

Sadiq Khan (Mayor of London)
New London Plan
GLA City Hall
London Plan Team
London
SE1 2AA

2 March 2018

By email only to: LondonPlan@London.gov.uk

UK Power Networks Response to 'The London Plan' (The Spatial Development Strategy for Greater London)

Dear Mr Khan,

Thank you for the opportunity to comment on the new draft London Plan. We are the UK's largest electricity Distribution Network Operator (DNO), dedicated to delivering a safe, secure and sustainable electricity supply to 8.2 million homes and businesses across London, the East and South East of England. In our response we have chosen to highlight key areas and aspects of our business that relate and support policies within the London Plan – drawing out areas that may need further thought or consideration.

London is constantly evolving and work is continuing on many fronts in support of it becoming a "low carbon" city. We recognise that we have a vital role to play in facilitating these plans and are helping to realise the ambitious visions laid out in the London Plan and the other Mayoral strategies by creating a more flexible and responsive network. We forecast between 1.2 and 1.9 million electric vehicles connected to our networks by 2030 and we are working on a number of projects to support this uptake including already facilitating the first fully electric bus garage in Europe at Waterloo. In this way we will help improve air quality and enable healthier environments for the people of London along with showcasing the capital's approach to the world.

As we transition transport from one energy source to another, and allow for the increased connection of renewable energy sources to our networks we need to ensure costs for existing and connecting customers remain affordable. The Draft London Plan and the Mayor's £34m Energy for Londoners schemes have ambitious targets that require both innovative thinking and changes in the way solutions are traditionally achieved. As such, we believe that early collaboration is key to identify the best solutions for London and we are committed to working with you and your team and all the different stakeholders in the energy sector to make this happen.

Furthermore, it is important we facilitate new growth such as housing and large infrastructure projects. To this end, we are making great progress on delivering our plans for the Central London Area with construction of four new large substations, increasing capacity by 300MVA, enough to support the energy requirements of almost six Olympic Parks.

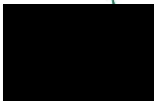
Alongside our commitment to supporting a low carbon city, UK Power Networks is conscious of its role in providing an essential service and we aim to make it as affordable as possible. Over the last

four years, in London, we have seen a 23% reduction in the number of power cuts and a 33% reduction in their duration thanks to our investment in new technologies such as self-healing grids and our improved operational response. A key contributor to this is our Central London depot, which enables us to provide a faster response 24 hours a day when power cuts occur. As a result, customer satisfaction in London has improved significantly, from 73% in 2012/13 to 86% in 2016/17, comparable with the likes of Amazon and John Lewis who are widely recognised as delivering frontier customer service.

In addition to our excellent reliability and great customer service, our customers continue to enjoy the lowest domestic electricity distribution charges in the industry, with prices at just 18p a day, 25% lower than the rest of the UK. However, we are keenly aware that a proportion of our customers are living in fuel poverty and, according to government statistics, fuel poverty is rising in our areas of operation. This is in contrast to the rest of the country where fuel poverty has been found to be falling. Therefore, we continue to seek ways to support our customers to become energy efficient to help them manage their household energy and subsequent energy bills. We do this largely through partnerships with organisations that are already established and trusted within the communities where we operate, as demonstrated by our 'You and Your Home' programme. This information and advice service offers customers a range of energy saving tips and advice on energy tariffs, winter fuel and warmth payments with the option of face-to-face sessions with an adviser if desired. Furthermore, we have a series of innovative projects targeting further energy efficiency programmes, more detail of which is included in the Innovation section to this response.

I hope you will find the detail within useful and informative, with the aim to set out many of the exciting projects on which we are delivering to improve and support London. If you wish to understand any part of the response in further detail, or indeed wider issues, myself, or members of my team would be happy to discuss.

Yours sincerely



Suleman Alli
Director of Safety, Strategy and Support Services
UK Power Networks

Appendix 1

Performance	Linked Policies: Good Growth – GG4 Spatial Development Patterns – SD1, SD4 Design – D1, D2, D6 Sustainable Infrastructure – SI3, SI6
--------------------	--

We develop the network by producing and maintaining regional development plans. We do this to ensure the network is developed in the most efficient manner, in order to comply with our statutory obligations as a Distribution Network Operator (DNO). The RIIO-ED1 price control framework as set by the regulator Ofgem is comprehensive, reflecting customers' expectations through a robust package of incentives and protecting their interests with uncertainty mechanisms. This framework, along with previous price controls, has facilitated the delivery of significant improvements in the quality of service customers receive at lower cost.

Our performance in London has been strong, over the past four years we have seen a 23% reduction in power cuts and a 33% reduction in their duration thanks to our investment in network resilience. Additionally, customer satisfaction is at its highest level of 86%, comparable with the likes of Amazon and John Lewis, widely recognised as delivering frontier customer service. We have done this all whilst reducing customers bills, and our London network is the lowest cost distribution network in Great Britain. At just 18p a day, it is 25% lower than the national average.

We note your specific point on ensuring that electricity infrastructure is capable of meeting the increased demands as a result of London's growing population, economy and the decarbonisation of both transport and heating sectors:

“It is of concern that the electricity network and substations are at or near to capacity in a number of areas, especially in central London. The Mayor will work with the electricity industry, boroughs and developers to ensure that appropriate infrastructure is in place to meet London's needs. Energy masterplans are expected to identify any necessary electricity infrastructure.”

We recognise that changes are coming and that there are challenges associated with increased demand. As London transitions to a zero-carbon smart city, UK Power Networks needs to ensure it is not a barrier to this clean growth but at the same time ensure costs for existing and connecting customers remain affordable. We plan to do this by advancing innovation and our ability to maximise utilisation of the existing network infrastructure in the first instance (see Innovation section for further details).

