SMART STREET

Customer contact centre briefing

23 July 2015

Tracey Kennelly

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Agenda

- Background
- Why do we need Smart Street?
- Project overview
- Aims of the project
- How does it work?
- Smart Street trials
- Trial area
- Understanding Smart Street
- Smart Street customer impact & engagement
- Smart Street technology
- How will Smart Street affect the contact centre?
- Key milestones & summary
- Where can I find out more?

Background - our smart grid development

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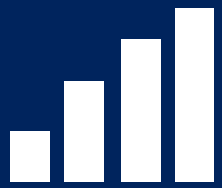
Leading work on developing smart solutions



Deliver value from existing assets

Customer choice

Reduce:
- Reinforcement costs
- Energy costs for customers

Improving carbon efficiency

LCN Fund
Low Carbon Networks

Four flagship products (second tier) £36 million

Respond builds on the C_2C and CLASS smart grid trials

C2C
Capacity to Customers

CLASS

SMART STREET

RESPOND

Why do we need Smart Street?

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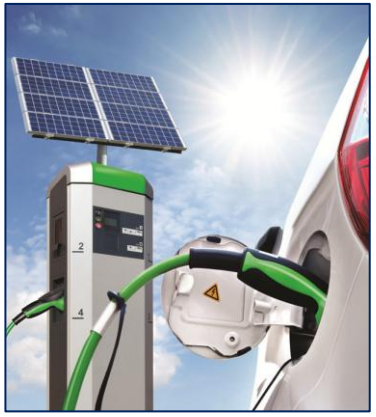
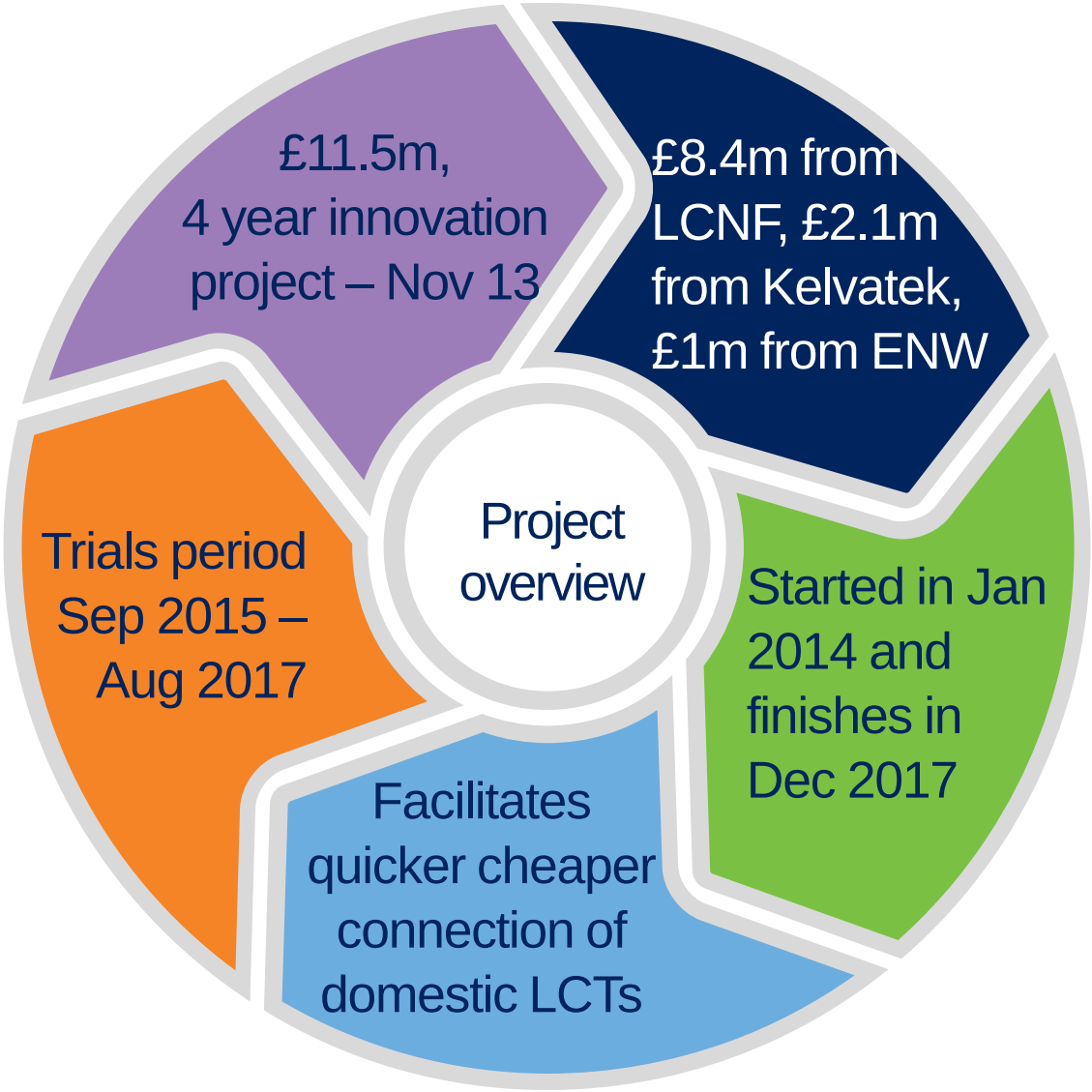
- To achieve the UK's CO_2 targets, customers will start to replace petrol/diesel cars with **electric vehicles** and **electric heat pumps** will replace and gas central heating systems
- Present peak demand 2kW (6kW EHP / EV 3.5 - 7kW)
- Projected to double electricity demand by 2050
- £1.8 billion by 2025 in NW to expand the network to cope with extra demand £15 billion GB / £600 per household
- Massively disruptive programme of work
- Much higher bills for customers
- Ofgem are supporting DNOs via the LCNF to test and adopt new 'smart grid' technology, operating practices and commercial arrangements.
- This learning is shared with other DNOs so the UK can meet the predicted huge increase in electricity demand at a much lower cost and reduce carbon emissions
- Smart Street is Electricity North West's third smart grid trial



