Customer contact centre briefing

23 July 2015

Tracey Kennelly
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

Leading work on developing smart solutions

- Deliver value from existing assets
- Customer choice
- Reduce:
  - Reinforcement costs
  - Energy costs for customers
- Improving carbon efficiency

Four flagship products (second tier)  £36 million

Respond builds on the C\textsubscript{2}C and CLASS smart grid trials
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

**Why do we need Smart Street?**

- PV 4kW of generation
Smart Street project overview

- £11.5m, 4 year innovation project – Nov 13
- £8.4m from LCNF, £2.1m from Kelvatek, £1m from ENW
- Started in Jan 2014 and finishes in Dec 2017
- Trials period Sep 2015 – Aug 2017
- Facilitates quicker cheaper connection of domestic LCTs
Aims of the project

- 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

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

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

Normal voltage range

Drift range

Historic networks have no active voltage regulation
Understanding Smart Street
Problem - LCTs create network issues

LCTs rapidly surpass voltage and thermal network capacity
Understanding Smart Street
Unlocks diversity between circuits

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

- Reliability driven by fix on fail

- Diversity between feeders is untapped

- Fuses not suitable for meshing of LV networks

- Customers’ needs invisible to the network

- Demand and generation levels limited by passive voltage control systems
Understanding Smart Street
How the network will change

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

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 C2C to be realised on LV networks)

Key
C2C Capacity to Customers
C Capacitor
W WEEZAP
L LYNX

Builds on C2C and CLASS • Storage compatible • Transferable solutions
### Customer impacts

<table>
<thead>
<tr>
<th>Geographic trial areas – customers can not opt out of the trials</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Warning] Customers will see increased activity</td>
</tr>
<tr>
<td>![Flash] Higher number of faults of shorter duration</td>
</tr>
<tr>
<td>![Clock] Less time off supply</td>
</tr>
<tr>
<td>![Molecule] Planned supply interruptions due to equipment installation</td>
</tr>
<tr>
<td>1,500 customers notified</td>
</tr>
<tr>
<td>Additional engagement with PSR customers</td>
</tr>
</tbody>
</table>
Customer engagement

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

To prove that customers will not perceive a change to their electricity supply
• 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
Now we can stabilise voltage  
We can set the voltage level lower  
This will lead to:

<table>
<thead>
<tr>
<th>Reduced demand</th>
<th>Reduced customer energy consumption</th>
<th>Maximised DG output</th>
</tr>
</thead>
</table>

**How much could customers save?**

<table>
<thead>
<tr>
<th>Conservation Voltage Reduction</th>
<th>GB</th>
</tr>
</thead>
<tbody>
<tr>
<td>£15 - £30 pa</td>
<td>£390 - £780m pa</td>
</tr>
<tr>
<td>£70 pa</td>
<td>£20m pa</td>
</tr>
</tbody>
</table>

---

**Efficient network solutions ● Energy savings ● Carbon benefits**
What technology customers won’t see - WEEZAP

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

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

- 84 LV capacitors
- One on each closed ring
- Tried and tested
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

3 ground mounted HV capacitors
Located in urban areas in GRP housings

4 pole mounted HV capacitors
Installed similar to pole mounted transformers
Technology – Spectrum

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

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

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

October 2014

October 2014

October 2014

July 2015

December 2017

Knowledge sharing and dissemination
Smart Street summary

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

- Maximise use of existing assets
- Leverage C2C, CLASS and worldwide learning
- Configure off the shelf technology

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

- Lower energy bills
- More reliable supply
- Reinforcement savings
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