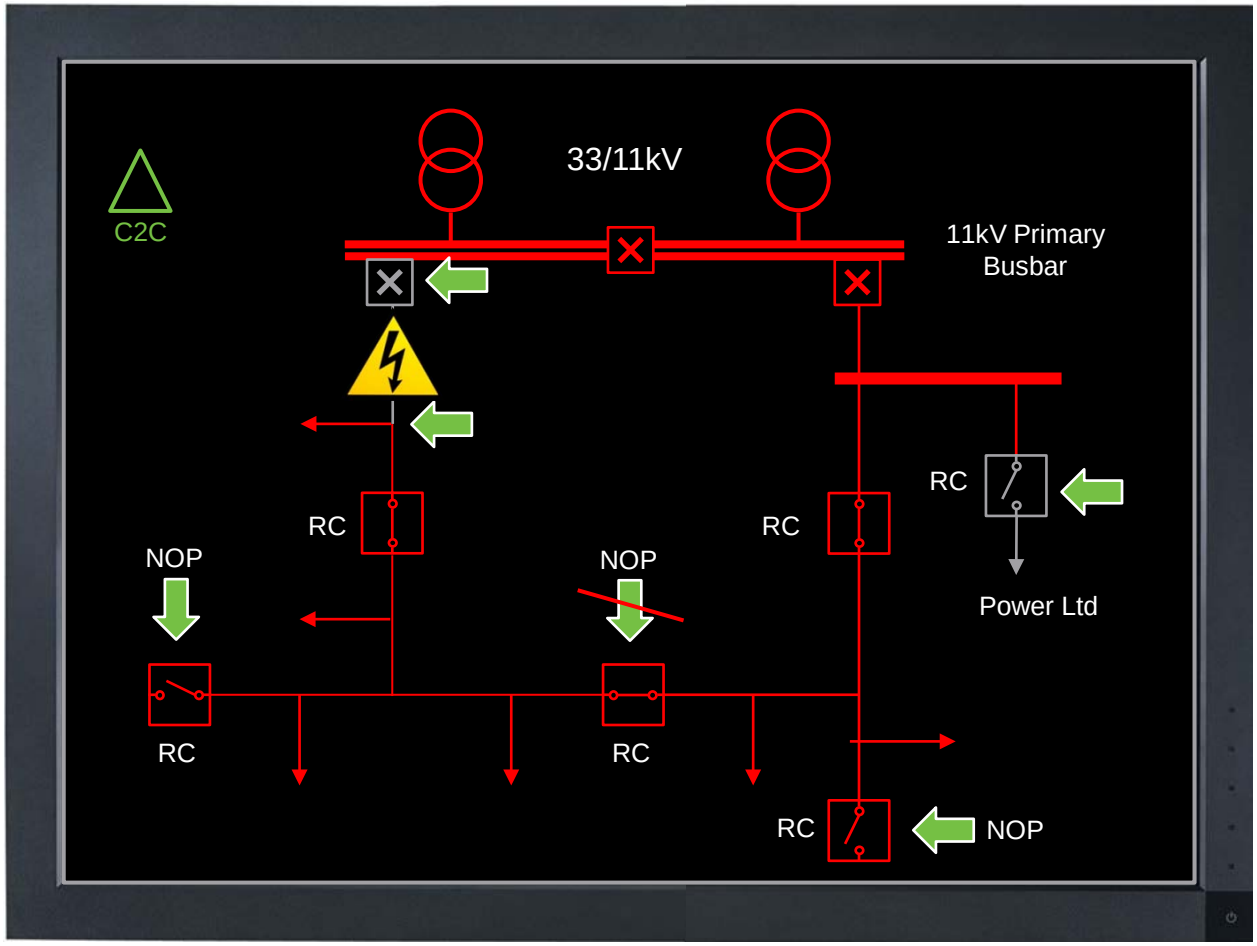
PowerOn Fusion

CRMS

Fault time

≤3 minutes

Our C_2C network management system



Architecture

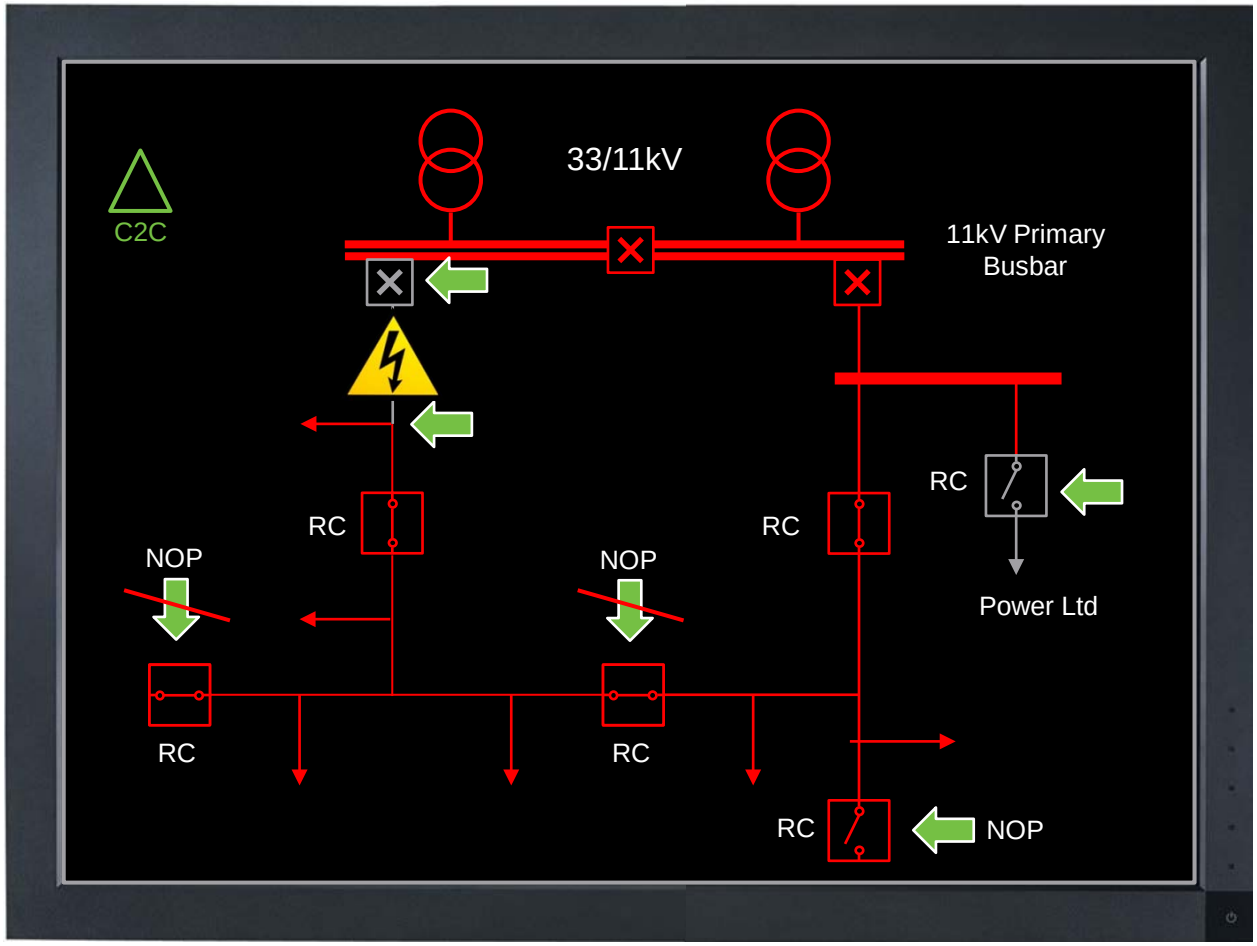
PowerOn Fusion

CRMS

Fault time

47 minutes

Our C_2C network management system

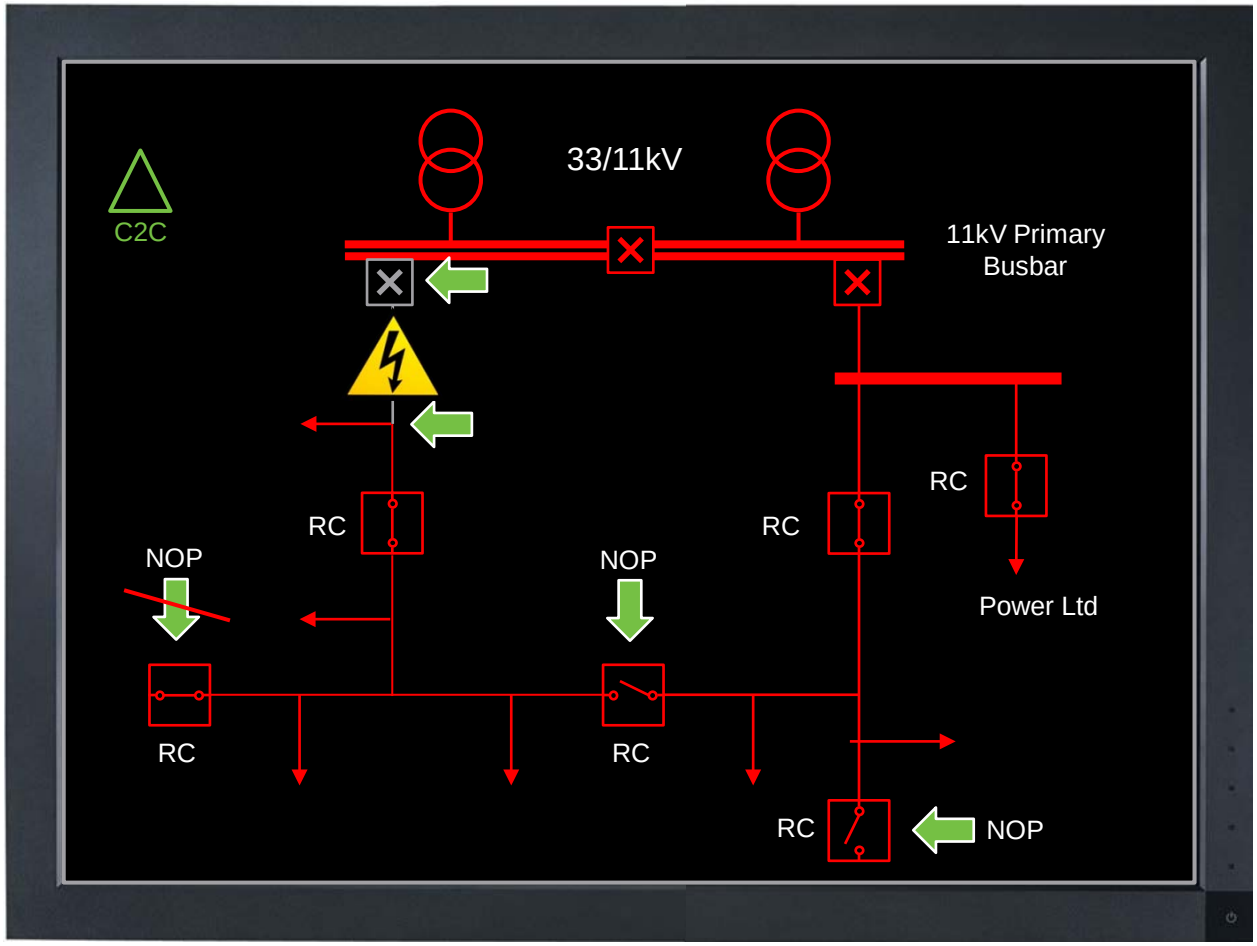


Architecture

Fault time

48 minutes

Our C_2C network management system



Architecture

Fault time

50 minutes

Our C_2C network management system

Power Limited

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Maximum duration per event	8 hours
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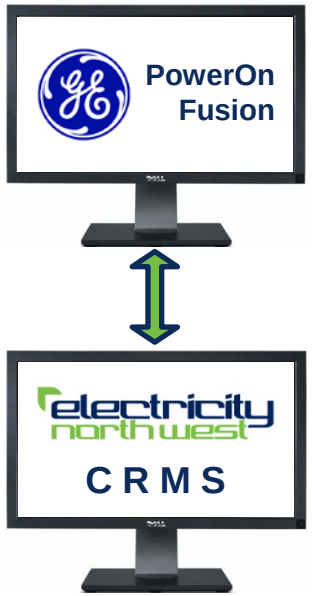
C_2C event start time	15 minutes
Current events per year	1

Architecture



Fault time

50 minutes

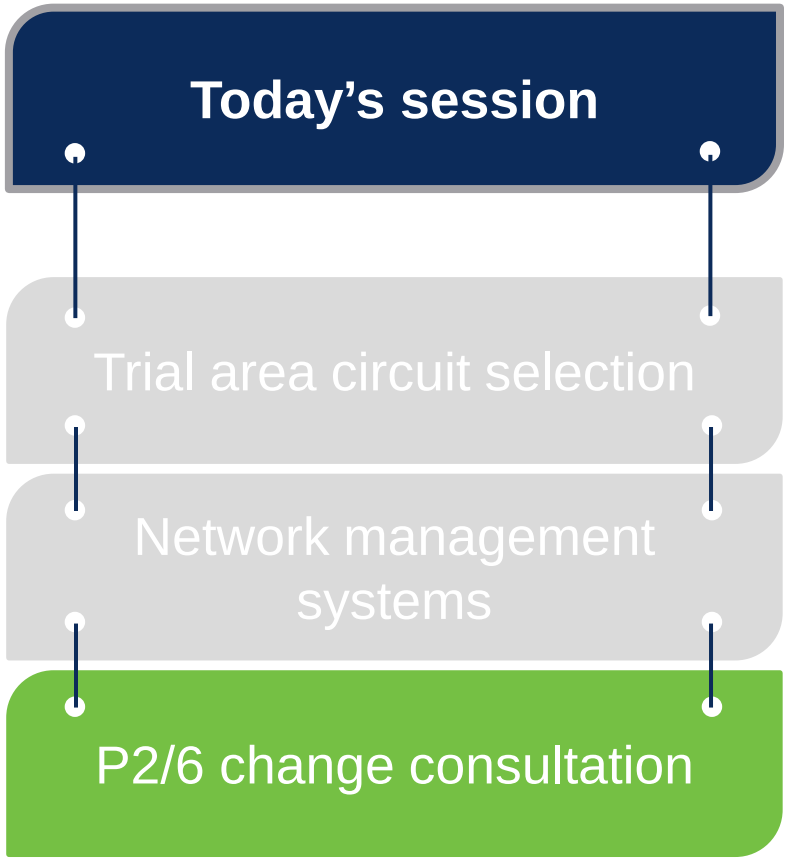
Managing the network

- Final solution – interfaces with incremental refresh, three hours reload and real time updates

- Developments for wider application
  - PoF has developed a managed customer data base that can prioritise customer restorations in accordance with a set criteria
  - PoF developing an automatic restoration sequence that will enable C_2C to used by other distribution network operators

- Splitting the C_2C process between two NMS system significantly increased difficulty but a working solution was developed that significantly improved on our initial requirements
- This proves that a UK wide roll out on a single NMS is realistic and achievable

Technical review



P2/6 change consultation