PV
4kW of
generation

Smart Street project overview



Aims of the project

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To balance voltage to make our network and appliances work in harmony and perform more efficiently

To make it easier to adopt low carbon technologies onto the network such as solar panels and electric vehicles

To avoid the cost of huge infrastructure improvements

To help meet the UK's tough low-carbon targets

Prove the hypothesis that customers will not notice Power supply, appliances and equipment will not be affected

If successful Smart Street could be deployed on a national level and provide benefits to millions of customers

Smart Street – How does it work?
Voltage Optimisation

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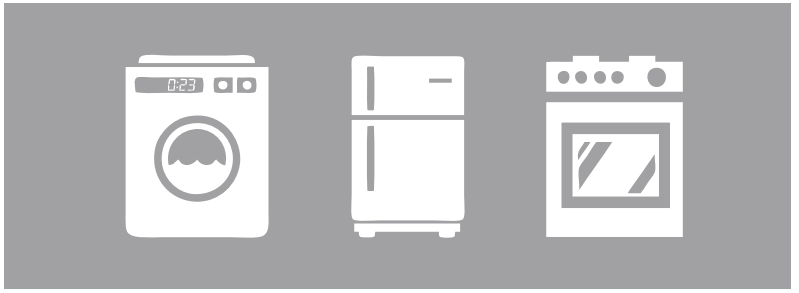
Efficiency

Network

Customer appliances



Allows networks and appliances to work in harmony delivering efficiency across the energy supply chain

Low carbon ● Lower bills ● Faster LCT adoption ● Less disruption

Smart Street – How does it work?

- Challenges - Loss of voltage as electricity flows through the network
- Appliances perform less efficiently
- New remotely control technology to manage voltage and make the network perform more efficiently
- Voltage intervention techniques to enable better voltage management on the network / CVR
- By reconfiguring the network and working smarter, we can release capacity and make voltage headroom to facilitate the connections of LCTs and operate a cost, carbon and energy efficient network

Smart Street – Trials

- 2 year trial period - 1/10/15 to 30/9/17

- One week on / off to accrue 12 months worth of Smart Street Data to assess technical and customer impact.

- Off /On design can be applied without customer intrusion – This isolates the effect of Smart Street from customer behaviour

- 5 trial regimes to test the application of equipment in isolation and different combinations

- Technical data analysed by University of Manchester and Queens University, Belfast.

- Customer engagement activities to assess any customer impact

Smart Street trial area

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6 primary substations
10 HV circuits

