

Capacity to Customers (C₂C)

European Demand Response and Dynamic Pricing 2013

Monday 24 June 2013



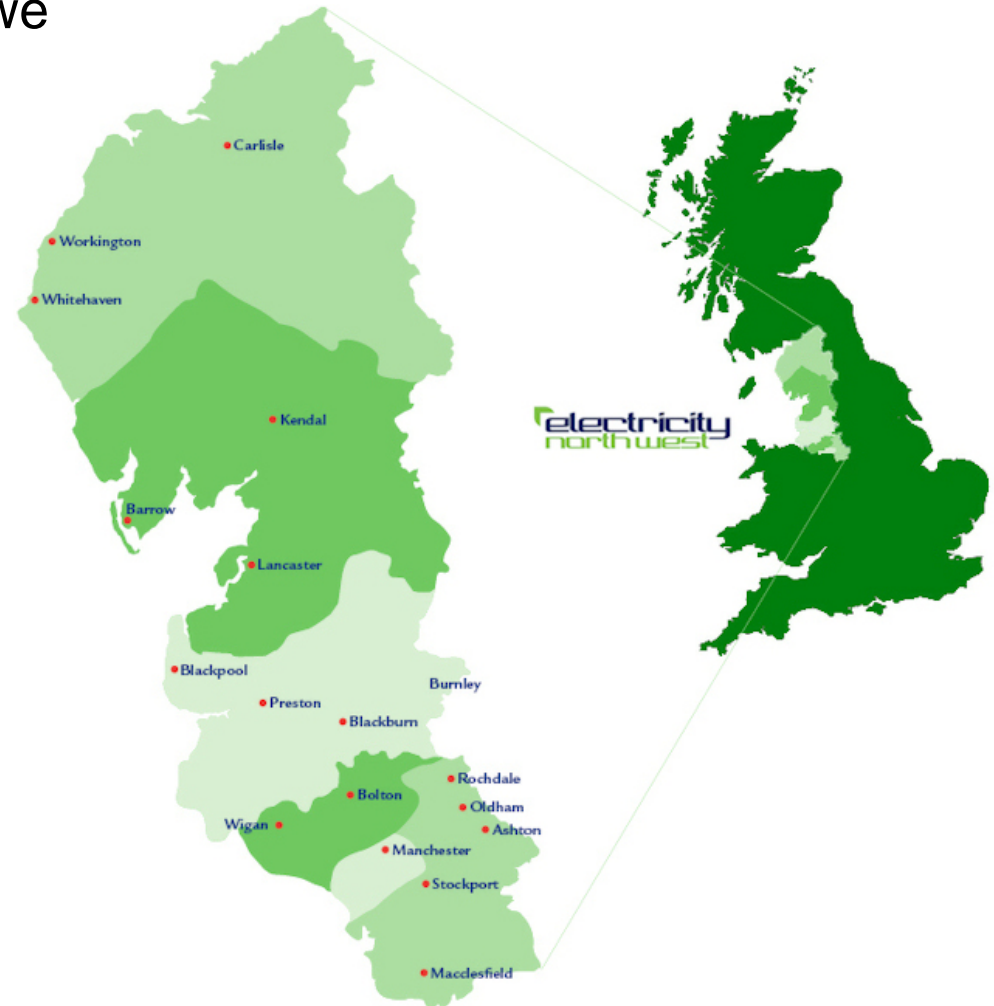
- Electricity North West
- Overview of Capacity to Customers (C₂C)
- Commercial proposition development
- Questions and answers

Introducing Electricity North West

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

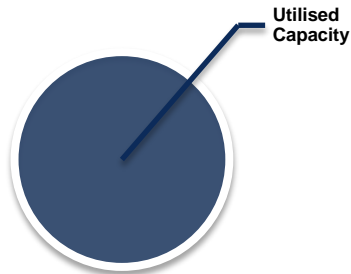
We distribute electricity to approximately 5 million people at 2.4 million domestic and Industrial locations consuming 25 terawatt hours of electricity annually

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



Capacity to Customers

Total available network capacity



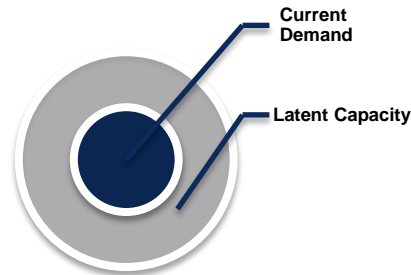
Combining proven technology and new commercial contracts