Gather views on the ability of Engineering Recommendation P2/6 (ER P2/6) ‘Security of Supply’ to recognise appropriately customer load management and demand side response and the requirement for modification of ER P2/6 in the short term to include explicitly the effects of DSR.

Electricity North West applied for and was granted a P2/6 derogation on the C_2C circuits.

Mixed views from all DNOs regarding the need for this derogation.

P2/6 change consultation

Network simulations

- Study to develop scenarios used in the workshops and consultation document

- Simulation set up
  - Primary selected that was representative of the network.
  - 8 formed closed rings from a total of 11 circuits
  - 2 circuits interconnected to other primaries
  - 2 connected to formed rings

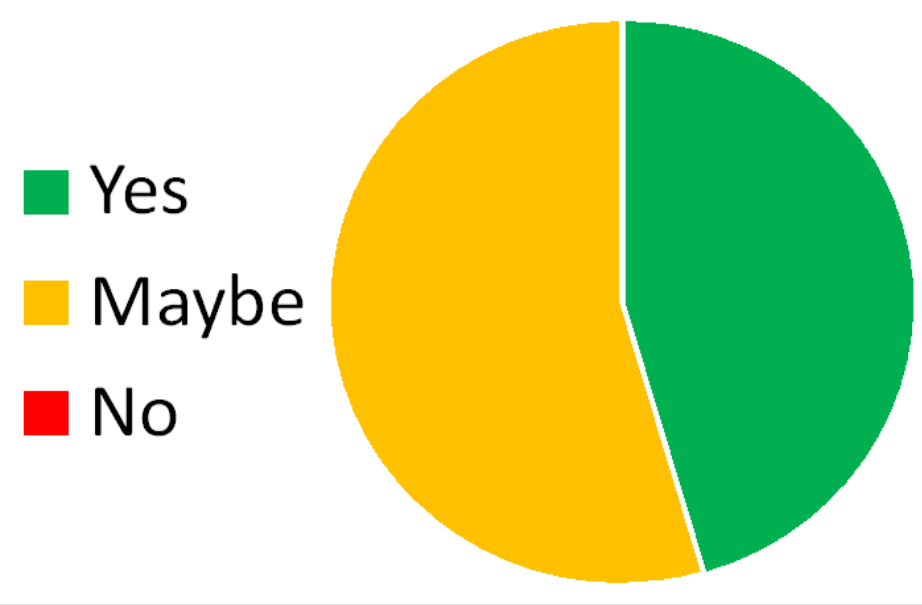
- Results
  - 78 -100% increase of capacity on the rings
  - Total increase in capacity on the primary due to closed rings was 78%. This does not take into account the radial feeders which also had spare capacity for C_2C customers

Consultation document and workshops

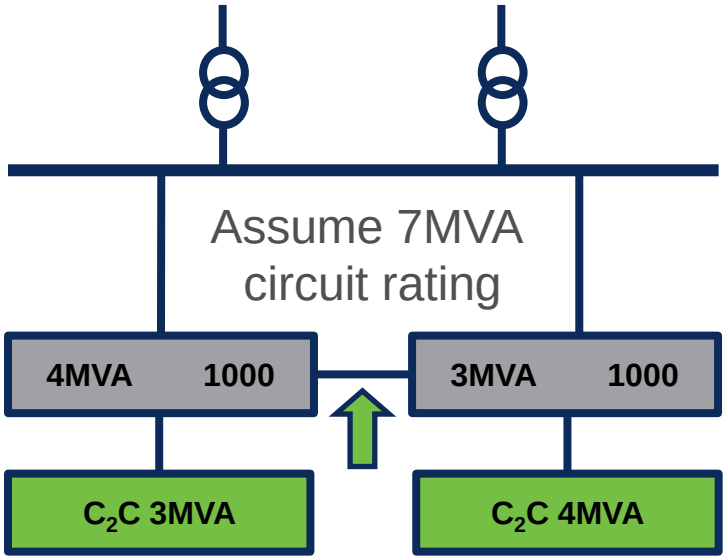
- Internal workshop used to development and refine questions and scenarios
- Consultation document and external workshop used to seek view on questions and scenarios
- Attendees of workshop
  - All DNOs
  - IDNO representative
  - National Grid

Consultation questions

- Do you think that responsive demand could be employed without breaching ER P2/6?