When innovation alone cannot meet the applicable requirements, we look to use more traditional reinforcement solutions for our networks. The RIIO framework does not allow capacity to be delivered 'ahead of need' as this can result in inefficient spending and cause higher than necessary costs for consumers. Instead, the RIIO framework, supported with our development strategies, ensure that a 'just in time' approach is taken to ensure new capacity is unlocked when required. If we were to have all the capacity required until 2050 now, our network would not be as efficient, and customer bills would be significantly higher. We have comprehensive plans to ensure we are managing our network in the most efficient and effective way possible.

As part of our plans to increase capacity to meet the future demand for power in London when it is required, we are reinforcing the network in areas such as Osborn St; Limeburner Lane; Eltham; Finsbury Circus; Backhill, Fisher Street, Wimbledon, St Pancras, Wandsworth & Southbank along with supporting Crossrail and the development of Wood Wharf with new substations at the Limmo Peninsula and Blackwall Way. In central London, together with partners we are delivering four new substations, located where demand is expected to rise over the coming years. These new

substations will be vital in providing an extra 300MVA of capacity (equivalent to nearly six Olympic Parks). Details on these sites can be found below, with further information within our Central London Plan¹.

Calshot Way (also known as Grafton Way)

Capacity: 86MVA **Complete:** May 2018 **Cost:** £10.4m

Grafton Way is a part of our City Road/City of London Regional Development Plan. The plan is to build a new substation in the Kings Cross area that will provide an increase in capacity of 86 MVA. This extra capacity will allow load to be transferred from the nearby Back Hill substation.

Vauxhall, Nine Elms, Battersea (also known as Stewart's Road)

Capacity: 86MVA **Complete:** 2019 **Cost:** £29.4m

We proposed the building of a new substation to facilitate the development of new planning proposals in the Vauxhall, Nine Elms and Battersea areas on the south bank of the Thames.

This substation will facilitate:

- 16,000 new homes;
- An extension to the London Underground Northern Line; and
- Regeneration of Battersea Power Station

White City (also known as Wood Lane)

Capacity: 43MVA **Complete:** 2020 **Cost:** £16.1m

The London Borough of Hammersmith and Fulham and the Greater London Authority have agreed a new White City Development, with mixed office, residential and community use. The site is close to the BBC Television Centre and Westfield shopping centre and a new substation in the White City area was proposed to support this new development.

West End

Capacity: 86MVA **Complete:** Mid 2020s **Cost:** £36.5m

London's West End is one of the most economically important areas of London. It encompasses the entertainment districts of Leicester Square and Covent Garden, as well as shopping districts on Oxford Street, Regent Street and Bond Street. Three substations that supply this area are expected to exceed their current capacity and hence we are developing plans to construct this new substation.

¹ <https://www.ukpowernetworks.co.uk/internet/en/about-us/business-plan/UK-Power-Networks-London-Brochure.html>

Innovation	Linked Policies: Good Growth – GG6 Sustainable Infrastructure – SI1, SI2, SI3, SI6 Transport – T1, T2, T3, T6, T7
-------------------	--

Innovation² is at the heart of our vision. We innovate in order to make our service more reliable, more affordable, cleaner and safer. Our three overarching objectives are well aligned with the ambitions set out by the Mayor of London in the London Plan:

- **Efficient and effective:** we aim to provide a safer, more reliable and cost-efficient supply by delivering our committed outputs in RIIO-ED1 at the lowest cost to customers, and by improving safety and reliability of the network by reducing the number of interruptions and their duration through automation alongside modern monitoring and control techniques.
- **Low carbon ready:** we aim to facilitate a low carbon system by improving network access through reducing time and cost to connect low carbon technologies (be they demand, generation, and storage) using innovative solutions and flexible service offerings.
- **Future ready:** we aim to be a future-ready distribution business providing new services, which meet the needs of tomorrow's customers.

Through the wide spectrum of our projects we are gaining invaluable learning on low carbon technologies, smart solutions and decentralised flexible energy systems that will support the transition of London to become a world-leading zero-carbon smart city by 2050.

We believe there is useful learning from our projects that could be applicable to the wider market. This information could be used to inform all aspects of policy, whether that is transport or environmental, through to all aspects of the energy hierarchy and feed into borough energy strategies. Examples of our innovation projects that demonstrate strong synergies with the London Plan are included below and we would be happy to discuss these and share further learning with you or your team if this is beneficial.

Electrification of Transport (numerous projects)

We have numerous projects that promote and facilitate the decarbonisation of transport including:

- Black Cab Green
- Smart Electric Urban Logistics (SEUL – UPS Delivery)³
- Recharge the future

More information can be found in the Transport section to this response and in our response to your Transport Strategy consultation dated 2 October 2017. The projects have strong alignment and support to key policies within the Transport and Sustainable Infrastructure sections to the London Plan. They serve to demonstrate how UK Power Networks is testing smart technologies and new commercial arrangements to facilitate the uptake of electric vehicles (EVs) and improve air quality while deferring where possible expensive network reinforcement and keeping costs down for our customers.

²

<http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/IFI%20projects/ProjectReports/UKPN11364%20innovation%20strategy%20doc%20web.pdf>

³ <http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-1-projects/smart-electric-urban-logistics/>

Low Carbon London (LCL) & energywise

We have undertaken pioneering innovation projects that investigated and concluded that reduction in demand on our networks from customers can be derived through energy efficiency projects. Our **Low Carbon London**⁴ project trialled and demonstrated a broad range of potential smarter approaches to how DNOs may invest and operate in the future. High level summaries are supplied below, but more detail is available on our website⁴.

