SMART STREET

LCNI conference
Network Performance, session 2.4
25 November 2015

Kevin Hoban
<table>
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<tr>
<th><strong>£11.5m, 4 year innovation project</strong></th>
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<td><strong>Started in Jan 2014 and finishes in Apr 2018</strong></td>
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<td><strong>Facilitates quicker cheaper connection of domestic LCTs</strong></td>
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<td><strong>Trials period Jan 2016 – Dec 2017</strong></td>
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<td><strong>Extensive customer engagement programme throughout project</strong></td>
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Voltage profile

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

LCTs rapidly surpass voltage and thermal network capacity

Drift range
Smart Street – the first intervention

- Voltage stabilised across the load range
- Power flows optimised
- Low cost
- Quick fit
- Minimal disruption
- Low carbon
- Low loss
- Invisible to customers

Voltage stabilised across the load range • Power flows optimised
Smart Street benefits

New controllable equipment on network stabilises voltage

Allows us to lower voltage levels

Enables networks and appliances to work in harmony

How much could customers save?

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<th>House</th>
<th>GB</th>
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<td>Reinforcement savings via DUoS</td>
<td>£330 over 25 years</td>
<td>£8.6b over 25 years</td>
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<td>Reduced energy consumption, 2013 (from CVR ≈ 3 - 7%)</td>
<td>£15 - £30 pa</td>
<td>£390 - £780m pa</td>
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<td>Maximise DG output (from maximising Feed In Tariff income)</td>
<td>£70 pa</td>
<td>£20m pa</td>
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Efficient network solutions ● Energy savings ● Carbon benefits
Smart Street trial areas

- 6 primary substations
- 11 HV circuits
- 38 distribution substations
- 163 LV circuits
- Around 62,000 customers
- 3 selected primary substations in CLASS

Locations:
- Wigan & Leigh
- Manchester
- Wigton & Egremont
Network reliability improvement

Builds on C2C and CLASS • Storage compatible • Transferable solutions
Technology – Spectrum

Spectrum

Measures, optimises and responds

CVR and losses benefits unlocked

Oversees network and customer needs

Builds on CLASS smart voltage control
System architecture
Distribution voltage regulated transformer

- 5 OLTCs
- 9 taps
- Local or remote
WEEZAP

World leading LV vacuum circuit breaker

Advanced measurement and protection capability

Safe LV interconnection, live monitoring and control

Improves supply reliability and restoration through fault management and detection
LYNX

LV switch

Allows active network meshing and un-meshing

Advanced monitoring capabilities

Ability to control the circuit locally or remotely
What customers will see – LV capacitors in street furniture

84 LV capacitors

One on each closed ring

Multi staged
Technology – monitoring

Gridkey monitoring device

Measures voltage at LV cable end

Data storage 10 minute intervals
Technology overview

84 LV capacitors installed

43 Lynx systems
498 Weezaps

50 end-point controllers installed

Spectrum 5 installed on network

Next steps
Commission system
Briefing and training
Go live!
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