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

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

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

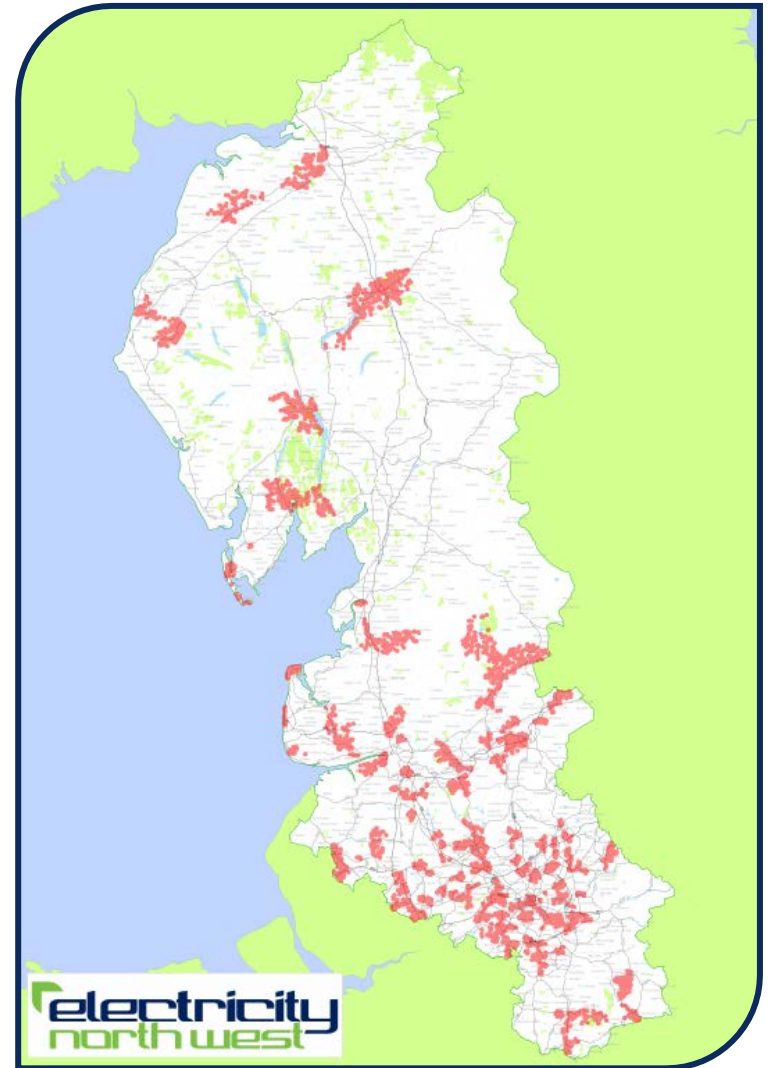
- Closedown report
- Project closedowns



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

- The trial area is all our **132 & 33kV network** and approximately 10% of our HV network
- C₂C 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 C₂C website

www.enwl.co.uk/c2c



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 C₂C 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 C₂C 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**