- **Energy efficiency and smart meters:** specifically looked at minimising energy demand and observing whether the issuing of smart meters can support energy efficiency behavioural change. Through this, and other initiatives, we assessed the opportunity and impact of energy efficiency, with findings published in the report 'Network impacts of energy efficiency at scale'⁵. A key finding estimated that up 10TWh of consumption savings could be achieved by 2020 by switching to more efficient appliances.
- **Smart tariffs and Demand Side Response:** We conducted an extensive, first of its kind, dynamic time of use tariff with over 1,100 customers in our London area, observing clear and strong support for flexibility-oriented tariffs.
- **Electric vehicles and heat pumps:** Using empirical data derived by monitoring a substantial number of electric vehicles (EVs) and heat pumps (HPs) and examining the impact on networks in London. The main findings are summarised in the LCL Report B2⁶, providing recommendations as to how to incorporate the impact of EV and HP loads on a distribution network into forecasting, connections, planning and demand monitoring processes. Trial data showed that there was only a minor effect on load profiles derived from heat pumps, however it was still significant and twice the expected contribution from EV charging.

Additionally, our '**energywise**'⁷ project involves providing energy efficiency measures, free of charge, to social housing tenants from Tower Hamlets to explore how low income households who may be struggling with fuel bills can better manage their household usage. It was the first Low Carbon Networks Fund project specifically looking to address the series of issue of fuel poverty. It involves two trials; the first of which was focused on energy saving. The second trial is on time of use tariffs and is still ongoing, as such final findings are not yet available.

Findings from the first trial demonstrated that an estimated total annual reduction in electricity consumption of 56GWh could be achieved across our three licence areas. This corresponds to an average reduction in the evening network load of approximately 14MW (enough to power approximately 7000 electric kettles). These reductions in load can benefit the customer's bill on two fronts, directly, through reduced energy usage, and indirectly, as the reduced load could remove the need or defer network reinforcement, thereby reducing the cost of the network operator and in turn lowering customer bills.

Just as important as having distinct engagement strategies, it is also paramount that other groups e.g. homeowners, landlords etc (whilst noting being potentially easier to target) are not prioritised over those perceived more 'challenging' demographics. Efficiency needs to be driven and planned

⁴ [http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Low-Carbon-London-\(LCL\)/](http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Low-Carbon-London-(LCL)/)

⁵ [https://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Low-Carbon-London-\(LCL\)/Project-Documents/LCL%20Learning%20Report%20-%20C3%20-%20DNO%20Learning%20Report%20on%20Network%20impacts%20of%20energy%20efficiency%20at%20scale.pdf](https://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Low-Carbon-London-(LCL)/Project-Documents/LCL%20Learning%20Report%20-%20C3%20-%20DNO%20Learning%20Report%20on%20Network%20impacts%20of%20energy%20efficiency%20at%20scale.pdf)

⁶ [https://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Low-Carbon-London-\(LCL\)/Project-Documents/LCL%20Learning%20Report%20-%20B2%20-%20Impact%20of%20Electric%20Vehicles%20and%20Heat%20Pump%20loads%20on%20network%20demand%20profiles.pdf](https://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Low-Carbon-London-(LCL)/Project-Documents/LCL%20Learning%20Report%20-%20B2%20-%20Impact%20of%20Electric%20Vehicles%20and%20Heat%20Pump%20loads%20on%20network%20demand%20profiles.pdf)

⁷ <http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Energywise/>

for all parts of society. Our experience on **energywise** demonstrates the importance of engaging with households who may initially be less open to investing in energy efficiency.

Furthermore, in Appendix 2, we have drawn out examples of other DNO led energy efficiency projects for your information, including our project **energywise**.

Domestic Energy Storage and Control (DESC)⁸

The aim of the project is to understand the impact and opportunities for distribution networks from high uptake of domestic energy storage, particularly when combined with small-scale embedded generation such as solar PV. To achieve this we have successfully recruited 70 participants (most of which are in the London area) with solar panels and in collaboration with domestic storage manufacturers and suppliers (Powervault, Sonnen and Tesla) we have installed domestic batteries of different makes and sizes.

We are now collecting 12 months' of data on how much energy is generated, stored and transferred to the grid by the participants. We are also carrying out a series of control trials to understand whether customers could offer flexibility services, such as demand side response, by allowing network operators such as ourselves to use energy stored in customers' batteries in times of high demand.

These services will be an enabler for the transition of DNOs to Distribution System Operators (DSOs) and will ensure that we can continue to reliably keep the lights on whilst enabling the connection of low carbon technologies, such as EVs, on our networks at the lowest possible cost.

DESC will also help our understanding into how customers can benefit from generating their own energy, storing it and then either using to help support network operations (unlocking a new revenue stream) or consuming it for their own needs (i.e. saving on energy bills).

Early findings to date have demonstrated that domestic battery storage coupled with solar PV installations can increase customers' self-consumption, saving them money on their energy bills (energy saved by each customer within 11 months was enough to power a typical UK household for 85 days). This also helps with managing high demand on networks by eliminating peaks and driving the demand down (for 60% of the days in June, customers were self-sufficient).

Powerful-CB⁹

Powerful-CB is an Ofgem Network Innovation Competition project to tackle fault level constraints¹⁰ across our networks, with a focus on overcoming specific challenges in the dense urban London network. By trialling these technologies, we are acting to enable CHP connections and contributing to the Mayor of London's target to generate 25% of London's heat and power requirements locally by 2025.

Fault level constraints can impact the connection of distributed generation due to low fault level headroom¹¹ in substations. Through the project we are developing and trialling two new fault-limiting circuit breakers that are significantly smaller and more efficient than any similar device currently in use. The project aims to make it quicker and cheaper for distributed generation, especially Combined Heat & Power (CHP) units, to connect to the network. Using advanced power electronics, this high-

⁸ http://www.smarternetworks.org/project/nia_ukpn0021

⁹ <https://www.ukpowernetworks.co.uk/internet/en/news-and-press/press-releases/Revolutionary-green-energy-project-could-help-transform-Londons-energy-supply.html>

¹⁰ When a fault occurs on the network, all generators connected to that section of network contribute energy to that fault. It is necessary to manage the amount of energy that contributes to faults to ensure equipment is able to operate safely. As more generation customers connect, there is potential for more energy to flow to the fault when one occurs, as a result it can often be expensive to connect in these 'fault level constrained' areas because of the necessary network reinforcement required for safe operation of the network

¹¹ The amount of generation able to connect safely to the network is called the fault level headroom

speed protection will allow hundreds of megawatts of low-carbon electricity sources the ability to connect to our network more safely and cheaply.