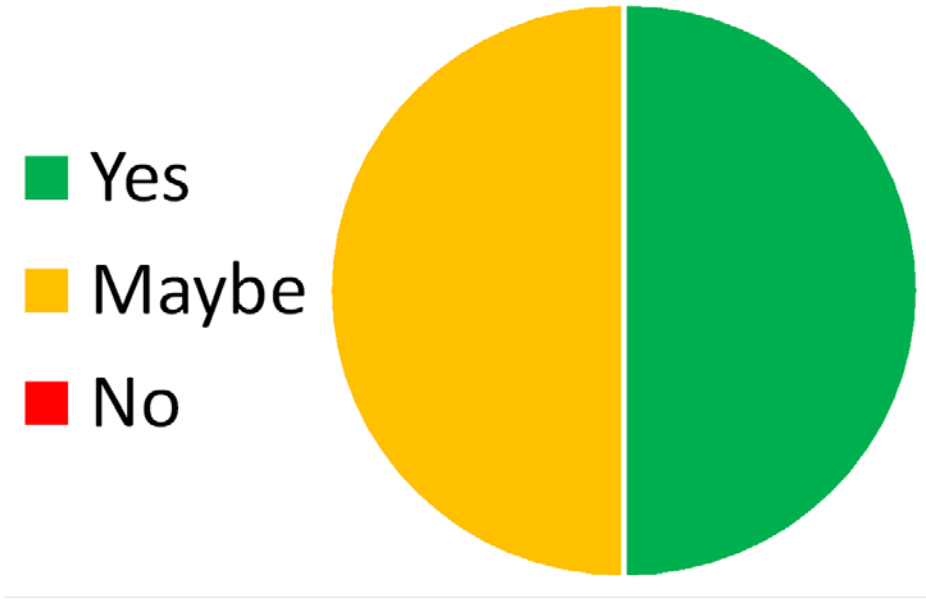


- Closed ring scenario



External workshop

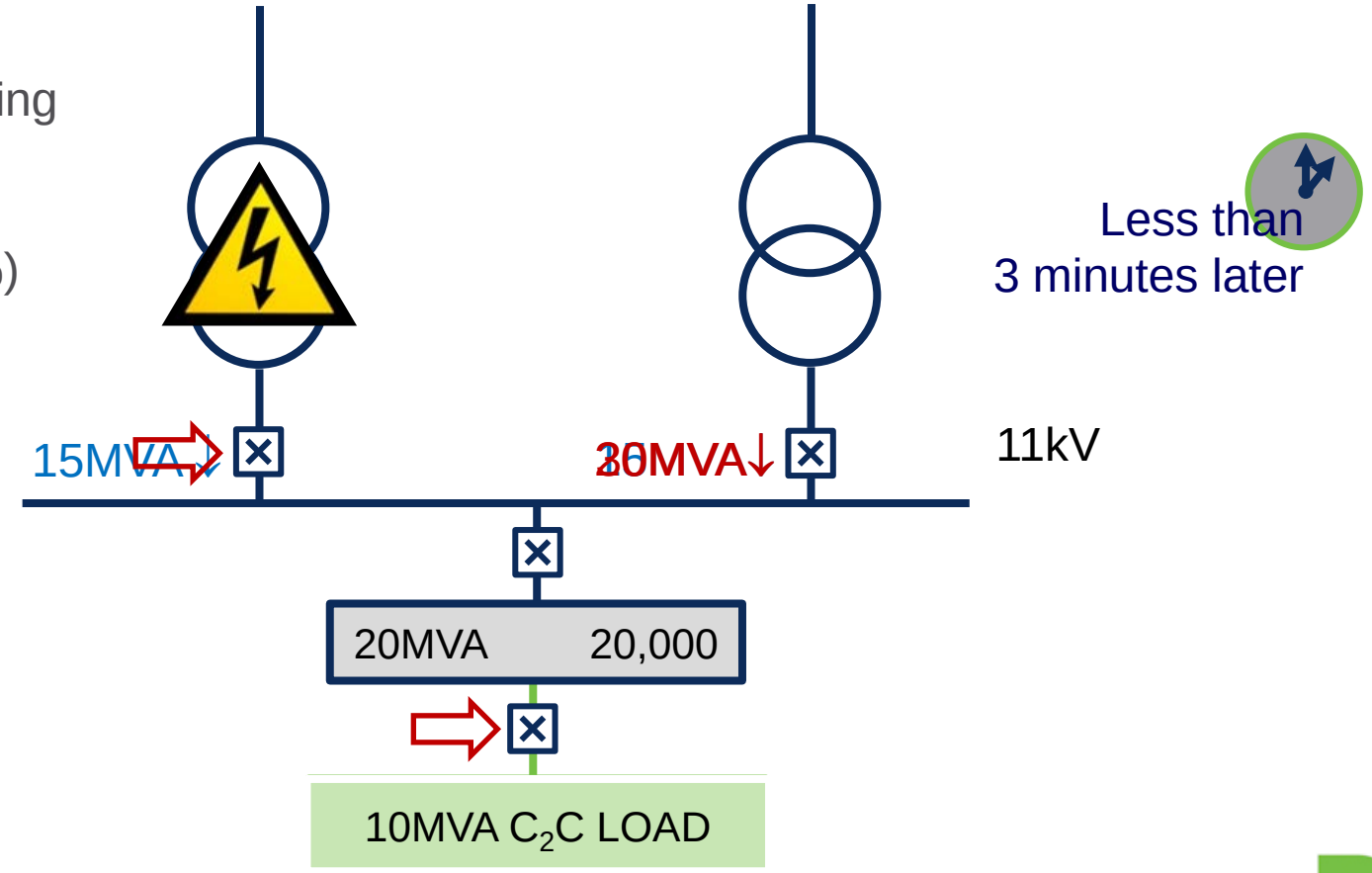
- Is this increase in short duration interruptions from 1000 customers to 2000 customers acceptable?



- Cautionary primary scenario

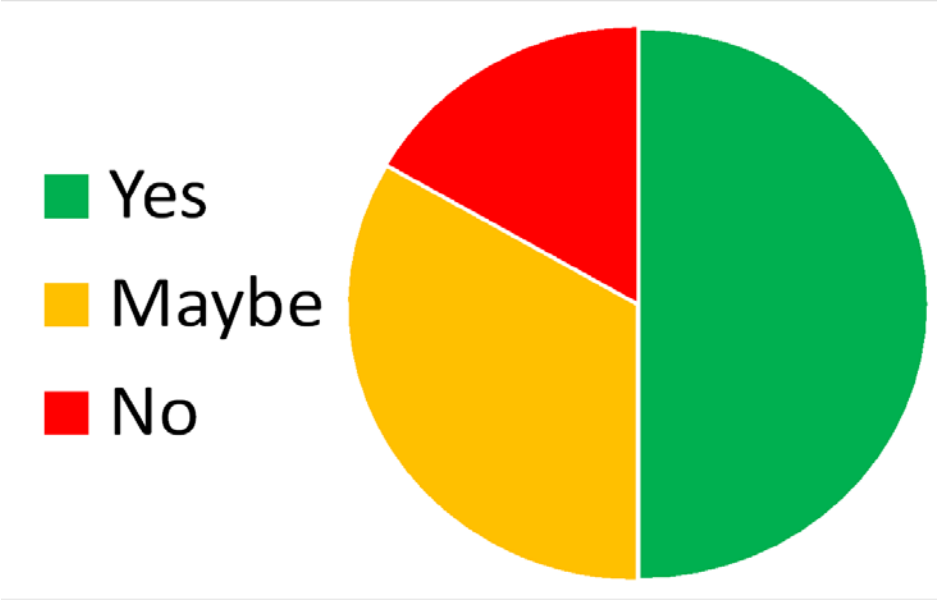
Assume tx rating of 20MVA

30MVA (150%) 3min rating



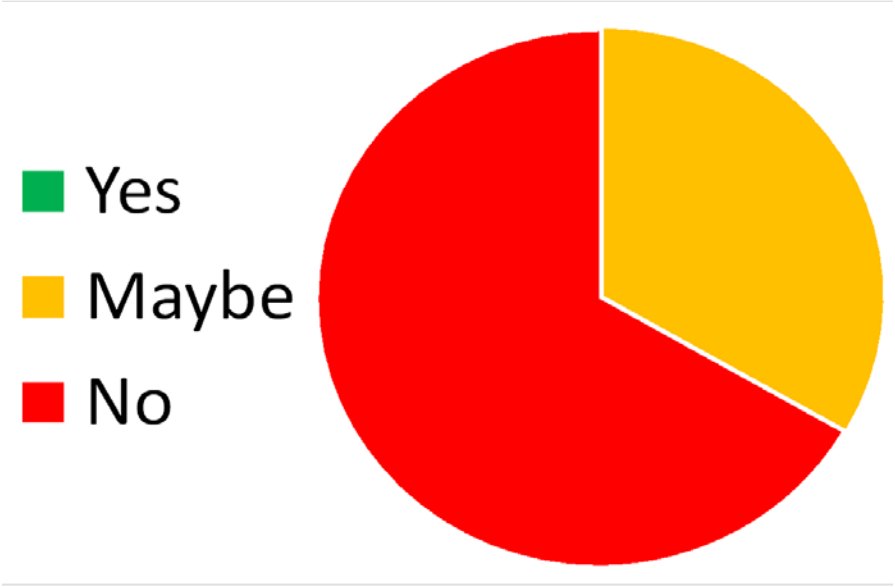
External workshop

- Is this cautionary primary scenario acceptable?



External workshop

- Is it acceptable to increase the load on a primary so that cross tripping is required to remove all load until the C_2C load is disconnected?



P2/6 change consultation

- General view is that changes are not required to Engineering Recommendation P2/6 in the short term but guidance should be given in the Engineering Technical Report, ETR130
- The scenarios did highlight that DSM could be treated in multiple ways with varying approaches from cautionary to progressive
- Good response to workshop from all parties