38 distribution substations
163 LV circuits

Around 67,000 customers

3 selected primary substations from CLASS

Understanding Smart Street
Voltage regulation

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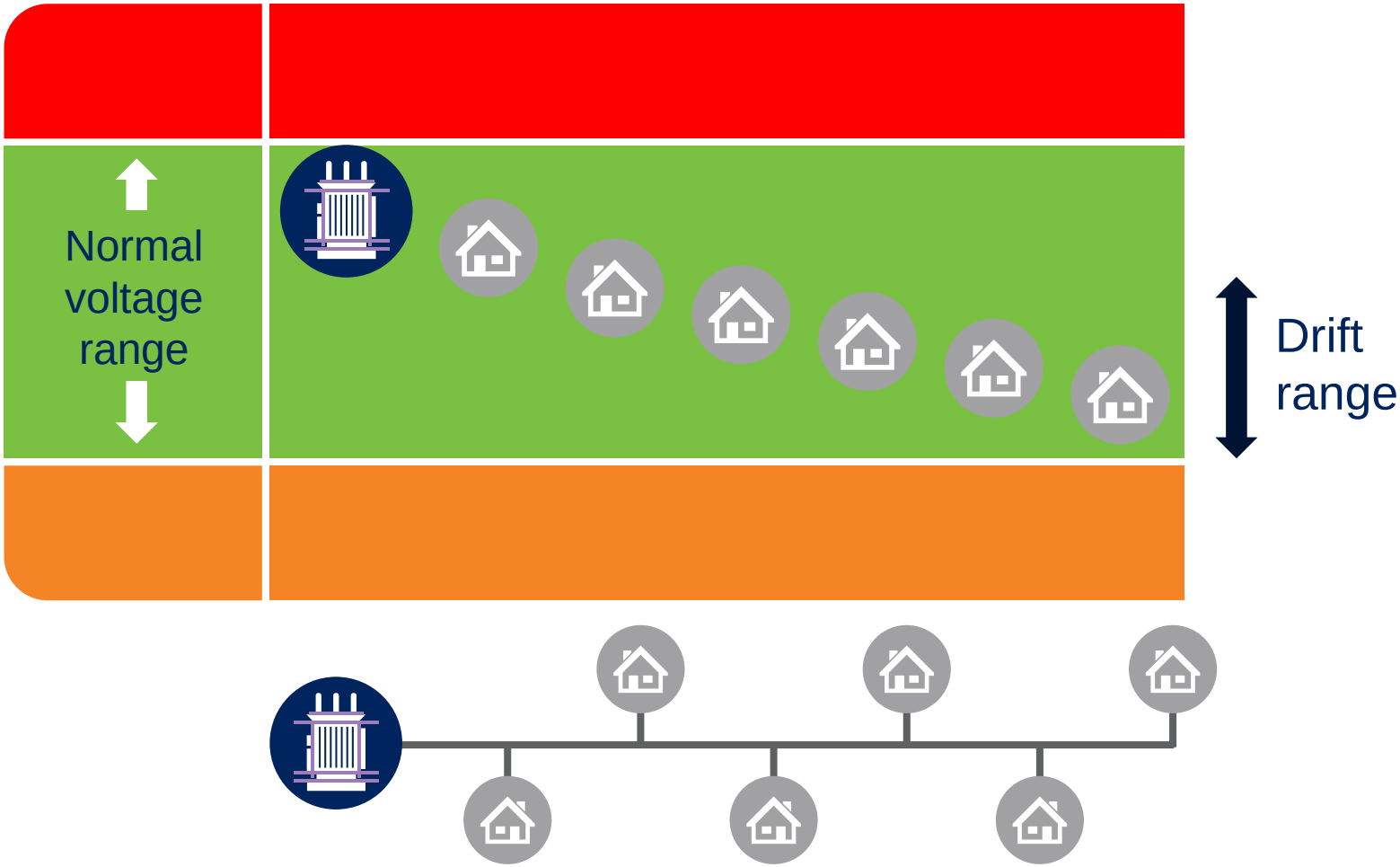