The devices will be installed in 2019 with the trial running for two years and we have and will continue to publish our learnings from these devices¹².

Additionally, when planning local energy strategies that include heat recovery and secondary heat sources, it is important to take into account the challenges associated with the implementation of heat recovery techniques. For instance, heat quality can be a challenge in real applications, with our own assets, the distribution network runs with a level of resilience and as such the heat quality is not consistent, often not of general quality and therefore not economically efficient to capture.

Active Response

Active Response, will trial a responsive, automated electricity network that reconfigures itself constantly, moving spare capacity to where the demand is. It does this by using power electronics to move electricity from heavily loaded substations to nearby substations with spare capacity.

Active Response will be the first time that electricity networks can move spare capacity around the system to support areas that are using more electricity. This means providing additional capacity in residential areas in evenings and at weekends when people are charging their cars, and then moving that spare capacity to where it is needed during the day – such as city centres, commercial hubs or electric fleet charge points.

Upgrading an electricity substation, or adding entirely new substations and cabling when customers need more power, takes time, costs money, and causes roadworks. Instead, Active Response could use these power sharing techniques to connect new customers, and those requesting more power, quicker and at lower cost.

It is estimated that Active Response could save customers nationwide £271million by 2030 and cut more than 448,000 tonnes of carbon emissions by 2030, which is the same as almost half a million return flights between London and New York.¹³

¹² <http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/powerful-cb/>

¹³ Calculation taken from: <https://calculator.carbonfootprint.com/calculator.aspx?tab=3>

Transport	Linked Policies: Good Growth – GG4 Spatial Development Patterns – SD4 Sustainable Infrastructure – SI1, SI3 Transport – T1, T2, T3, T6, T7
------------------	--

You have outlined key plans in the Transport Strategy and the London Plan in setting out the key challenges and areas of focus for transport and electric vehicle use in London. We provided a response to the Transport Strategy consultation dated 2 October 2017, please refer to this response for our position on supporting the transition in London’s transport plans. Additionally, UK Power Networks has already been involved in several discussions with the GLA on the transition of transport modes in London and we welcome further collaboration towards the effective delivery of commitments in these plans.

We are playing a leading role in encouraging the shift to low carbon transport – since 1990 the power sector has made a 49% reduction in greenhouse gas emissions, which provides a stark contrast to that of the 2% reduction observed in the transport sector¹⁴. It is clear that the transport sector will see significant changes in the coming years, for example, as stated earlier, by 2030, we forecast between 1.2 and 1.9 million additional electric vehicles (EVs) will be connected to our electricity networks alone. As such, we are committed and enthusiastic about our role in facilitating the uptake of EVs and plan to do so by advancing innovation wherever possible and we believe that up to 40% of the additional power required can be supplied by using smart solutions.

We have significant experience enabling the uptake of EVs¹⁵, and can provide unique insights into the impact of changes occurring in the transport system. While the UK has begun transitioning to a low carbon economy, the last six years has involved the connection of over 4000 EV charge points, placing additional load on our networks. This comprises of both charge points installed at customer properties and directly to our network such as on-street charge points. We have been actively exploring the impacts of EV charging demand on our networks as well as the opportunities for intelligent management of demand from the existing network capacity.

To illustrate how we have been actively supporting customers who are promoting and leading the electrification of the transport sector, we are proud to have facilitated Europe’s first fully electric bus garage at Waterloo¹⁶, with both Camberwell and Northumberland Park bus garages also gaining similar connections in recent months. We are also collaborating on the Black Cab Green project with TfL and London Electric Vehicle Company to facilitate their desires to decarbonise and to better understand and mitigate network impacts of taxis and private hire vehicles as they become zero emission capable.

Our response to your Transport Strategy provides additional detail to our views on the decarbonisation of transport, but some of the key considerations that will help facilitate the transition to increased EV use are highlighted below:

- **Early engagement:** We encourage early engagement from the GLA, TfL, local authorities, fleet operators and customers with significant EV charging requirements. They should give

¹⁴ <https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-national-statistics-2016>

¹⁵ For further information on our outlook on different EV consumer groups and the flexibility in their charging requirements please see reports B1 and B5 from our LCL project [http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Low-Carbon-London-\(LCL\)/](http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Low-Carbon-London-(LCL)/)

¹⁶ For more information on the UK’s largest all electric bus garage in London’s Waterloo and the visit from Daniel Zeichner MP please see our press release from January <http://www.ukpowernetworks.co.uk/internet/en/news-and-press/press-releases/Shadow-Transport-Minister-visits-the-UKs-largest-electric-bus-garage.html>

careful consideration to the power supply and network infrastructure requirements early in their plans and we are committed to support them through this process.

- **Visibility and notification:** Visibility and notification of EV charge point installations enables more efficient planning and management of our networks, this is most crucial to low voltage networks where monitoring is less extensive. Electricity network operators have established an EV charge point installation notification process¹⁷ with the Electricity Networks Association (ENA) that currently captures data on the location and rating of charge points. This is largely a voluntary process and would be further improved by policy changes encouraging compulsory notification to the DNO. We consider the following as the minimum data fields that should be included in any future standardised format of data collection:
 - **Static data** – location of charge point, number of sockets, rated power (kW) per socket, mode of charge (AC/DC), smart functionality e.g. stop charge, vary charge rate; and
 - **Dynamic data** – charge rate and charging status.
- **Standards:** Standards are particularly important to ensure that customers have safe and secure smart functionality designed into a charging system that is also open, interoperable and scalable. Standards should be designed to allow consistent interaction and information exchange between the smart charge point and electricity network management systems as well as protection from cyber-attacks.