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Questions & Answers

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Break

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Customer Review

Kate Quigley

Future Networks Customer Delivery Manager

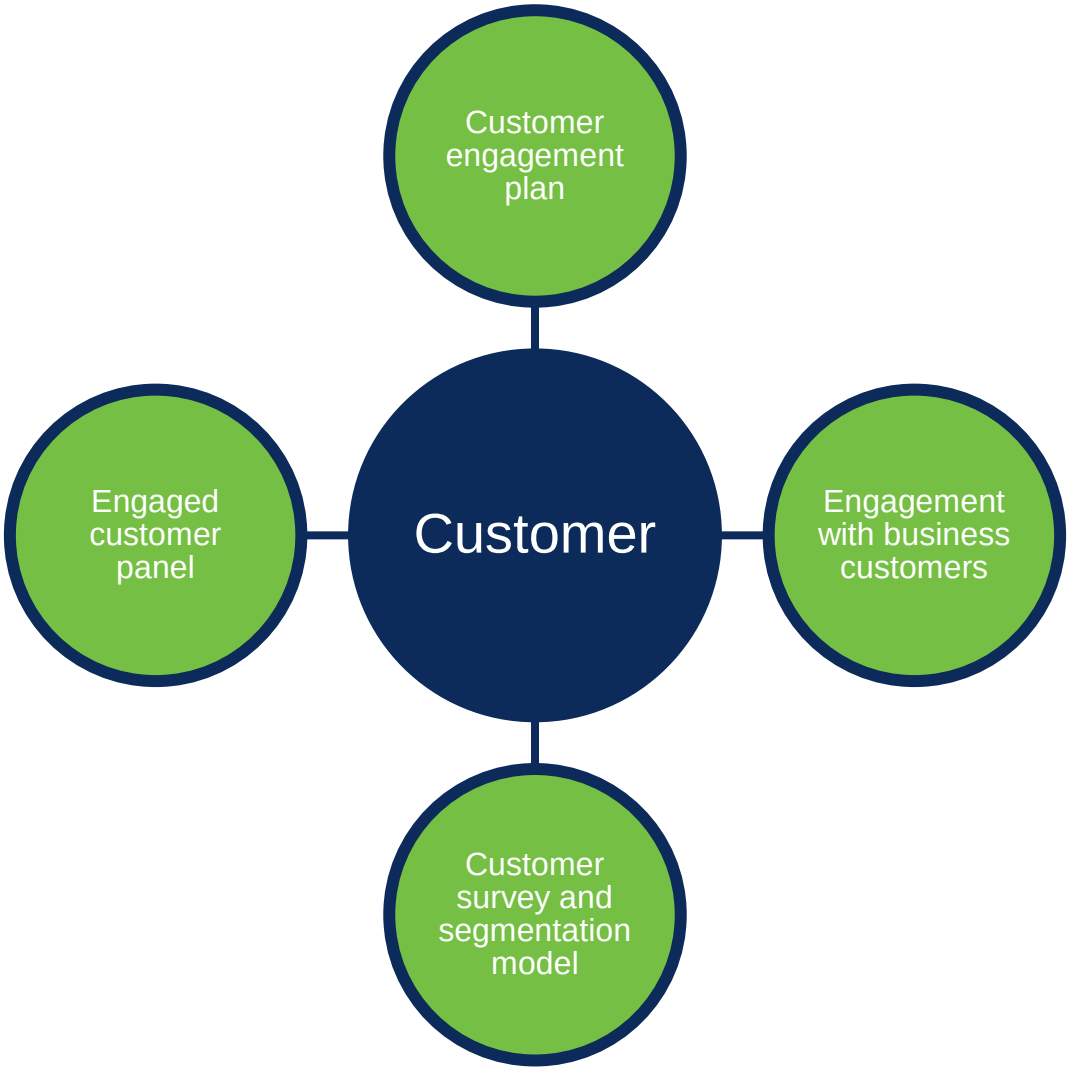
David Pearmain

Advance Methods Manager, Impact Research

Daryl Swift

Research Director, Impact Research

Customer review



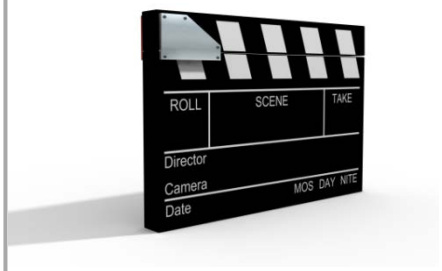
Objectives

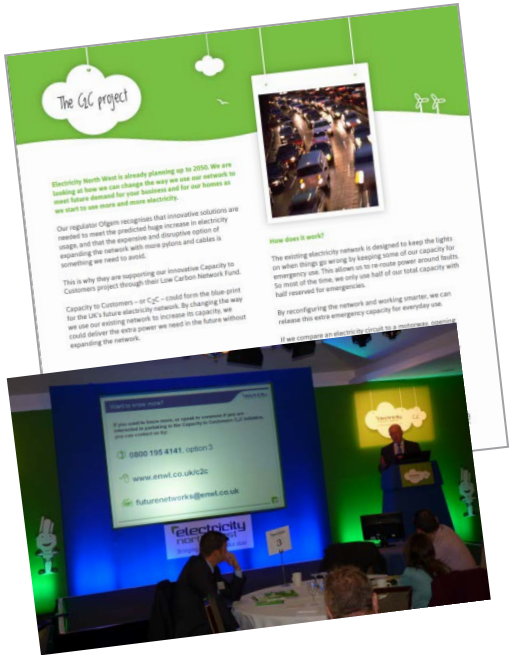
1. To communicate C_2C to industrial and commercial (I&C) customers
2. To explore the appeal of C_2C to I&C customers
3. To explore the uptake of C_2C contracts
4. To engage with domestic customers about C_2C

Engagement with business customers

1 To communicate C_2C to industrial and commercial (I&C) customers

- Targeted mail shot to I&C customers on C_2C circuits





- Seminar for new connections customers

Video removed

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Objectives

1. To communicate C_2C to industrial and commercial (I&C) customers
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4. To engage with domestic customers about C_2C

Capacity To Customers

Customer Engagement

Impact Research

Dr David Pearmain

Director

Background

Impact Research was specifically tasked to focus on the following hypothesis:

"The C_2C Method will effectively **engage customers** in a new form of demand and/ or generation side response thereby stimulating the market and promoting the future use of commercial solutions to address the Problem."

Objectives of the Survey

Three key questions to answer:

1. Is there an **appetite** in the I&C market for C_2C?
2. What is the level of interest by **sector**?
3. For the I&C market, what **contract elements** are required to make C_2C as attractive as possible?

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Our Approach

How? And Where?

181 Quantitative interviews:
Phone recruitment + online questionnaire lasting up to 30 minutes

Fieldwork took place between 12th July- 10th August

Recruitment Criteria

Respondents had to have joint/sole decision making responsibility for their organisations electricity supply to take part.

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Key measures used to answer questions

- Level of **Appeal**
- Likelihood to **Recommend** that their organisation considers opting for a C_2C contract
  - *This question shown before and after showing consumer variations of C_2C contract propositions*
- Stated **Preference**
  - *Customers were shown variations of C_2C specific contract offerings and asked which they would be likely to take-up*

Commercial elements varied:

- maximum number of managed interruptions per year
- maximum cumulative interruption duration per year
- payment method
- the length of contract
- number of safeguarded days
- levels of payment

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Key Findings

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Is there an appetite in the I&C market for C_2C?

- 52% of customers found the C_2C concept appealing
- 26% of customers would recommend their organisation consider opting into a C_2C contract *(once they had seen the potential scope of the contracts in more detail from SP exercise)*

Key Interest Metric	All customers % (180)
Appeal	**52**
Recommend (pre SP)	**31**
Recommend (post SP)	**26**

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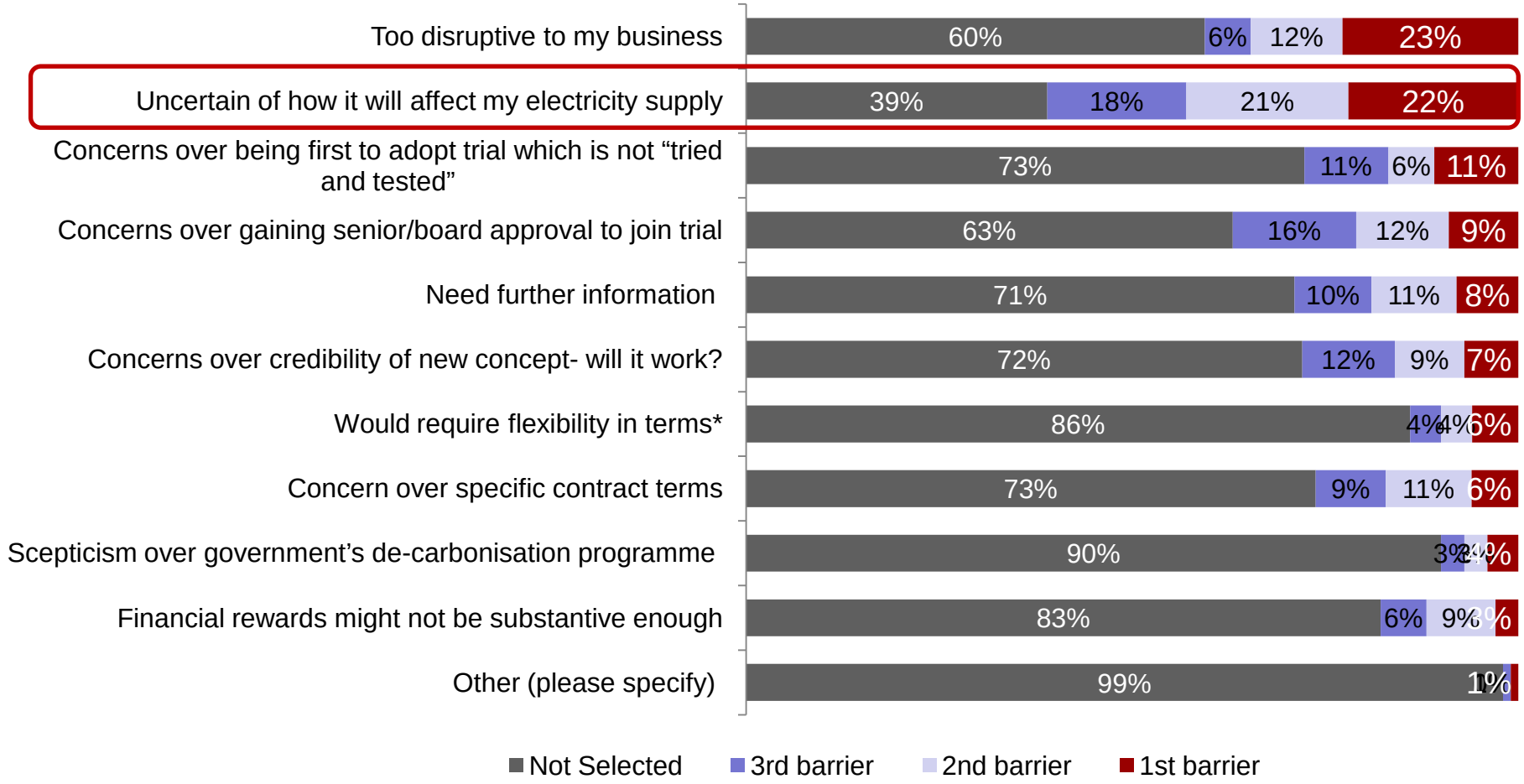
The main perceived barrier to C_2C is uncertainty as to its impact on the reliability of customers supply



I do not think there are any barriers/risks to signing up 1%

QD5 What do you perceive the main ***barriers***/***risks*** to signing up to the new electricity C_2C concept to be?

What is the level of interest by sector?

- The level of **appeal** is lower for Manufacturing & Processing v. other sectors, but the difference is not statistically significant.
- However, the gap between Manufacturing and Process and 'other sectors' becomes significant for **recommendation**, with Manufacturing & Processing 10% less likely to take up both before and after seeing the full scope of contracts.

Key Interest Metric	All customers % (180)	Manufacturing & processing % (82)	Other sectors % (98)
Appeal	52	49	54
Recommend (pre SP)	31	**25**	**35**
Recommend (post SP)	26	**21**	**31**

Impact Research

The importance of tailored contracts

- Despite the relatively lower levels of general interest, the actual potential take up is **higher for Manufacturing and Processing** organisations than for other sectors, when asked to indicate their likelihood to take up **specific examples** of the contract.

Key Interest Metric	All customers % (180)	Manufacturing & processing % (82)	Other sectors % (98)
Appeal	52	49	54
Recommend (pre SP)	31	25	35
Recommend (post SP)	26	21	31
Full range of contracts available (SP)	22	**24**	**20**

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How does interest by sector correlate to the size of demand of that sector?

Max Import Capacity (MIC) value

- 54% of MIC held by Manufacturing & Processing Customers
- 50% of total capacity held by those who would be open to making some of their non-essential capacity 'managed'
- **17% would be open to 'managed' capacity and are interested in C_2C**

Impact Research

For the I&C market, what contract elements are required to make C_2C as attractive as possible?