Historic networks have no active voltage regulation

Understanding Smart Street Problem - LCTs create network issues

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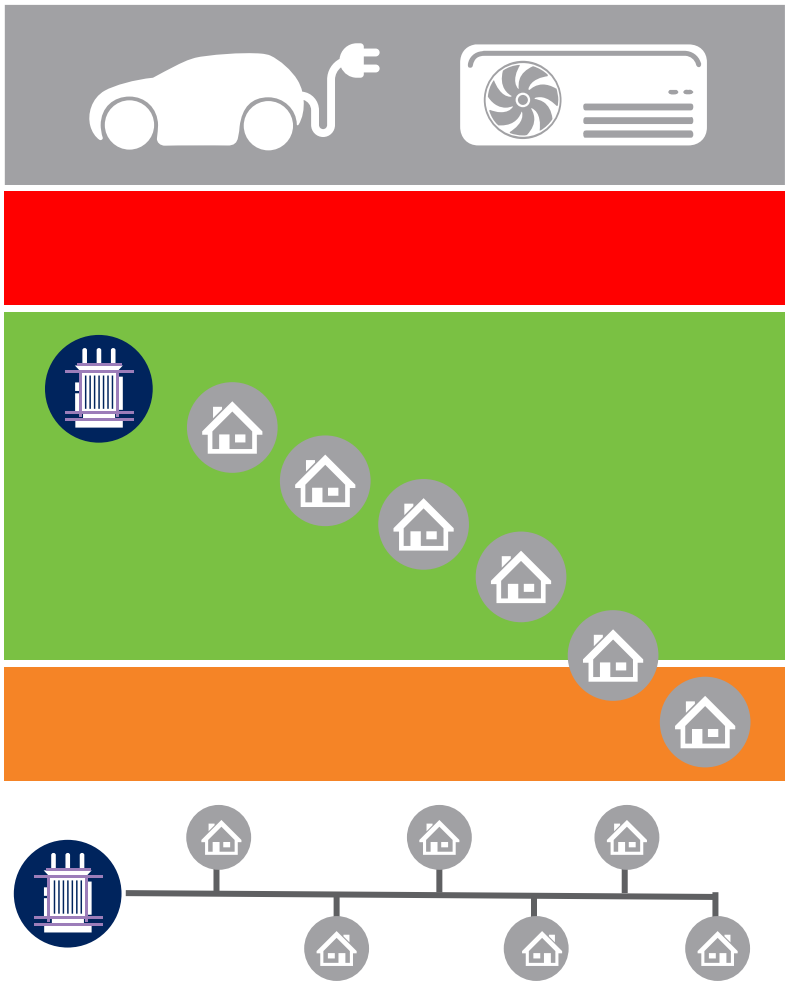
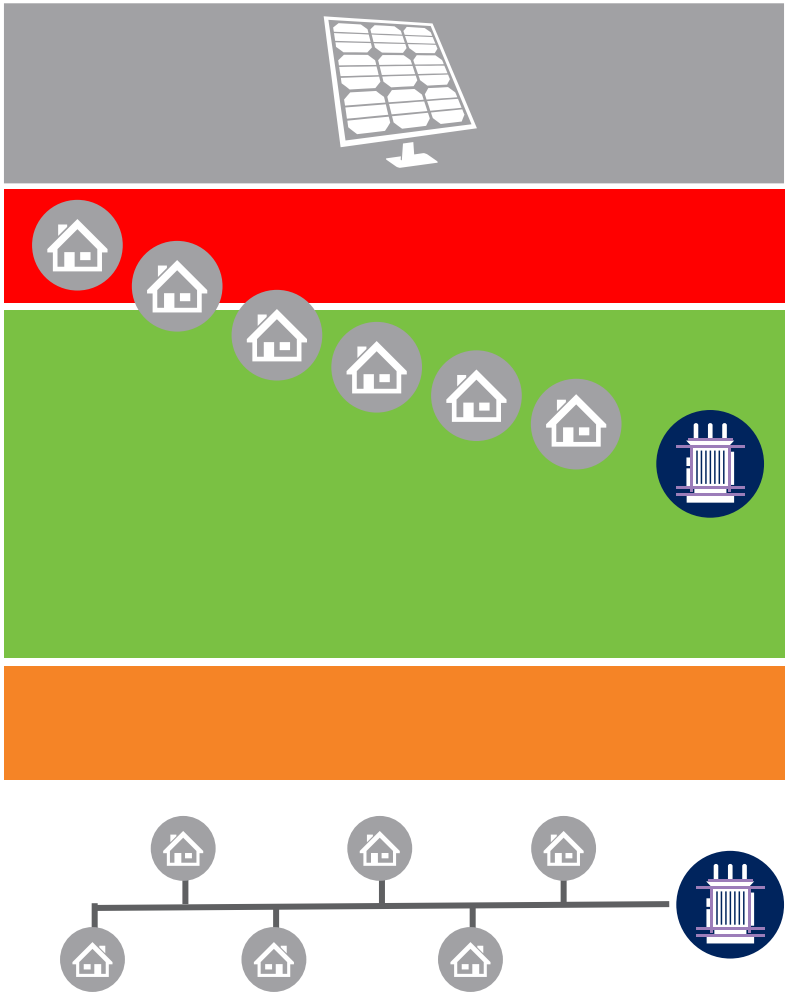