Building on existing initiatives, we believe the following steps would further help the adoption of EV's and we welcome the opportunity to work together in supporting you advancing the following activities:

- **Infrastructure stakeholder collaboration:** Facilitating forum with key infrastructure stakeholders to ensure standardisation and interoperability of charge points.
- **Communications:** Publicising existing initiatives and alleviating concerns for drivers and fleet operators looking to electrify is a key element in advancing growth.
- **Guidance:** Providing more support and guidance¹⁸ to industry stakeholders including local authorities in the installation of public and private charge points.
- **Smart Charging:** Promoting measures being outlined as part of the Electric and Autonomous Vehicle bill, in particular requirement for Smart Charging. Smart Charging infrastructure will be important in enabling customers to charge their vehicles, by maximising the utilisation of existing network capacity and minimising the requirements and costs of reinforcing the electricity network.

¹⁷ <http://www.energynetworks.org/electricity/futures/electric-vehicle-infrastructure.html>

¹⁸ We have published guides on connecting electric vehicle charging points specifically to support local authorities and fleet operators in the connection process. <http://www.ukpowernetworks.co.uk/internet/en/our-services/electric-vehicle-charging/>

Environmental	Linked Policies: Good Growth – GG4, GG6 Design – D1, D2, D12, D13 Sustainable Infrastructure – SI1, SI2
----------------------	--

We support your vision to transform London into a greener and more pleasant city for its population. We recognise that air pollution is an important issue in London and that it is imperative that measures are implemented to rapidly reduce nitrogen oxides and particulate matter emissions that are harmful to human health. The aims in the London Plan provide sensible steps to achieving improved accessibility to cleaner public transport and we will endeavour to support in enabling these through our work promoting and facilitating the decarbonisation of transport highlighted in the above section.

Delivering Clean, Smart, Flexible Power

The nation’s journey to a low carbon economy is revolutionising the way we produce, distribute and consume electricity. We have experienced these changes first hand and we have seen how our customers, motivated by efficiencies, new technologies, and government policies, can drive radical changes such as the sudden and widespread connection of renewable generation to our networks.

Over the past three years, the UK has seen the connection of 12GW of solar generation and 16GW of wind capacity – sufficient to exceed consumer demand at certain times in summer. The distribution networks are at the forefront of enabling these changes; 90% of the solar energy alone connects directly to the local distribution networks. Renewable energy installations, such as wind and solar farms, are on the rise and we are proud to have enabled 9GW of distributed generation to connect to our networks; a third of the UK total and around three times the capacity of Hinkley Point C power station.

The pace and scale of these changes in our industry is increasing. In the last two years, large-scale storage has emerged with advancements in electricity storage technology. To date we have over 61MW of storage connected to our networks with a further 1.3GW of storage with quotations accepted and storage enquiries for a total of 24GW. At the same time, we are starting to see the pickup of EVs and the national roll out of smart meters. The electricity system needs to enable these technologies and to do this it has to change.

To continue to support the low carbon transition in a safe and cost-effective way our role will continue to evolve. Instead of acting as the passive manager of a network of cables and assets connecting centralised generators to homes and businesses, we are transitioning to become an active manager of a system that enables local communities, renewable generation, small and medium sized businesses, prosumers and consumers to access the energy and flexibility markets, all whilst making sure the lights stay on. This transition from a passive network manager to one providing active, market-focused services for our customers requires a transformation of our business to meet the requirements of this new role; that of a DSO.

We are already transitioning to this new role and innovation is at the forefront of this, using new methods and technologies to inform network investment, design and operational strategies and is comprised of a large, wide-ranging portfolio of solutions being deployed, trialled, and researched, as illustrated in the previous section. The section below outlines some notable solutions already impacting our areas.

Flexible Distributed Generation¹⁹

Flexible Distributed Generation (FDG) connections allows distributed generation (DG), (e.g. solar and wind) with a cheaper and quicker point of connection to the existing network without the need

¹⁹ <https://www.ukpowernetworks.co.uk/internet/en/our-services/list-of-services/electricity-generation/flexible-distributed-generation/>

for/or ahead of reinforcement. Previously, if a DG connection required network reinforcement, the cost of this reinforcement would have to be met by the generator owner, providing a substantial barrier to many DG projects getting off the ground. The FDG connection offering was developed as part of our research demonstration project, Flexible Plug and Play (FPP²⁰), to facilitate the connection of DG in areas of network congestion without the need for the customer to pay high connection costs. This connection is in return for the ability for us to control their output in times of high network load.

The FDG connection is enabled by the Active Network Management system (ANM), a software automation product that monitors the network in real-time and automatically controls the output of participating generators. The ANM is designed to ensure safety of the public, our employees and the network infrastructure and as such it delivers fail-safe instructions if it detects abnormal operation of any of overall system components including the generators. As a result of the FDG schemes there are currently 23 generators operational, having saved over £70m in connection costs. Without FDG these projects that would not otherwise have been developed and further demonstrates how we are an enabler to clean, smart and flexible power.

Flexibility Tenders

We are actively seeking to contract with flexible energy resources to support delivery of cost-effective investment and smart management of the distribution network. Whereas FDG (mentioned above) is flexibility via the connection agreement, this solution refers to flexibility deployed through a bilateral contract between us and distributed energy resources such as generation, DSR, and storage.

The flexible capacity such contracts provide will be used to manage uncertainty over when network investment is required as well as supporting network operations. The locations with potential for deployment of flexibility was published to industry in August 2017 and a competitive tender published in October 2017 to procure flexibility services over the next couple of winters.

The new flexibility services contracts are expected to have three key benefits:

- A new way for electricity generators, storage, major consumption users and aggregators to offer their resources to create additional income;
- More efficient use of the existing network infrastructure and connected resources will mean lower electricity distribution costs for customers; and
- Help ensure an even more resilient electricity supply.