- When customers considered specific examples of contracts in the stated preference exercise:
  - **length of contract** had the biggest single influence on take up.
  - **Safeguarded days** significantly increased take up rates.
- The variation in reward is important, but not as critical as the other components over the range that we tested (±25%).
  - This suggests that much higher levels of reward are required to significantly drive up participation

Impact Research

Summary of key measures

1. Customers find the concept appealing
2. The biggest barrier was customer uncertainty about how C_2C would affect their supply
3. 50% of total capacity held by those who would be open to making some of their non-essential capacity 'managed'; this dropped to 17% after seeing potential scope of contracts.
4. Customers appeared to expect more attractive levels of incentive than those offered in the survey

THANK YOU!

For further information please contact:

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Impact Research

Objectives

1. To communicate C_2C to industrial and commercial (I&C) customers
2. To explore the appeal of C_2C to I&C customers
3. To explore the uptake of C_2C contracts
4. To engage with domestic customers about C_2C

Electricity North West

Engaged Customer Panel

Impact Research

Darryl Swift

Director

Background

- In April 2013 Electricity North West has launched C_2C on around 10% of its network.
- In preparation for this trial and as part of their submission to Ofgem, they agreed to **consult with customers** to establish what, if any, type of **communication** will be necessary for those customers who will be on a trial circuit.
- This consultation has taken the form of an **Engaged Customer Panel**, established in July 2012. Three phases of research have already been conducted amongst participants.

The principal objective of the research was to identify the optimum method of communicating C_2C in a simple manner to **domestic customers** who live in a property situated on a C_2C trial circuit. The work sought to establish which **communications materials and techniques** would work best with this audience.

Research Objectives

The research was designed to address four key questions:

1. Which communication material(s) and **type of information** is best suited to ensure customers understand C_2C?

2. When they understand, do customers feel it is important that **other customers** receive information about C_2C?

3. If so, **how**, to **whom** and **when** should Electricity North West engage with customers about C_2C?

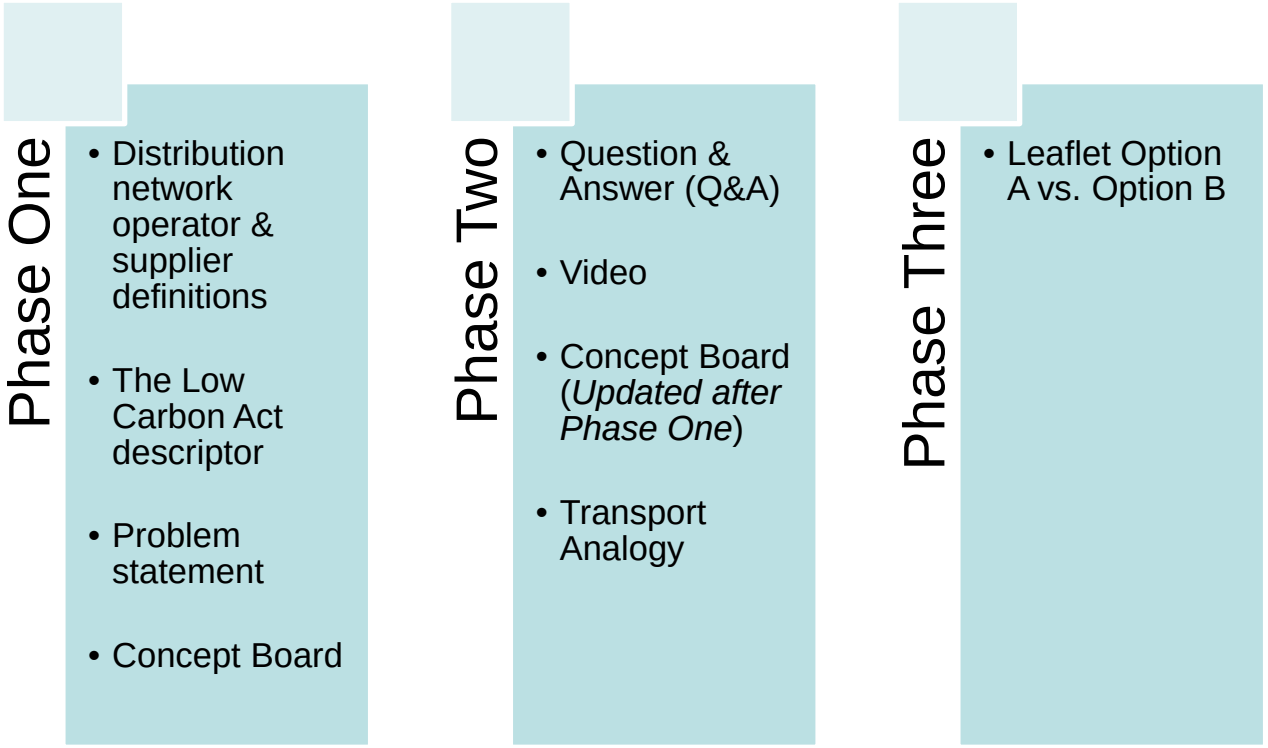
4. How can the **learning** from the ECP be used effectively to design and implement a communication plan to brief customers affected by C_2C?

Research Approach

- **Qualitative** customer engagement.
- Panelists were recruited to be representative of Electricity North West's customer base with a **mixture** of gender, age, social grade and home ownership.
- In each phase of research, three 90 minute **focus group** discussions were run:
  - Group 1: Carlisle, domestic customers
  - Group 2: Manchester, domestic customers
  - Group 3: Manchester, I&C customers
- Although the research needed to represent the views of all customers, **domestic customers** were the key interest group, given that they represent the large majority of the approximately 300,000 customers on C_2C trial circuits.

Why were there three phases of research?

A staggered approach was taken to sharing information and testing its effectiveness through **three phases** of research. This was a deliberate strategy to gradually develop, test and evaluate communication materials in order to understand customers' appreciation of both the problem statement and C_2C.



This three stage approach allowed the effectiveness of the phase one materials to be tested against the more comprehensive phase two materials which were later refined and tested again in phase three.

Q. Which communication material(s) and type of information is best suited to ensure customers understand C_2C?

- **If** the objective was to ensure the general customer base has a thorough understanding of C_2C, they would need to be subjected to the same level of 'education' as the ECP.
  - There is an apparent lack of understanding of **who** Electricity North West is, the **role** of **DNO** versus **Suppliers** and the role that decarbonization will have on increasing demand for electricity.
  - Furthermore, the **weak connection** customers make between decarbonization and the need to potentially expand the network, mean that these things need be addressed **before** even introducing C_2C to customers.

- The ECP demonstrated through phases one and two that the most effective way of communicating the aforementioned is through;
  - a simple **question and answer** fact sheet
  - **video** material
  - a C_2C **concept board** which explains the problem, how C_2C could address the problem and how it affects customers on a C_2C trial circuit.

Impact Research

Ensuring customers understand C_2C and how it works in practise requires significant investment. Is it necessary?

- The conclusion of this element of the work was that the effort required to inform the general domestic customer base about C_2C and gain a reliable level of **understanding** would be **considerable**.

- Such an exercise would be both costly and time consuming and would, therefore, only be justified if a clear **need** to establish such understanding was apparent.

- **The focus of the second phase of research was to evaluate if there was a perceived need to inform other customers about C_2C.**

Impact Research

Q. When they do understand, do customers feel it is important that other customers receive information about C_2C?

- Phase two of the research demonstrated that customers understood C_2C through the materials provided to them, **yet they were divided as to the importance of communicating such information to the wider customer base**.

The argument against further communication;

Some customers felt that given the perceived complexity of C_2C and the initial questions it raised, Electricity North West should **not** directly communicate with domestic customers on the C_2C trial circuits. This was based on the fact that:

- The **frequency** of power cuts experienced by customers will not be discernibly different to the current situation.
- The power cut **duration** on C_2C circuits is likely to be noticeably improved.
- Whilst there may be a second or third order effect on customers whilst visiting participating I&C customers such as supermarkets, domestic customers are **unlikely to be affected.**

Q. When they do understand, do customers feel it is important that other customers receive information about C_2C?

The argument for further communication;

On the other hand, some customers felt that disseminating information about C_2C would be in the **interests of the public** and a **positive message** to receive.

The level of briefing that was necessary in phases one and two with the ECP would not be feasible across a large customer base given the relative cost of engagement and the general paucity of industry awareness amongst domestic customers.

What happened next?

- Further deliberation in phase three of the research covered a **simplified communication** piece which deliberately avoided any mention of the technical details of C_2C, only that work was being undertaken that would **improve their electricity supply**.

Impact Research

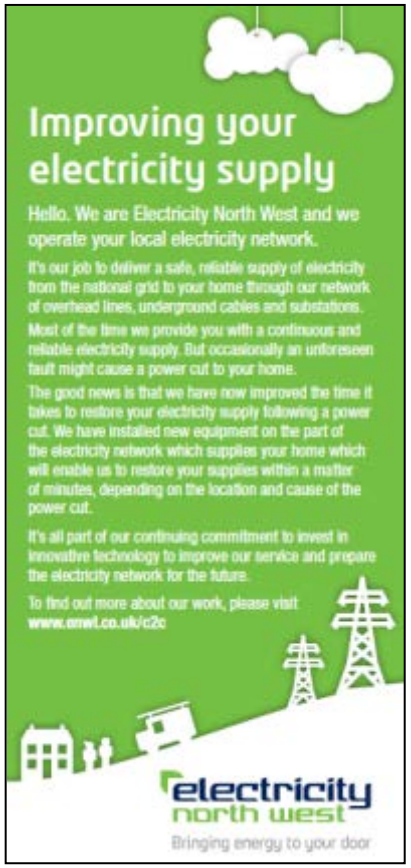
Proactive vs. reactive communication- the key message of which focuses on what is important to customers, the reliability of their supply

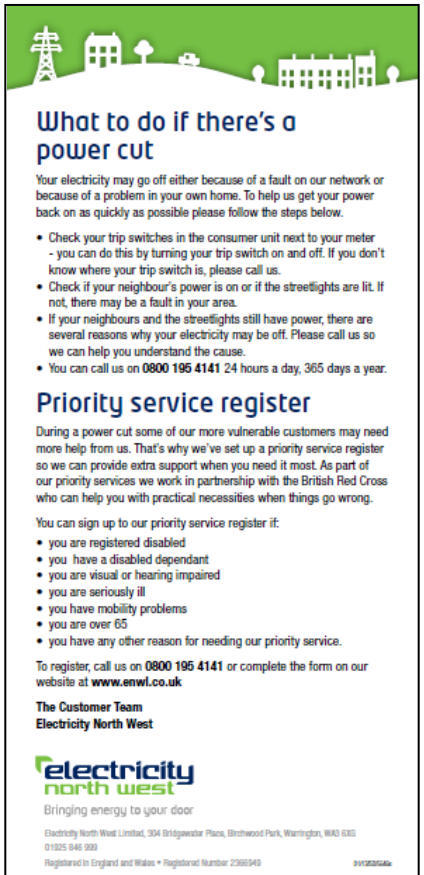
Option A: Proactive

Designed to be sent to ALL customers on the C_2C circuit; approx. 300,000

Option B: Reactive

Designed to be sent ONLY to customers on the C_2C circuit that experienced a power cut