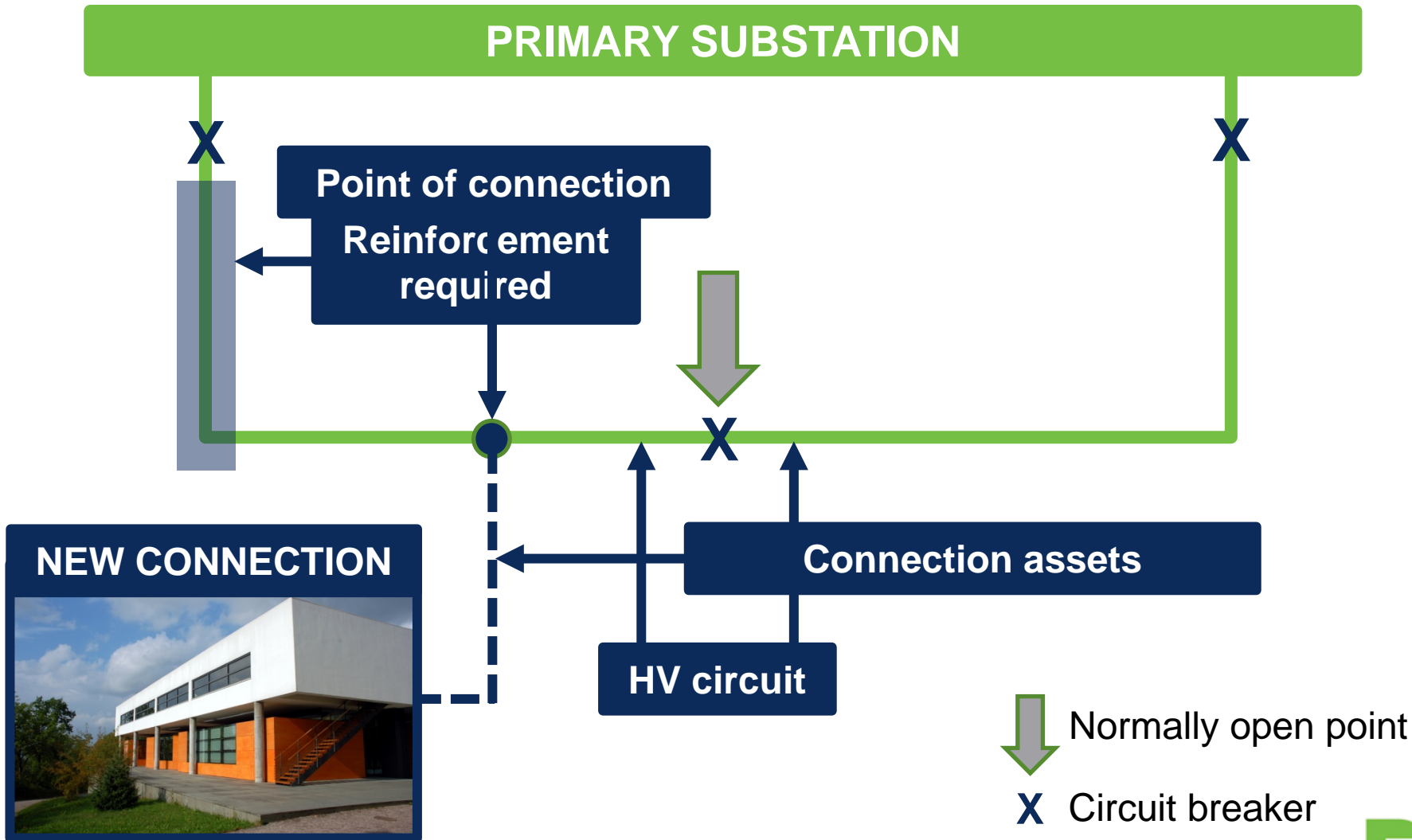


8 hours 

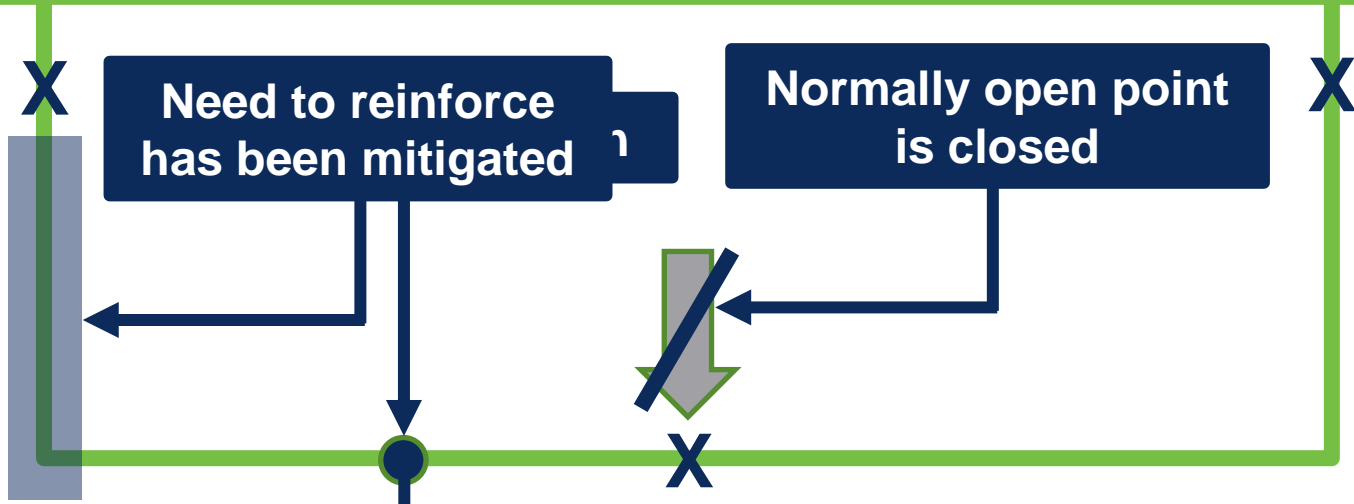
As a C₂C managed customer, the restoration of the non-essential power may be delayed up to a pre-agreed period of time