Drift range



LCTs rapidly surpass voltage and thermal network capacity

Understanding Smart Street
Unlocks diversity between circuits

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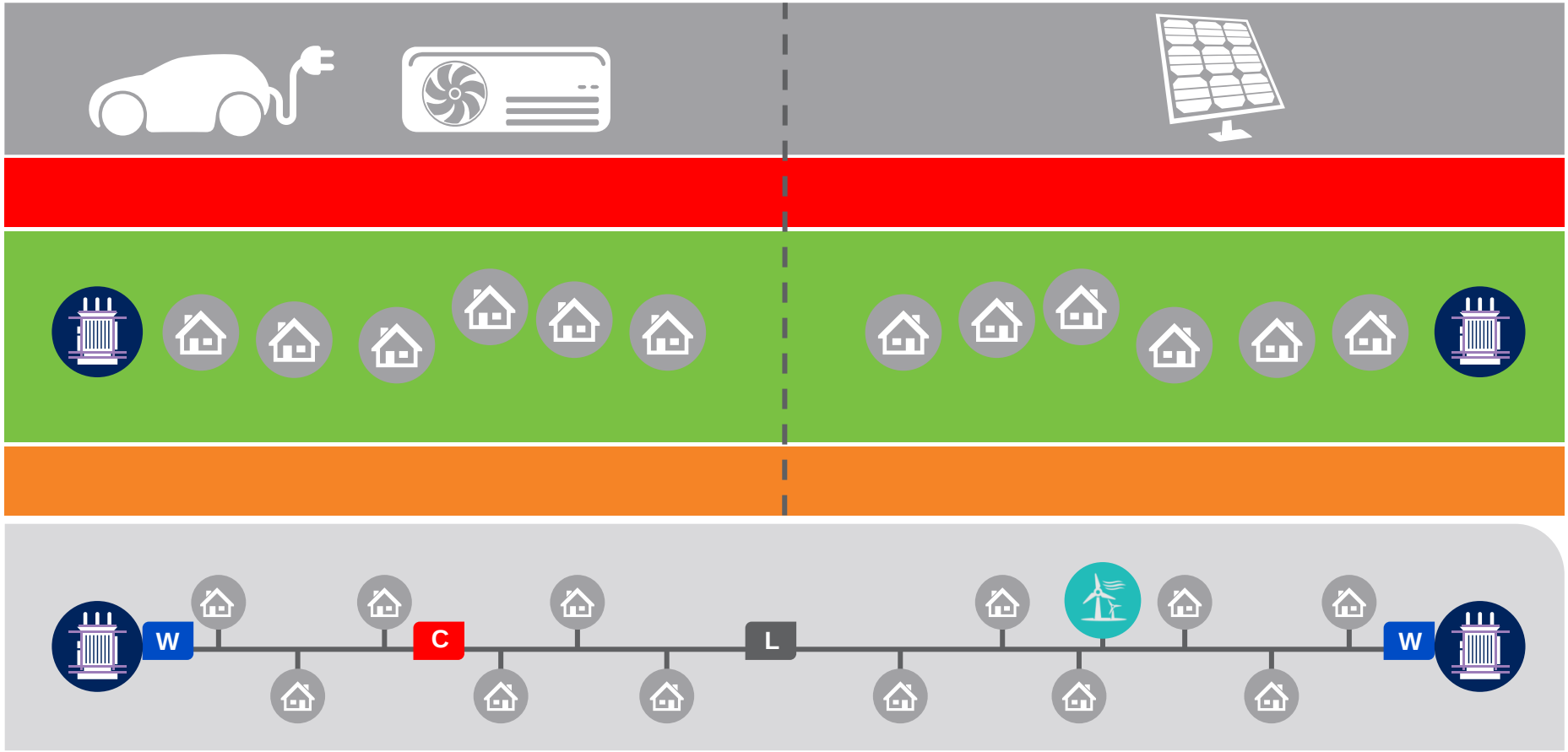

Low cost ● Quick fit ● Minimal disruption ● Low carbon ● Low loss ● Invisible to customers

Voltage stabilised across the load range ● Power flows optimised

Understanding Smart Street
Existing radial network

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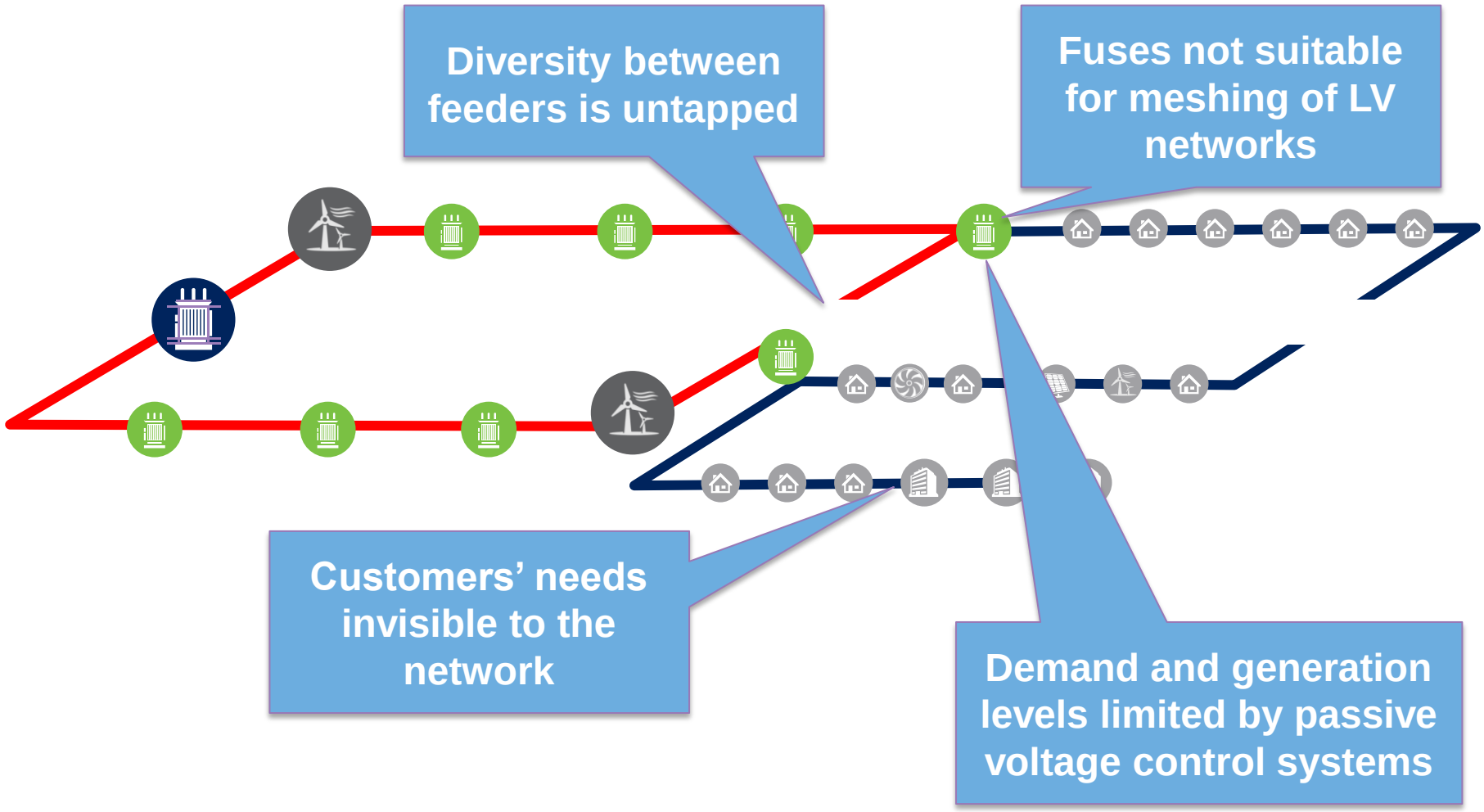