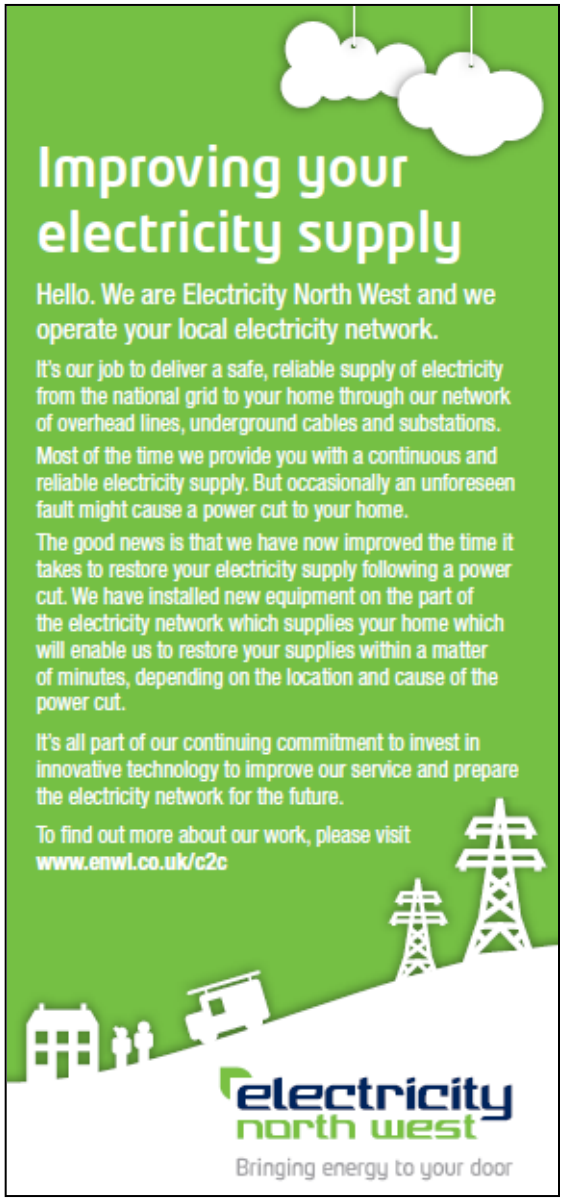




Impact Research

Proactive communication was the preferred option

- Pros:
  - ✓ Gives customers some good news; shorter power cuts
  - ✓ Positive "improving your electricity supply"
  - ✓ Precise; tells you what you need to know without going into too much detail
    - ✓ informative but not too technical
  - ✓ "Hello"; polite, friendly, "touchy feely" and not too formal
    - ✓ Makes you feel included; kept informed
  - ✓ Not commercial, not selling anything; like a public service announcement
  - ✓ Explains why things are better; *"because we recently installed new equipment on the part of the electricity network which supplies your home*"



Impact Research

Q. If they do communicate C_2C, how, to whom and when should Electricity North West engage with customers?

- The ECP recommended that **all** customers on C_2C trial circuits should be communicated with **proactively, before the live trial phase commences in April 2013**.
- This option was preferred over the alternate option of **reactively** sending out information after a fault had occurred on a C_2C circuit.
- Communicating proactively by distributing an **information leaflet** was the preferred method.
  - The ECP recommended that the leaflet should be **hand delivered** so that the leaflet does not arrive at the same time as other post or circulars.

Impact Research

Q. How can the learnings from the ECP be used effectively to design and implement a communication plan to brief customers affected by C_2C?

- Phase three clearly indicated that in order to effectively and proportionately engage with customers, Electricity North West should **remove technical information** and focus on the **positive information messages** that had resonated with the ECP in phase two.

- This information includes, but is not limited to;

  - Introducing Electricity North West and its **role** as a DNO.
  - Delivering good news, '**Improving your Electricity Supply**'.
  - Explaining how to **find out more**.
  - Giving **advice** on what to do if there is a power cut.
  - Raising awareness of the **Priority Service Register** for vulnerable customers.

- Such information serves to convey a positive message, whilst raising awareness of the role Electricity North West has in the region.

ECP recommendations

- **Should Electricity North West communicate with customers on C_2C trial circuits?**
  - **Yes**, Electricity North West should communicate with customers.
- **Why should they do so?**
  - The information to be communicated is considered to be an important **public service announcement** and conveys positive news about customers electricity supply.
- **What format should the communication take?**
  - Printed information using a **leaflet** format is the recommended approach.
- **What should it say?**
  - The information leaflet should **introduce** Electricity North West and explain its role as a DNO, confirm that an **improvement** has been made to the electricity supply and how this **benefits** them, give **advice** about what to do in the event of a power cut, raise awareness of the **Priority Service Register** and **how to get in touch** with Electricity North West with any questions.
- **When should it be delivered?**
  - The leaflet should be delivered **proactively** prior to the C_2C trial starting on 1 April 2013.
- **To whom should it be delivered to?**
  - The leaflet should be communicated to **all customers on C_2C trial circuits.**

THANK YOU!

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Impact Research

Summary and next steps – I&C customers

- C_2C is appealing, contracts signed
- Greatest barrier is customer uncertainty about reliability of supply
- Learning from survey used to structure C_2C commercial contracts
- Work enormously helpful in designing the commercial engagement phase with prospective trialists
- Ongoing engagement will continue during trial
  - Post acceptance survey
  - Ongoing monitoring

Summary and next steps – domestic customers

- Relationship between DNO and supplier still confusing for customers, and customers supplier focussed
- C_2C is too complex for many customers to understand
- Customers think it's their right to know about changes to their supply, particularly if message is positive
- Information should be simple and informative, not create confusion
- Customers want to know more about their DNO
- Customers want to know what to do in a power cut
- Post fault questionnaire
- Ongoing monitoring

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Questions & Answers

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Lunch

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Commercial Review

Mark Crane

Future Networks Commercial Delivery Manager

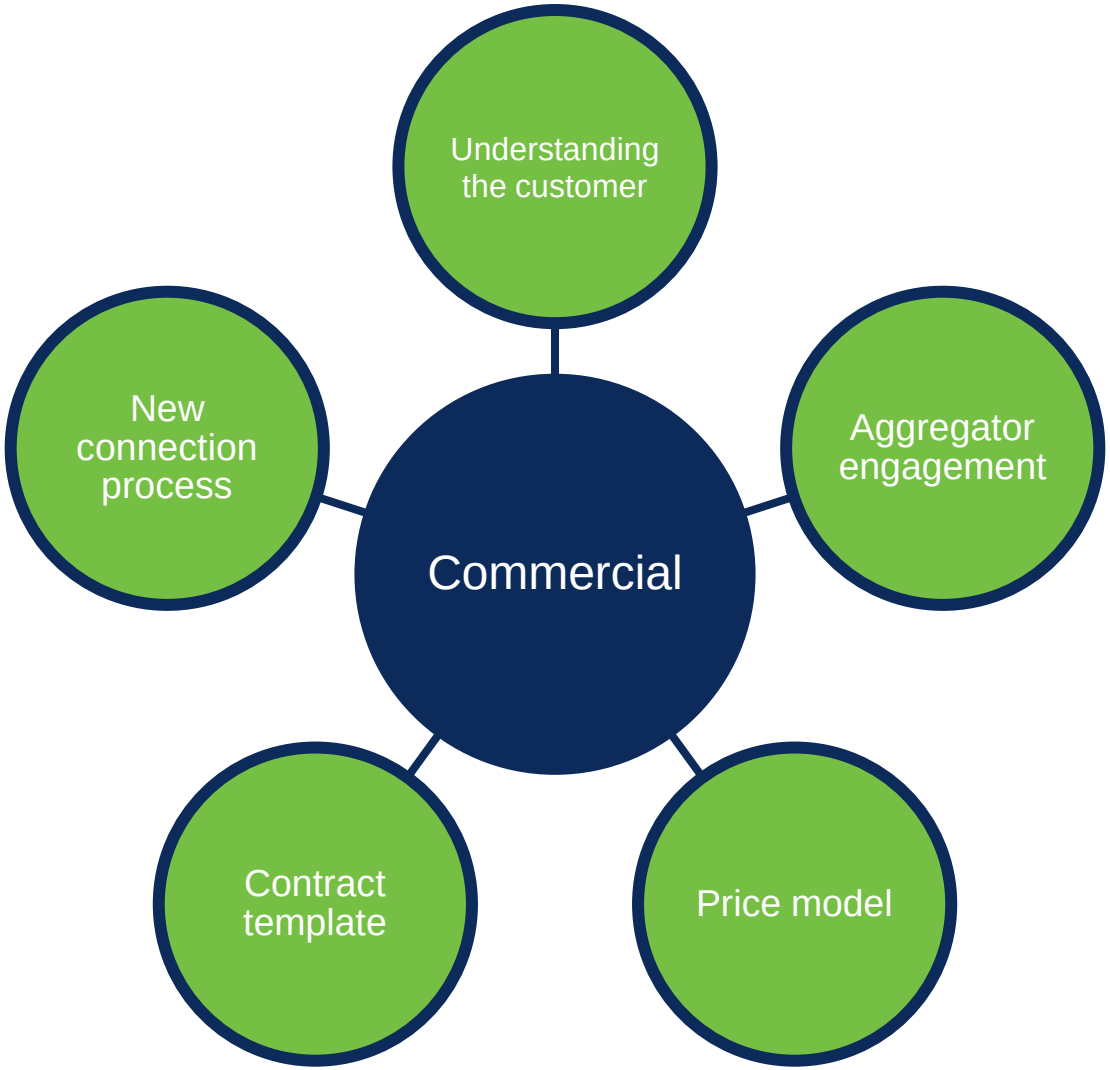
Jonathan Grant

Group Executive Chairman, W. Howard

David Powell

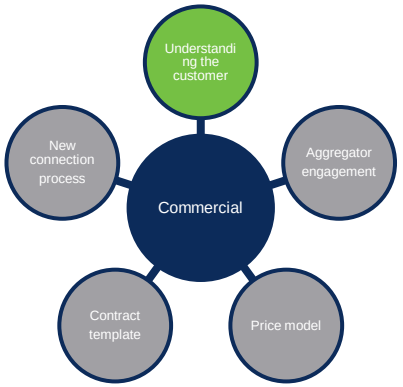
Ancillary Services Business Developer, npower

Commercial review



Understanding the customer

- Customer survey
- Four customers directly engaged



Emerging lesson

- A combination of quantitative and qualitative research

Understanding the customer

Uncertainty regarding disruption or multiple disruptions

Appeal of value added offerings

Effects on the customer's business

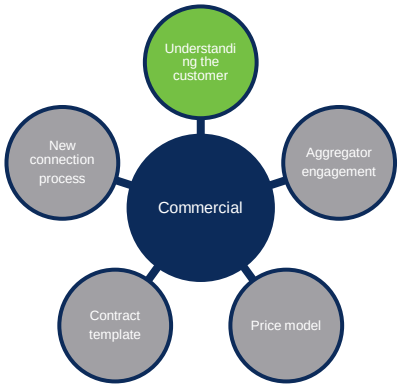
Understand price level

Flexible protected days and option for protected circuits

Maximum outages per annum and duration to be defined

Understanding the customer

- Each customer provided a breakdown of costs based on an 8 hour power outage



Emerging lessons

- Customers engaged in an open and honest way as the relationship matured
- The customer's position changed over time from risk averse to risk taker
- Customers required a simple contract with a maximum of two events p.a.