We believe this strategy will be key to playing our role in facilitating the £17-40bn of wider system benefits which Ofgem and BEIS cite as attainable through smarter, more flexible use of the energy system.²¹

Our innovative projects, transitioning to business as usual smart grid solutions and the resulting connection of renewables has helped reduce the carbon factor for electricity in the UK. This, as reported in the 'UK Government GHG Conversion Factors for Company Reporting'²² has gone from 0.46219kg CO₂e per kWh in 2015 to 0.35156kg CO₂e per kWh in August 2017, a 24% reduction. This reduction in Business Carbon Footprint is a benefit passed to everybody.

Reducing our Business Carbon Footprint

In our RIIO-ED1 Business Plan we set a target to reduce our business carbon footprint (BCF) by an additional 2% in each year of the RIIO-ED1 price control period (2015-2023) against our baseline

²⁰ [http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Flexible-Plug-and-Play-\(FPP\)/](http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Flexible-Plug-and-Play-(FPP)/)

²¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/633442/upgrading-our-energy-system-july-2017.pdf

²² <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting#conversion-factors-2017>

year (set by Ofgem) of 2014/15. To check progress against our RIIO-ED1 target we prepare monthly BCF reports and any anomalies in the data are closely examined to establish the root cause. Corrective and preventative actions are then implemented where necessary. We are pleased to report that in 2016/17, our latest full year's report, we showed a reduction of almost 11%, significantly ahead of target.

Additional detail on our BCF reductions since 2014/15 are mentioned below:

- **Operational Transport:** At 38%, operational transport is the largest element of our BCF, representing the fuel used by our fleet of vans, trucks and specialist vehicles which work directly on our electricity networks. Additionally, we also report on the fuel used by our contractors' operational vehicles when working on our behalf. A major upgrade of our fleet has taken place in recent years replacing many older vehicles with safer, more reliable fuel-efficient models. Our contractor emissions have also reduced as functions like tree trimming have been brought in-house. Furthermore, we are conducting trials on EVs to ascertain which vehicle job roles can be replaced by EVs. As a result of the above measures, overall our BCF for operational transport has reduced by 16%.
- **Building and Substation Energy Use:** This represents 36% of our BCF. Carbon savings of 10% have been achieved as a result of the consolidation of staff into fewer building and simple energy saving initiatives such as the introduction of LED lighting in many offices.
- **Business Transport:** We encourage all staff to travel by rail when practical and promote the use of tele-conferencing facilities to limit unnecessary travel. Overall business transport makes up 6% of our BCF and to date, this has been reduced by 8% by the aforementioned measures.

Noise Reduction

We are supportive of your strategy to address ambient noise taking the issue of how it may affect the health and wellbeing of communities very seriously. We therefore support the Agent of Change principle outlined in Policy D12, this takes the National Planning Policy Framework Section 123 and provides clarity in London that the mitigation costs need to be met by the developer.

Noise is considered in the design phase of all of our new projects with mitigation and reduction measures incorporated into the design where required. To illustrate our efforts to minimise the effects of noise, since 2015, we have specified the use of low loss transformers, which are typically 3-5dB quieter than conventional transformers in an effort to reduce the impact our equipment may have. Additionally, we have made a commitment to our regulator (Ofgem) that we will investigate all noise issues and address any sites requiring attention.

We lead the way in the industry in implementing new low frequency noise reduction technology and have recently been working with Sonobex²³, installing a new noise reduction screen at our Moscow Road site in London. This is the first installation of a barrier of this type in the UK and it has successfully decreased the ambient noise level to residents and visitors to that area of the capital. We will look to roll out this type of screen to more of our sites in urban areas where appropriate.

We are currently looking at how best to proactively engage with local authorities to ensure local development core strategies consider the presence of our equipment. An example of this approach can be shown with our Environment Team actively engaging with Local Environmental Health Officer forums to raise awareness of noise and other potential issues associated with operation of the electricity distribution network. This has been met with positive responses and is something we are keen to develop. We believe there are opportunities to improve information sharing with developers, and are therefore reviewing the feasibility of producing noise maps for our larger sites to identify

²³ <http://www.sonobex.com/>

potential issues at an earlier stage. This way, the impacts on occupants of new residential and commercial developments and other stakeholders can be mitigated, and expensive retrofits which ultimately feed through to Londoners' electricity bills can be avoided or minimised.

To help us achieve this, we would welcome the opportunity to work with your office and local boroughs, to identify what other avenues could be explored to raise awareness amongst planners of the implications of siting new developments next to our substations and to identify specific actions to mitigate this.

Finally, we note your reference to BS8223:2014 in respect of providing guidance on good acoustic design inside buildings. Whilst this is a widely used standard it is not always appropriate for low frequency noise associated with electricity transformer hum. When buildings are in close proximity to our substations consideration should also be given to:

- Room dimensions to ensure standing waves are not created;
- Windows having a dip in acoustic performance at the 200Hz noise frequency. This frequency is often associated with the second harmonic produced by transformers;
- Considering the use of noise reduction curves within the planning conditions – the NR20 would be the appropriate curve to use. However, a robust process would need to be put in place to ensure that planning conditions are achieved post construction.

Resilience	<p>Linked Policies: Good Growth – GG5, GG6 Design - D10 Heritage and Culture – HC7 Sustainable Infrastructure – SI12</p>
-------------------	--

Operational Resilience

In these days of increasing risks and threats from ever changing technological, commercial and environmental challenges it is vital to be more adaptable, flexible and agile. These characteristics are typical of a resilient organisation.

Based on an initial study and report by the UK Government’s Emergency Planning Office (EPC) in 2015, we have been developing a strategy and operational framework that brings together and strengthens all risk-related disciplines and activities. This ensures that we are prepared for the events – both planned and unforeseen – that may affect our ability to ‘keep the lights on’.