- Reliability driven by fix on fail -

Understanding Smart Street
How the network will change

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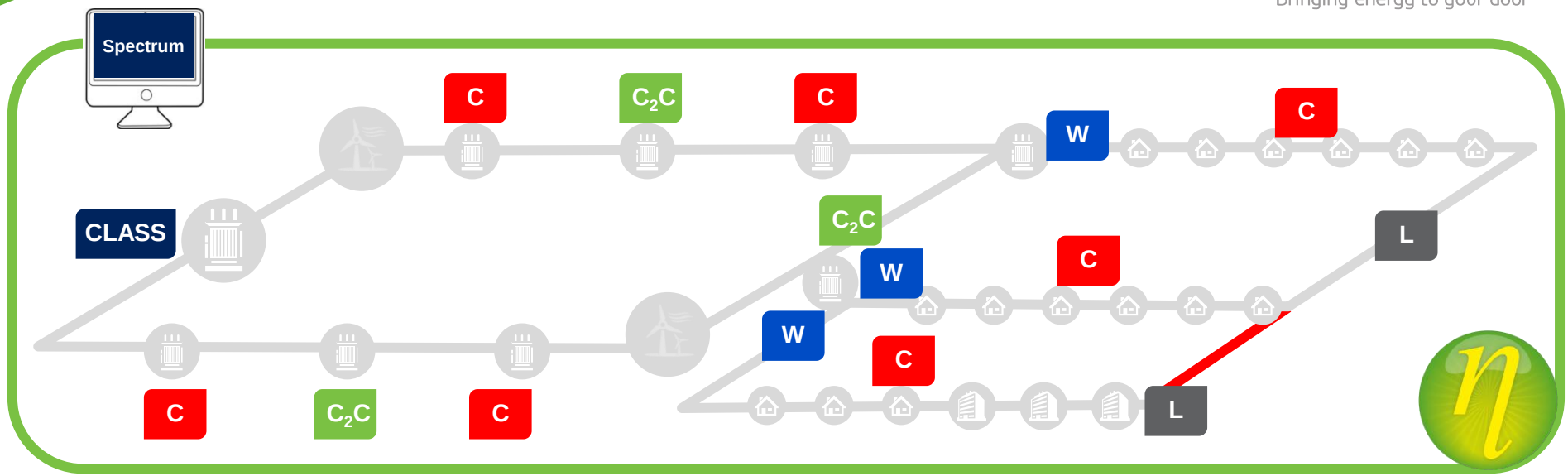

KELVATEK

- WEEZAP - world leading adaptive LV technology
- Enables safe LV interconnection, live monitoring and control
- Improves supply reliability and restoration through fault management and detection
- Allows the benefits of interconnection and adaptive automation (developed under C_2C to be realised on LV networks)

SIEMENS

- Spectrum software measures, optimises and responds
- CVR and losses benefits unlocked
- Oversees network and customer needs
- Builds on CLASS smart voltage control

Key

C_2C	Capacity to Customers
C	Capacitor
W	WEEZAP
L	LYNX

Builds on C_2C and CLASS ● Storage compatible ● Transferable solutions

Customer impacts

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Geographic trial areas – customers can not opt out of the trials

			
Customers will see increased activity 1,500 customers notified	Higher number of faults of shorter duration	Less time off supply	Planned supply interruptions due to equipment installation Additional engagement with PSR customers