The W.HOWARD Group
est. 1958

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W. Howard Limited

- Initial engagement
- Response and initial barriers to signing
- How this developed as our understanding matured
- Reasons for signing

W. Howard Limited - going forward

- Review of contract terms of employment to include sending employees home unpaid
- Standby generator potential for office only

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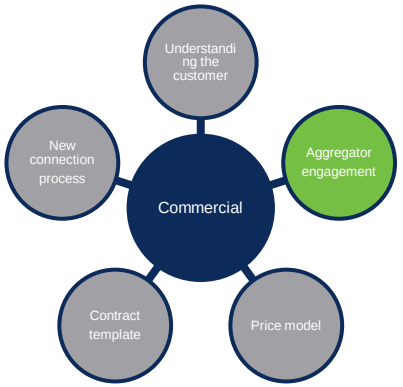
Questions & Answers

Aggregator and agent engagement

- Full engagement with aggregators - list of MPANs, post codes and circuit list sent to aggregators for checks against their client lists



Emerging lessons

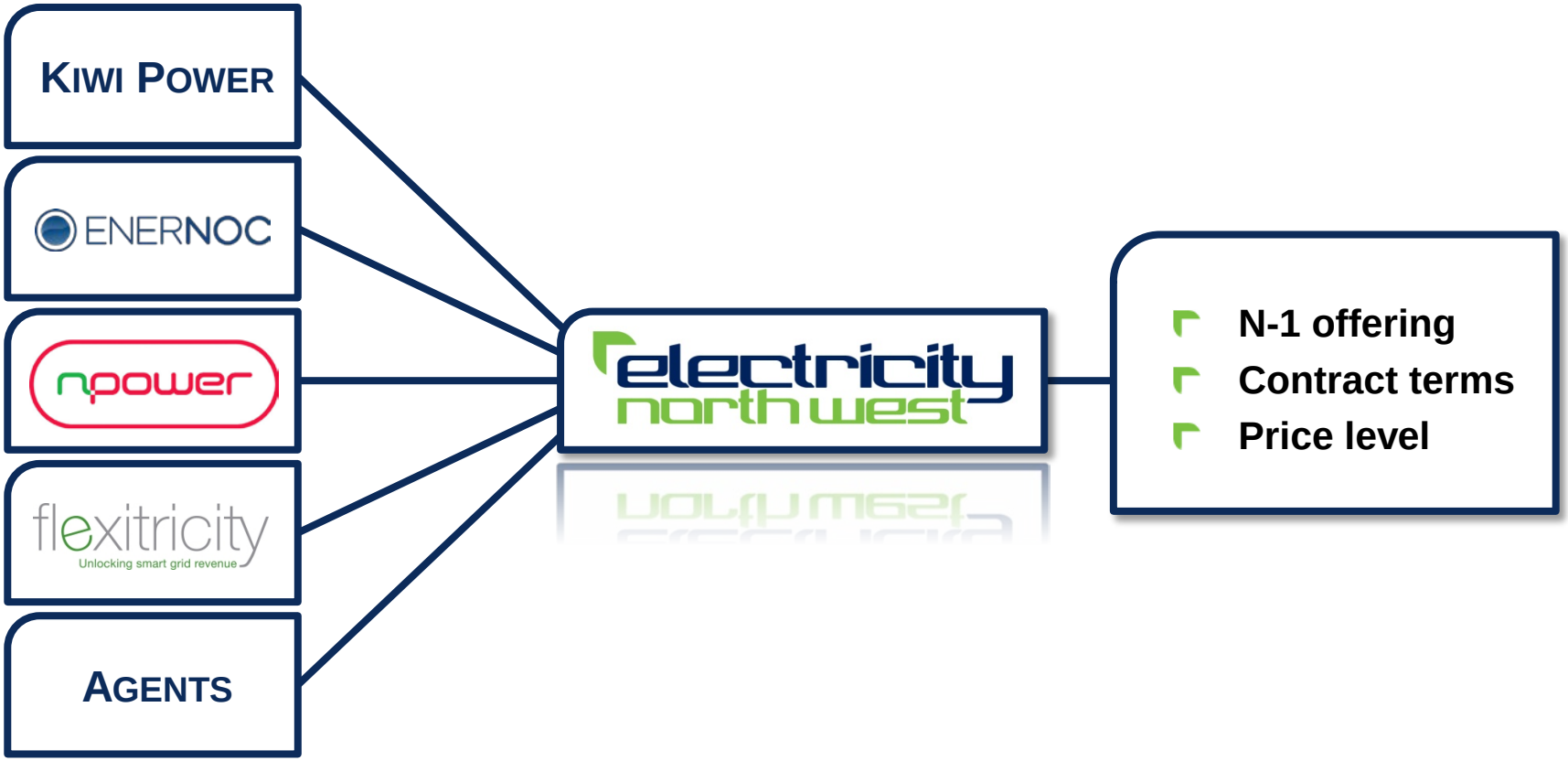
- The aggregators had few clients within Electricity North West's area
- Aggregators tended to be focused on a small number of large customers geared to FR and STOR

Three routes to market

- DNO direct
- Agent/aggregator finder's fee using our equipment with the contract model being Electricity North West direct with the customer
- Aggregator providing equipment, bilateral contract with the aggregator and the aggregator with the customer

Aggregator and agent engagement

What is the cost of delivery and the delivery model?



Aggregator and agent engagement

	£/MW/pa	Commission level	Contract model
AGGREGATOR 1	£10k - £15k	25% - 50%	Contract either direct with customer or ENWL – Agg, ENWL - customer
AGGREGATOR 2	£40k - £90k 10% of bill	£15k per site	Agg to contract direct with customer
AGGREGATOR 3	£30k - £40k		Flexible

Emerging lesson

- Each aggregator had different views on the customer value of n-1DSR, commission levels and contract models

Aggregator and agent engagement

December 2012

- The team agreed that a tender process should be run to appoint the aggregator/agent
- Voluntary OJEU notice submitted

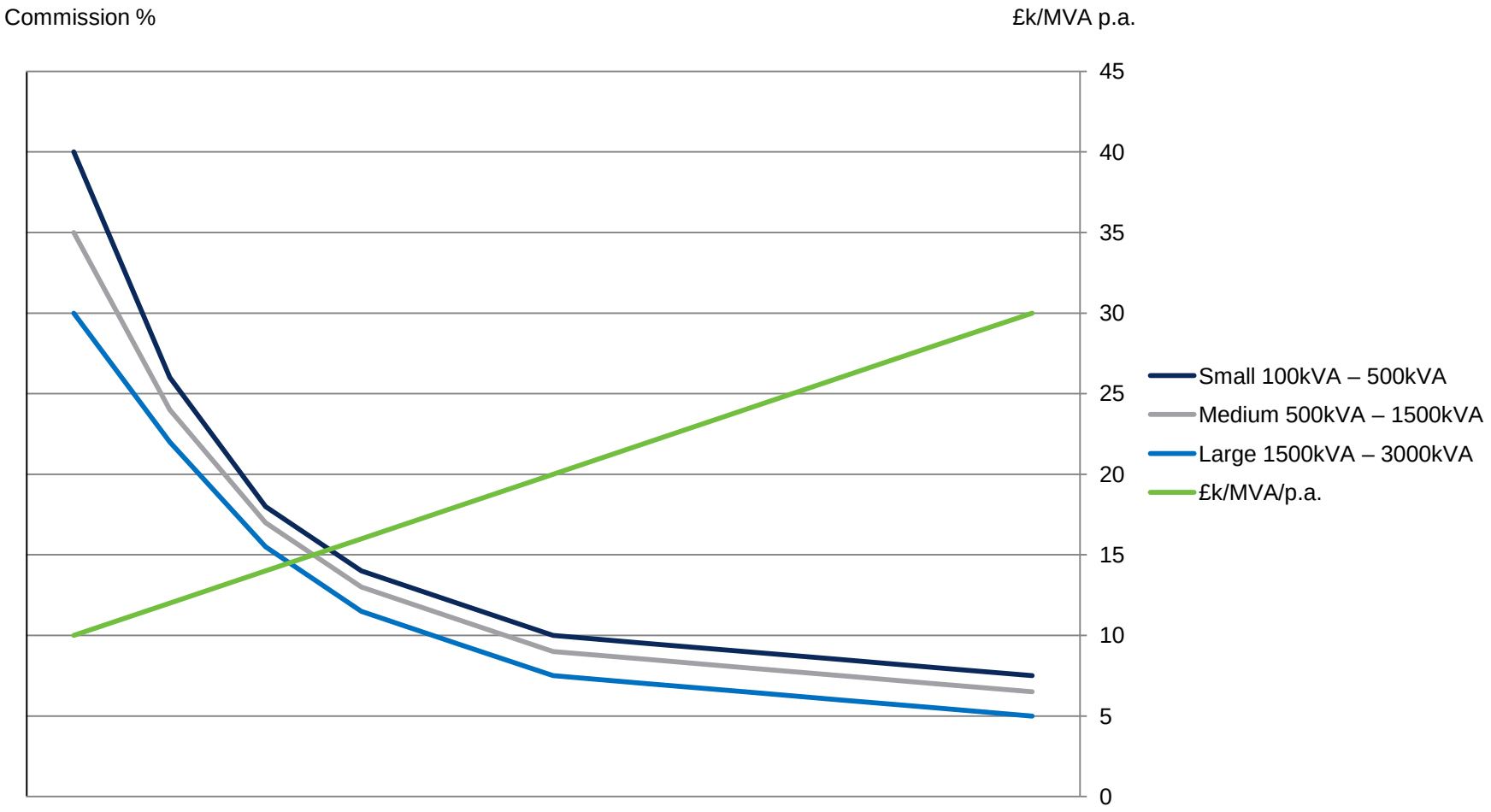
January 2013

- The tender process was run throughout January

Emerging lessons

- The tender created competition between the aggregators
- The bids revealed very different commission levels from aggregators' initial opinions
- No alternative contract models were offered by the aggregators

npower price discovery commission model



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Capacity to Customers

17th April 2013

David Powell – Ancillary Services Business Development Manager, npower

Objectives

> Npower and the C_2C trial

> Project Deliverables

> Approach and work to date

> Next Steps

Introduction

- Npower's Ancillary Services team was selected as a partner to the C_2C project at the beginning of February.
- Acting as primary route to market, npower are tasked to sign-up a minimum of 10 customers for the C_2C trial.
- We will do this sourcing customers from our own significant existing customer base within the North West as well as engaging new customers.
  - As an energy supplier npower has a strong presence in the UK business market serving around 17,000 large I&C customers, with over 100,000 sites together with 238,000 SME sites
  - In Electricity North West's region we supply around 1,000 half-hourly metered sites
  - The Ancillary Services team are engaged with a number of customers for Demand Side Response schemes through our SmartSTOR service

Project Deliverables

- To sign-up 10 I&C customers over the next 11 months to 1st March 2014 for existing and new connections

- Commercial contracts with customers commence 1st April 2013 and run until 30 Sep 2014.