Being a resilient business is relevant to all aspects of our operations. The scope ranges from ensuring that we can cope with extreme weather events (see flooding section below) to having access to sufficient resources, including staff, information technology and finance, to meet our customers’ needs on a day-to-day basis. An example of this can be seen in our RIIO-ED1 business plan in which we set out our plan to establish an additional depot specifically in central London area. This has seen the acquisition of 100 additional staff based in Covent Garden, with teams ready to respond 24 hours a day, seven days a week. This has been a great success and helped significantly reduce the time it takes for us to arrive at a power cut, and as such we aim to achieve:

- To be on site within 30 minutes for a low voltage (LV) fault;
- An average completion time for LV faults of 170 minutes; and
- All customers restored within 60 minutes for a high voltage (HV) fault.

To ensure that our assets are appropriately resilient, we work closely with local planners, developers and communities incorporating advice and requirements through our relationship with London’s police forces, central government (e.g. BEIS) and agencies (CPNI and NCSC) along with local authorities and partnerships (such as London Resilience Partnership). This ensures we are able to mitigate and manage any incident with the potential to disrupt our operations and effect our ability to provide a service to London.

Flood Resilience

We have sought to deliver flood protection measures in London that are cost efficient and deliver the maximum risk reduction to improve the number of customers protected. Resilience in the supply network ensures that customers supply can often be quickly re-established at minimal inconvenience following flooding of critical equipment. Flood mitigation of vulnerable sites are prioritised where there are high numbers of ‘unrecoverable²⁴’ customers connected to a vulnerable site.

Since 2011 in excess of twenty vulnerable substations have been protected from flooding in London with a similar number in the pipeline for protection during the remainder of the RIIO-ED1 period. This amounts to nearly half a million additional customer supplies protected. Flood events such as the incidents in Tooley Street, London (April 2008 and May 2009) have highlighted the risk that

²⁴ Many substations have high levels of interconnection, meaning load can be transferred from site to site to manage demand. ‘Unrecoverable’ customers are defined as those customers who cannot have their supply switched to an alternative substation (i.e. one not affected by a flooding event) due to limited interconnection at the flooded site.

substations (particularly subterranean sites) are subject to surface water flooding. As a result, our London flood programme has focused primarily on surface water flood protection at sites with plant and equipment below ground level. Following site-specific assessments, at risk sites have had flood protection measures in the form of bunding, floodgates and sealing of duct and cable entries implemented during the past few years to mitigate this risk.

Where substation sites are developed and new buildings and plant are installed, guidance documents are available to assist engineers and third parties in identifying flood risk and protecting new plant and equipment. This will normally be achieved by raising the critical equipment above the environment agency 1:100 or 1:1,000-year flood levels.

Cyber Resilience

The protection and resilience of our information systems and operational technology is of critical importance to UK Power Networks. We have a dedicated Cyber Security team and specialist support partners who oversee and operate a comprehensive set of cyber controls and measures. These are aligned to ISO27001, compliant with the Smart Energy Code and positioned to address all the requirements of the forthcoming Network and Information Systems (NIS) Directive.

Our cyber security strategy is underpinned by the following hygiene factors which are embedded into the design, build, testing and operation of our IT systems and processes:

- **Least Privilege** – only allowing minimum necessary access with strong authentication methods;
- **Segmentation** – designing the IT systems and networks in a way that provides defence in depth against cyber-attacks;
- **Resilience Testing** – routinely moving our IT application and services to failover states to validate their health and reliability;
- **Continuous 24/7 monitoring** - detecting and reacting to cyber threats and attacks at the earliest opportunities;
- **Practising Incident Response** – routinely exercising our processes against realistic attack scenarios;
- **System Maintenance** – operating a continuous monthly cycle to apply security updates;
- **Advanced Security Testing** – routinely testing our networks & systems with skilled ethical hackers; and
- **Security Awareness & Education** – Using our ‘Security Matters’ campaigns to continuously provide our people and partners with the knowledge and skills to better protect our information and systems (including continuously sending test phishing emails randomly across all our email users to assess their vigilance levels)

We recognise that swift and effective exchange of security intelligence and learnings with our industry peers and government stakeholders is vital to protecting our business and ultimately the UK’s critical national infrastructure, particularly given the strategic importance of London.

Efficient Land Use	Linked Policies: Good Growth - GG2, GG4 Spatial Development Plans - SD1 Design - D1 Housing - H1, H2, H4 Economy - E4, E7 Sustainable Infrastructure - SI3
---------------------------	--

We have a long-established and ongoing programme to identify property surplus to current and future operational requirements to meet existing and predicted load demands with surplus land released to the open market via a sale or letting arrangement. In addition, a submission is made to our regulator (Ofgem) who must be satisfied that customers' interests will not be compromised by the disposal.

These assets are available for acquisition by third parties for a variety of different uses including storage, industrial, residential, or commercial redevelopment. Where appropriate, proceeds from the sale are used to finance the enabling works, such as the relocation/renewal/consolidation of operational equipment and site separation. As well as contributing to the integrity of the network, the security of electrical equipment, ease of access for maintenance and helping to reduce ongoing maintenance/health & safety costs, these enabling works often result in visual improvements and noise abatement in the immediate environment.

The Asset Optimisation Programme provides benefits for customers on many fronts, all of which can be traced back to supporting policies with the London Plan:

- Removal of surplus assets results in a more efficient operation of our network, resulting in lower costs and hence lower bills for customers.
- Our regulatory framework stipulates that any returns from the proceeds of a sale are shared with customers (47%), resulting in again, lower bills for customers.
- Sale/reconfiguration of land presents the option to develop new residential and industrial usage helping to facilitate growth and maximising use of land.