Customer engagement

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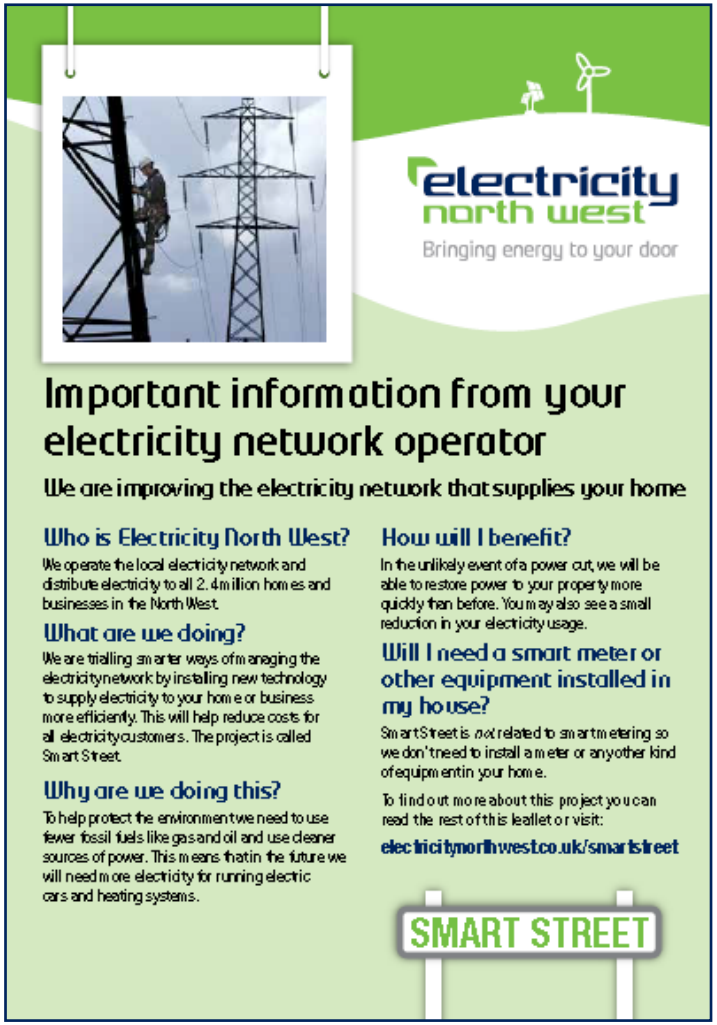
To prove that customers will not perceive a change to their electricity supply

- Customer engagement using multiple channels
- Engaged customer panel to develop comms materials
- Project leaflet for all customers in trial areas
- Draw on information from CLASS and other projects
- Qualitative research – three engaged customer panels
- Feedback via customer contact centre, website and SMS
- Findings published on dedicated project website

Smart Street
Customer Leaflet

- Leaflet distributed to 19,500 customers in Smart Street trial areas on 24th October 2014

- Sent to arrive mid week to minimise impact on CCC



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Important information from your electricity network operator

We are improving the electricity network that supplies your home

Who is Electricity North West?

We operate the local electricity network and distribute electricity to all 2.4 million homes and businesses in the North West.

What are we doing?

We are trialling smarter ways of managing the electricity network by installing new technology to supply electricity to your home or business more efficiently. This will help reduce costs for all electricity customers. The project is called Smart Street.

Why are we doing this?

To help protect the environment we need to use fewer fossil fuels like gas and oil and use cleaner sources of power. This means that in the future we will need more electricity for running electric cars and heating systems.

How will I benefit?

In the unlikely event of a power cut, we will be able to restore power to your property more quickly than before. You may also see a small reduction in your electricity usage.

Will I need a smart meter or other equipment installed in my house?

Smart Street is *not* related to smart metering so we don't need to install a meter or any other kind of equipment in your home.

To find out more about this project you can read the rest of this leaflet or visit:

electricitynorthwest.co.uk/smartstreet

SMART STREET

Smart Street – Customer benefits
Conservation voltage reduction

Now we can stabilise voltage

We can set the voltage level lower

This will lead to:

- Reduced demand
- Reduced customer energy consumption
- Maximised DG output

Conservation Voltage Reduction

Lower Voltage Range = Appliances More Efficient

How much could customers save?		GB
Reinforcement savings via DUoS	£330 over 25 years	£8.6b over 25 years
Reduced energy consumption, 2013 (from CVR ≈ 3 - 7%)	£15 - £30 pa	£390 - £780m pa
Maximise DG output (from maximising Feed In Tariff income)	£70 pa	£20m pa