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

- ▶ How can opting for a C₂C managed supply save our customers money on a new connection?
- **No network reinforcement charges**
 - **Reduced connection asset costs**



PRIMARY SUBSTATION

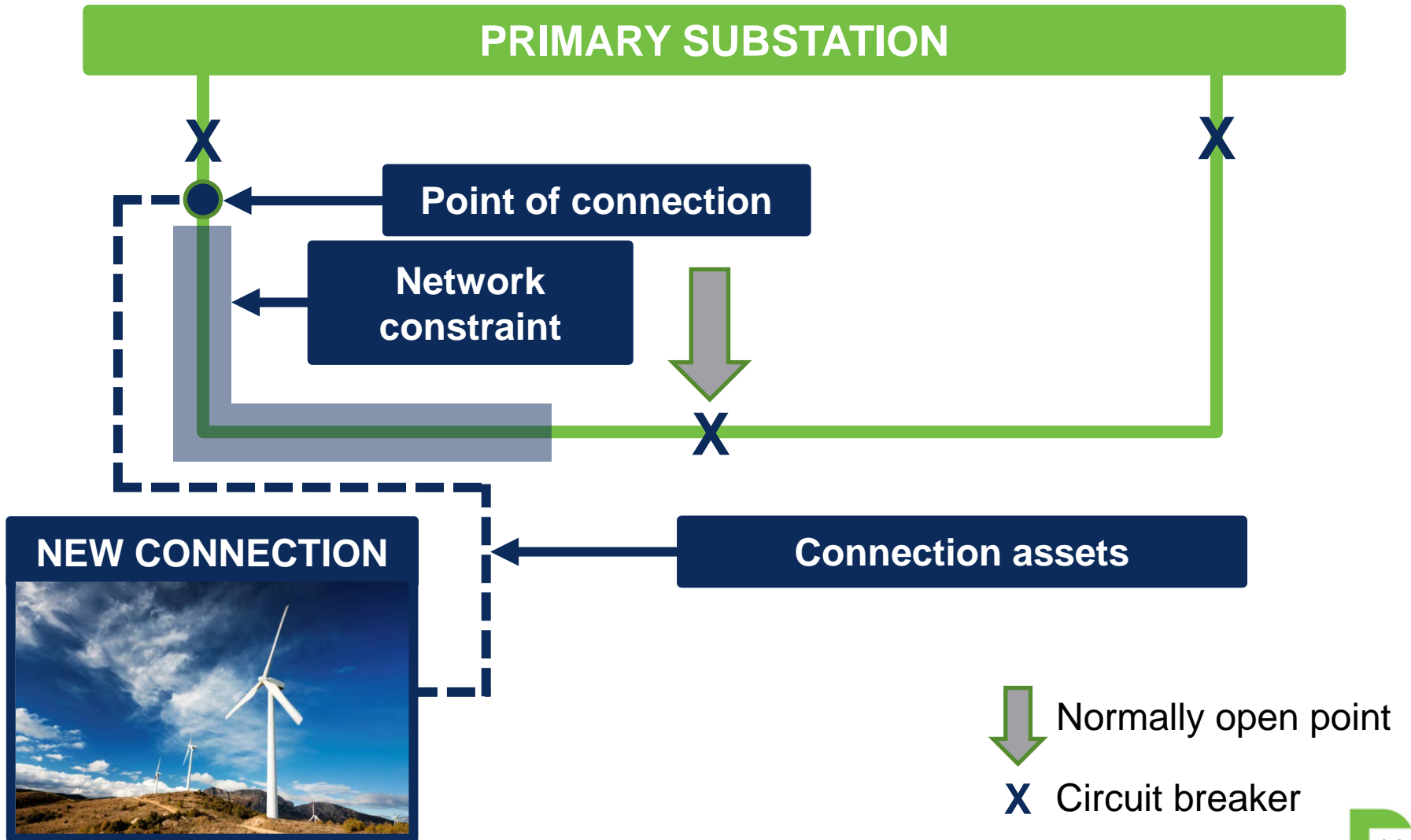


NEW CONNECTION

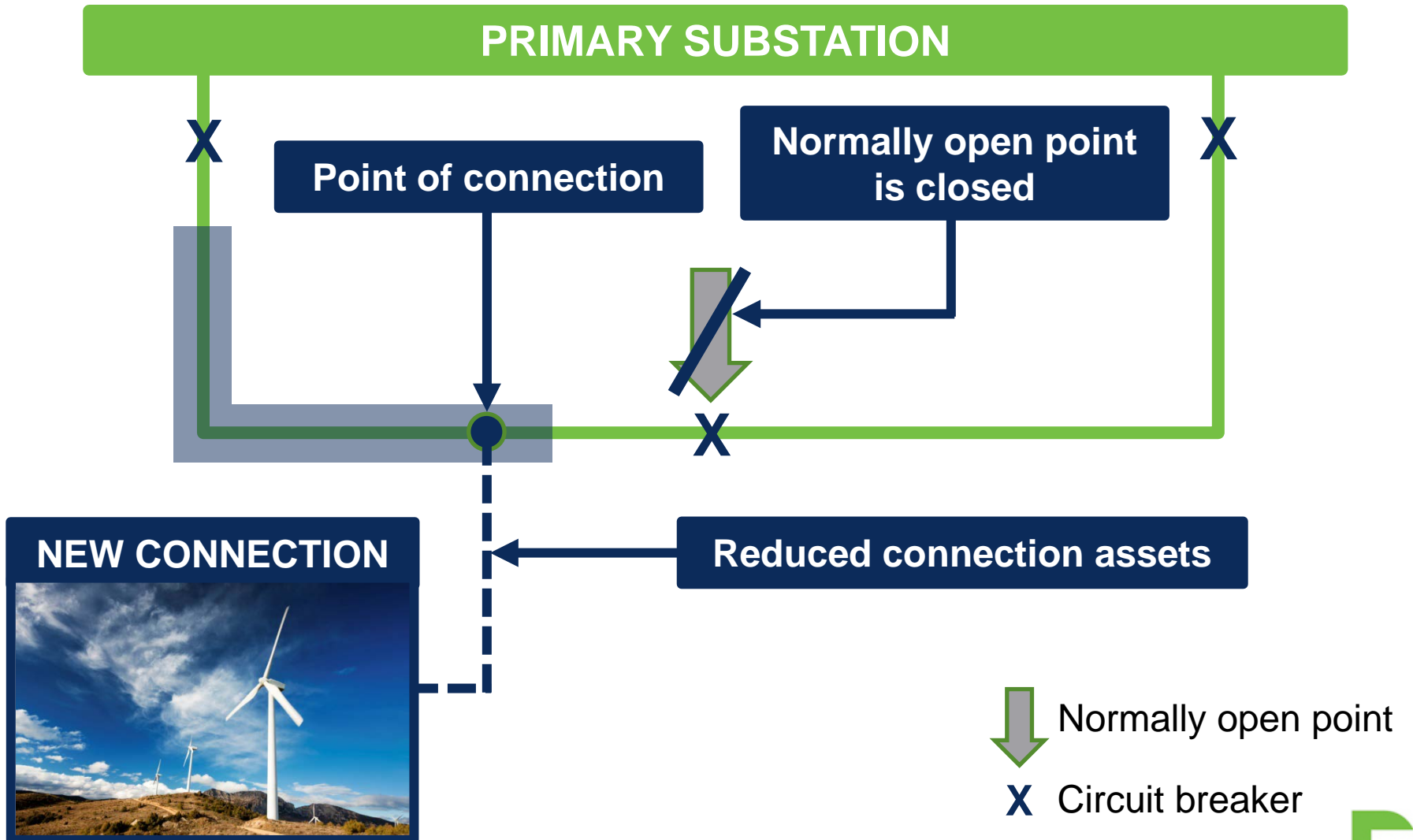


Connection assets

- ↓ Normally open point
- X Circuit breaker



PRIMARY SUBSTATION



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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

1

Customer survey

2

Further in-depth discussions

3

Routes to market

4

Contract arrangements

1

To explore the appeal and potential uptake of C₂C to I&C customers

- Targeted mail shot to I&C customers on C₂C circuits
- Seminar for new connections customers
- Survey to answer three key questions:
 1. Is there an appetite in the I&C market for C₂C?
 2. What is the level of interest by sector?
 3. For the I&C market, what contract elements are required to make C₂C as attractive as possible?