- Timeframes
  - By 1st July 2013 — 2 customer contracts
  - By 1st October 2013 — 6 customer contracts
  - By 1st January 2013 — 9 customer contracts
  - By 1st March 2014 — 10 customer contracts

- To explore, within the commercial contract with the customer, the customers appetite for risk and the monthly payments acceptable to them against an existing benchmark.

Approach and Work to Date

Key focus over the last 10 weeks has been about mobilisation of our resources and initiating activity:

> Data Teams:	- Data and customer targeting
> Sales Teams:	- Internal briefing and engagement with the teams - Understanding telesales requirements for lead generation & developing scripts
> ENW:	- Reviewing & prioritising identified leads from earlier customer engagement - Agreeing the process for customer engagement
> Marketing Team:	- Internal & external communications

Approach and Work to Date cont.

Customer Data & targeting

- Npower I&C supply customers:
  - Data extract for >=100kVA Max Import Capacity – 1000 sites identified
  - Sites matched to ENW trial HV circuit post codes – 200 sites identified
  - Target list issued to Sales teams for review
  - A small number of leads identified from our New Connections team

- Embedded generation
  - Generation Services team's customer portfolio reviewed (assets used for commercial generation)
  - RWE Renewables (connected wind farm assets)

- Electricity North West leads from initial research work

- Customers already engaged with Demand Side Response work with npower

Next Steps

Customer contact

- Progressing with Customer contact and arranging meetings
  - Across all identified routes to market
- Ongoing engagement with our Sales teams

Data

- Create ‘tranches’ to target sales activity – by customer size / business type
- Review data enrichment activity with SIC, number of employees etc

Key Enablers

- VBA Excel model built to check trial circuit post codes
- ENW process for final checking that customer is on a trial circuit
- Provision of fault history prior to meeting with a customer

THANK YOU

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Questions & Answers

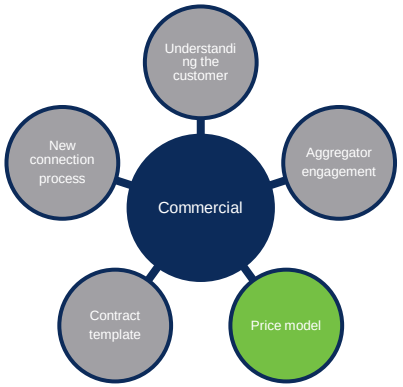
Aggregator and agent engagement

'Aggregator providing equipment, bilateral contract with the aggregator and the aggregator with the customer'

- Engaged with Flexitricity to provide this option
- Based on Flexitricity providing automation equipment at the customer's premises
- Contract held between Flexitricity and the customer

Price model

- Aggregator/agent's view
- Customer engagement
- IIS
- Electricity North West view



Price model development

Emerging lessons

- Different views on the value of n-1DSR to the customer, commission levels and commercial models.
- **£20k/MVA** p.a. mid-point target (*availability payment*)

Price model development

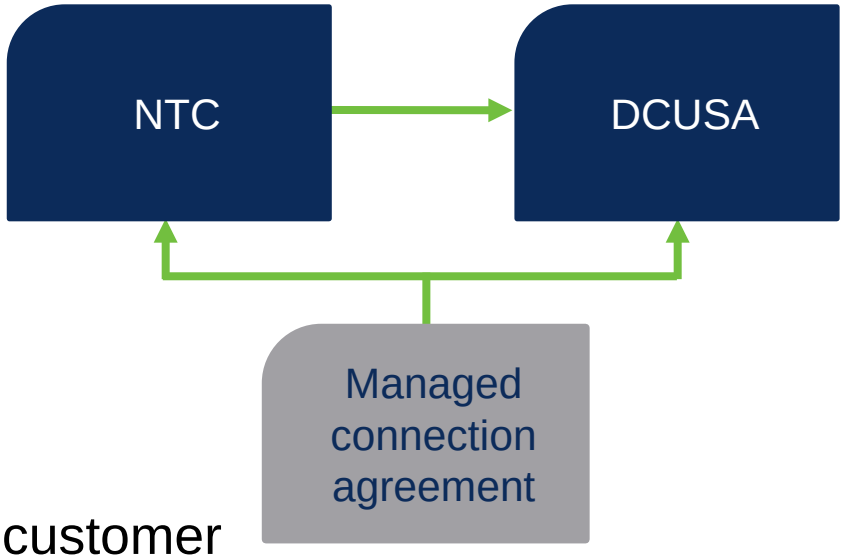
- Customer **interface** developed for presentation purposes

Emerging lessons

- Customer presentations were crucial to the customer's understanding of the C_2C product
- As customers became comfortable, the flexible options became less important

Contract template development

	Demand and generation
New customers	Contract
Existing customers	Contract



New connection demand or generation customer
Existing demand or generation customer

Emerging lesson

- Customers requested the contract be as simple as possible

Existing customer contract (demand or DG)

- The contract duration is from 1 April 2013 – 30 September 2014
- No termination option *formally* offered
- Options:
  - Outage duration (from 2 – 8 hours)
  - Protected days
  - Protected load
  - De-energisation times, days and seasons options

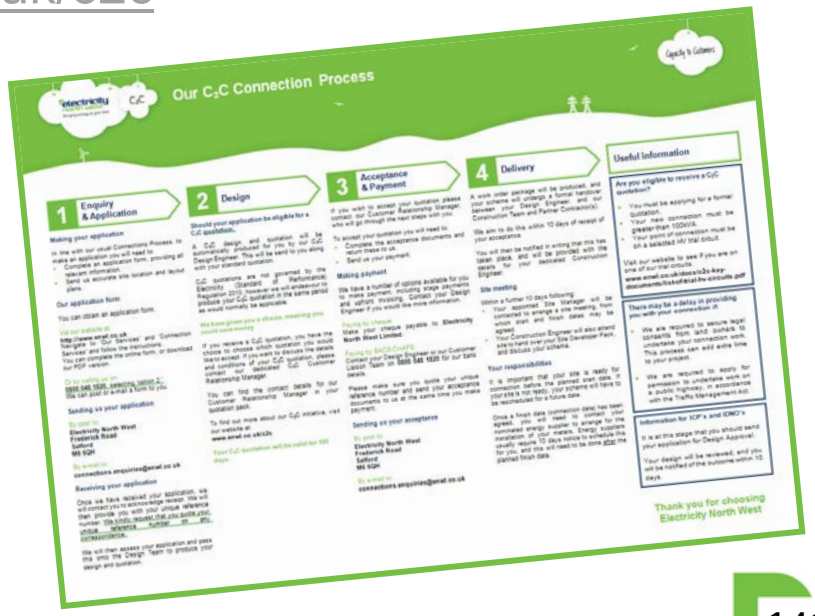
New connection customer contract (demand or DG)

- The contract is **permanent** with the following termination clauses for both parties:
  - The customer can terminate
    (cost capped in real terms cost of reinforcement)
  - The DNO can terminate the agreement post trial
    (cost of reinforcement borne by the company)
- Reinforcement savings passed to the customer
- No other options initially offered

New connections process

1. Enquiry and application
2. Design
3. Acceptance and payment
4. Delivery

- New C_2C managed connections are available to all eligible applicants
- Produced a **four step** process document
- Process live
- Published process on our website www.enwl.co.uk/c2c



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Emerging lesson

Adopted existing processes for simplicity and to revert at a later date back to BAU

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Next Steps

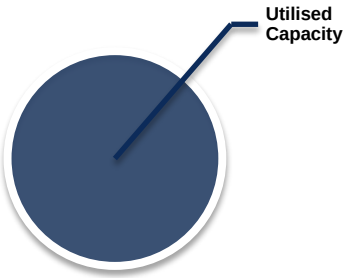
Steve Cox

Future Networks Manager

Recap - innovatively releasing Capacity to Customers

Capacity to Customers

Total available network capacity



Combining proven technology and new commercial contracts

Allows ENWL to release significant network capacity back to customers

Facilitating connection of new demand and generation without reinforcement

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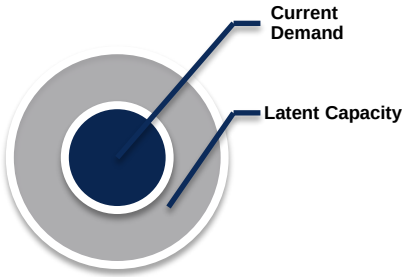
Technical innovation

Total available network capacity



Apply remote control equipment to the HV circuit and close the normal open point

Enhance network management software

This effectively doubles the available capacity of the circuit negating the need for traditional reinforcement

+

New commercial contracts

To retain customers' security of supply we will utilise innovative demand side response contracts

These contracts will allow us to control the consumption of customers on a circuit at the time of fault

Innovative, low risk and facilitates delivery of low carbon targets

C_2C project summary and next steps

Where are we now

- Initial I&C customer engagement completed
- Domestic engagement commenced
- Contracts on sale
- Infrastructure live

- Carrying on engaging with customers
- Complete customer sign up and evaluate price point
- Monitoring and power quality of network
- Finalise update recommendations for ETR 130

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Want to know more?

0800 195 4141, option 3

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LCN Fund
Low Carbon Networks

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