Efficient network solutions ● Energy savings ● Carbon benefits

What technology customers won't see - WEEZAP

KELVATEK

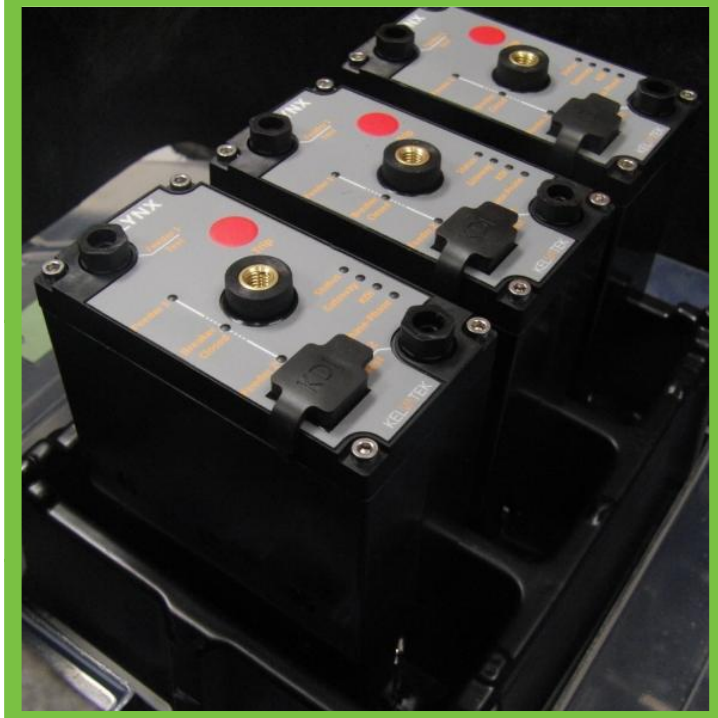
World leading LV vacuum circuit breaker

Advanced measurement and protection capability

Safe LV interconnection, live monitoring and control – operated via NMS or locally

Improves supply reliability and restoration through fault management and detection

What technology customers won't see - LYNX



KELVATEK

LV switch - replaces traditional links in a link box

Allows active network meshing and un-meshing

Advanced monitoring capabilities

Ability to control (open/close) the circuit locally or remotely via NMS.

What customers will see – LV capacitors in street furniture

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84 LV capacitors

One on each closed ring

Tried and tested

What customers will see - capacitors

- A capacitor is similar to a battery
- both **store electrical energy**
- Capacitors are much simpler than a battery
  - Can't produce new electrons - only stores them
- Imagine a capacitor as a **water tower** hooked to a pipe
- A water tower "stores" water pressure
  - when the water pumps produce more water than needed, the excess is stored in the water tower
  - At times of high demand, the excess water flows out of the tower to keep the pressure up
- A capacitor stores electrons in the same way and can then release them as required.

What customers will see - HV capacitors

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3 ground mounted HV capacitors

4 pole mounted HV capacitors

Located in urban areas in GRP housings

Installed similar to pole mounted transformers

Technology – Spectrum

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Measures, optimises and responds

CVR and losses benefits unlocked

Oversees network and customer needs

Builds on CLASS smart voltage control

Smart Street – Impact on the contact centre
Managing enquiries / complaints

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Customer sensitised following leaflet distribution	Customers concerned about new technology installs & street furniture	Customer engagement to understand impact of Smart Street	Customer enquires via contact centre	Register on CRM – details to TJK & Future Networks	Resolution on a case by case basis

A well planned strategy customer engagement strategy

Next steps

- Brief ENW contact centre before trial go live
- Further ECPs to gauge customer perception & acceptability of trials
- Produce report of customer research findings
- Ongoing engagement with customers during trial

Smart Street
Key customer milestones

June 2014

Dec 2017

Customer Engagement Plan & Data Privacy Statement to Ofgem	Engaged customer panel workshop	Deliver general awareness materials (leaflet) and publish on the website	Engaged customer panel lessons learned published on the website	Customer Contact Centre Training & materials published on intranet	Publish Customer Survey Report on website
June 2014	September 2014	October 2014	October 2014	July 2015	December 2017

Knowledge sharing and dissemination

Smart Street summary

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- Faster LCT adoption
- Less disruption
- Less embedded carbon
- Optimise energy and losses
- Re-usable technology

Carbon Footprint

- Maximise use of existing assets
- Leverage C_2C, CLASS and worldwide learning
- Configure off the shelf technology

Low Risk

- Combine into one end-to-end system
- Optimisation

Challenge

- Lower energy bills
- More reliable supply
- Reinforcement savings

Benefit

Where can I find out more?

- Check out the project website at: www.enwl.co.uk/smartstreet
- Contact the project team at: Futurenetworks@enwl.co.uk
- On the Volt: Network Strategy > Future Networks > SmartStreet
- **Smart Street contact** – Kate Quigley, Future Networks Customer Delivery Manager, Kate.Quigley@enwl.co.uk
- **Smart Street contact** – Tracey Kennelly, Future Networks Customer Research Co-ordinator, Tracey.Kennelly@enwl.co.uk

QUESTIONS & ANSWERS

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