- └ C₂C is appealing, contracts signed
- └ Greatest barrier is customer uncertainty about reliability of supply
- └ Key learning used to structure C₂C commercial contracts
 - **Tailored contracts** terms considered important
 - **Length of contract** had the biggest single influence on take up.
 - **Safeguarded days** significantly increased take up rates.
 - **Higher levels of reward** required to significantly drive up participation
 - The level of **appeal** is lower for Manufacturing & Processing v. Others
- └ Ongoing engagement will continue
 - Post acceptance survey
 - Ongoing monitoring

2

In depth discussions with I&C customers

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

3

Routes to market

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

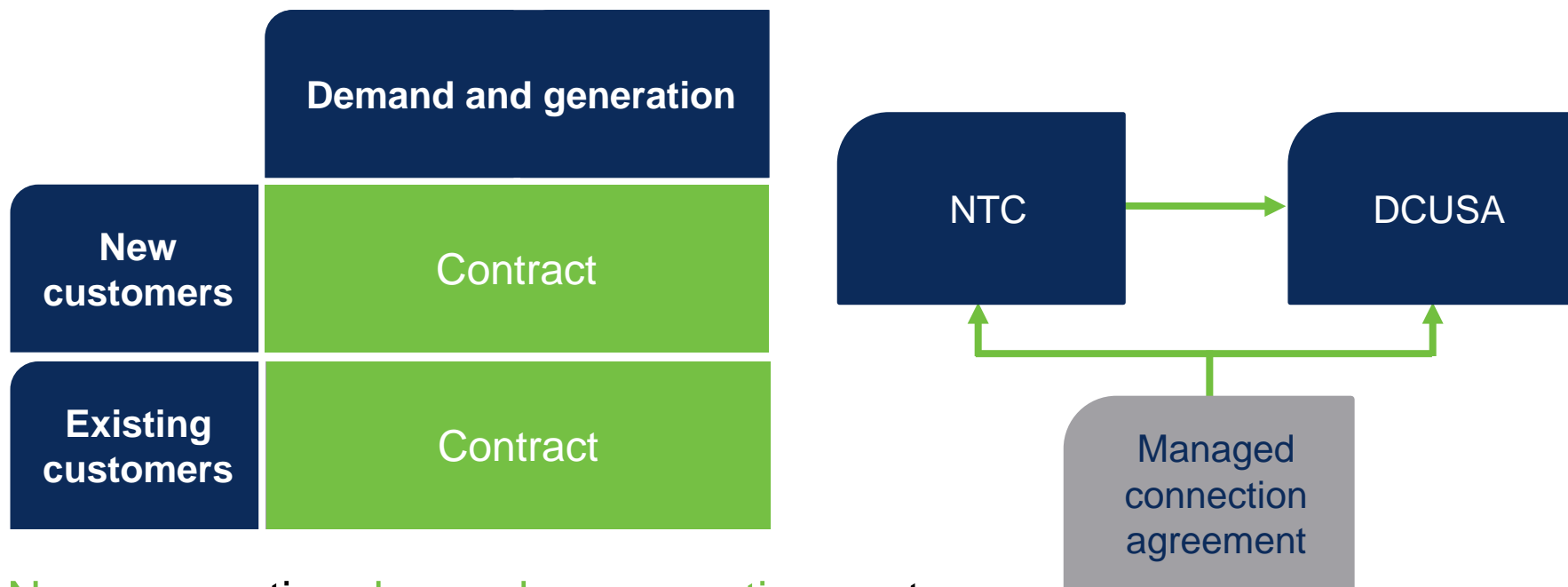
What is the cost of delivery and the delivery model?

- Customer **interface** developed for presentation purposes
- Customer presentations were crucial to the customer's understanding of the C₂C product
- As customers became comfortable, the flexible options became less important



4

Contract Arrangements

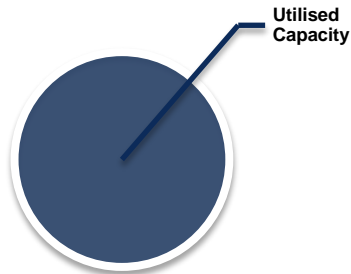


New connection demand or generation customer

Existing demand or generation customer

Capacity to Customers

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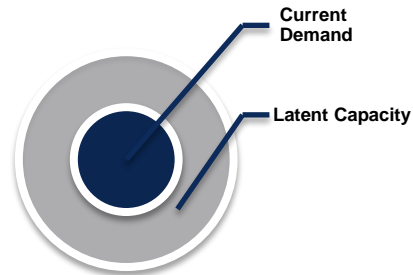
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Where are we now

- Infrastructure live
- Contracts on sale
- Carrying on engaging with customers
- Complete customer sign up and evaluate price point
- Monitoring and power quality of network

Questions & Answers

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Want to know more?

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