Apprenticeships	Linked Policies: Economy - E11
------------------------	---------------------------------------

UK Power Networks gained Employer Provider status through the Education and Skills Funding Agency (ESFA) in March 2017 and has a Platinum Provider Status by the Energy & Utility Independent Assessment Service for the delivery of the Trailblazer Apprenticeship Standards for Power. We are very proud that we were the first company to deliver Trailblazer qualified apprentices across all industries, which was recognised in the House of Lords by Lord Aberdare, Vice Chair of the All Party Parliamentary group for Apprenticeships.

Since 2014 we have taken on 110 apprentices in the London area with the purpose of the schemes delivering qualifications to new learners, ensuring they have the knowledge and skills to work safely whilst providing excellent opportunities for externally recognised qualifications to be achieved.

The duration of the programme varies to cater for different educational and experience starting points with individuals given the option of three distinct programmes:

- **Foundation Apprentices Programme (36 Months)** – aimed at school leavers and those with no previous work or engineering experience and are recruited ideally with A-C in English and Mathematics
- **Experienced Apprentices Programme (24 Months)** – aimed at apprentices who have previous work experience in subjects requiring practical skills i.e. Car Mechanics, Armed Forces, Window Fitters, and Electricians etc. they are also expected to have gained A-C GCSE or equivalent qualifications
- **Smart Metering Low Voltage (LV) Jointers Programme (18 Months)** – as above targeted at apprentices who have gained work experience in subjects requiring practical skills. The difference to the above is the apprentices are trained as Live LV Jointers and are not required to gain HV jointing competencies

Each bespoke programme is designed to enable apprentices to meet the skills required to become a qualified crafts person in either overhead lines, underground cables or as a substation fitter. Individuals are able to work towards the City & Guilds Electrical Power Engineering 2339 Technical Certificate with their programmes including maths and English skills and a personal development programme for outdoor environment work readiness.

To enhance the foundation apprentice’s interpersonal skills, they also have the opportunity to participate in a residential course with the Outward Bound Trust and complete a Duke of Edinburgh Award Scheme (DofE) at Gold level, which further challenges, engages and inspires the apprentices.

In addition to the above we also deliver an Engineer Development Programme (EDP) for 30 months, to provide learners with a Higher National Certificate (HNC) or higher. Participants follow a programme of operational training and rotation around business units to gain a broad engineering knowledge and understanding enabling them when qualified to manage teams, plan and deliver projects, and gain Senior Authorised Person status.

These programmes serve to illustrate how we provide opportunities to promote inclusive access to training, skills and employment opportunities for all Londoners.

Diversity and Inclusion	Linked Policies: Good Growth – GG1
--------------------------------	---

The very first policy within the London Plan talks about building strong and inclusive communities, ensuring that London continues to generate opportunities that everyone is able to benefit from. Our diversity and inclusion ambition fits well with this, we aspire to be an organisation that attracts, retains and develops the best talent and we recognise that in order to sustain our business in the longer term we need diverse talent and teams led by inclusive leaders. We are committed to developing a culture where all employees, regardless of their background and characteristics are able to share in and contribute to the success of the business. As part of our ‘Everyone Matters strategy’, which aptly describes our approach to diversity and inclusiveness, we have signed up to the National Equality Standard (NES), a robust and comprehensive accreditation that has become the accepted standard for inclusiveness in business across the UK.

We have taken steps to improve our understanding of the demographic make-up of our employees. Through this, we are working to cross-reference our policies and processes (such as performance monitoring, talent identification and career progression) with diversity data to allow us to identify any disproportionality and underrepresentation, implementing actions to address these. Diversity data will allow us to baseline our recruitment outreach, hires, promotions, and leavers and better evaluate and analyse trends with a view to challenging any inequality.

Within our action plan are a range of personal development and training sessions promoting equality and diversity such as inclusive leadership workshops, inclusive behaviour bitesize sessions, e-learning on unconscious bias, equality and diversity, bullying and harassment, interview refresher training and an interactive team building game, Equally Yours. The Everyone Matters action plan along with our goal to become NES certified will ensure equality is integrated into everything we do and that we have the policies and systems in place to promote equality. This includes the development of measurable leadership competencies and incorporating this into a behaviours framework.

Additionally, we are in the Top 25 best companies to work for, have achieved Investors in People Gold and last year we were awarded the Company Recognition Award by the Association for Black and Minority Ethnic Engineers for demonstrating diversity and inclusion within our organisational strategy and actively supporting schemes and programmes to encourage more diverse talent. In addition to this, we have signed up to the Inclusive Culture Pledge 2018, attended the National Student Pride Careers Fair and we will be entering in the Inclusive Top 50 UK Employers list.

These events and programmes serve to illustrate how seriously and ambitious we are at ensuring the work place is a diverse and inclusive environment for its employees. London is one of the most diverse cities in the world and we are committed to ensure we reflect, resonate and provide opportunities for all those that reside here.



Appendix 2

Project Name	Project Status	DNO lead	Project Overview	Key Learnings	Useful Links (ENA's Smarter Networks Portal and/or DNO's project site)
energywise (registered as Vulnerable Customers and Energy Efficiency)	In Progress	UK Power Networks	<p>Location: Tower Hamlets, East London</p> <p>Aim: Understand the extent to which fuel poor households on either credit or “pay as you go” smart meters can engage with energy efficiency and demand side response measures (smart meter, smart energy display, energy efficiency devices incl. LEDs, ecoKettle & standby shutdown and time of use tariffs). Whilst understanding the consequent network peak benefits.</p> <p>Output: Demonstrate customer benefits and network benefits from project interventions.</p>	<ul style="list-style-type: none"> • By designing an engagement strategy tailored to the specific needs of the demographics of the area, with a dedicated customer field officer team established with local intelligence and language skills, energywise has successfully engaged with different age bands (including elderly customers) and an ethnically diverse population. • Over the first trial participants saved on average 3.3% off their annual electricity consumption, in line with the national average for households with smart meters. • These savings correspond to a 5.2% reduction in average peak demand per household and they are expected to be seen in other DNO regions replicating the trial. • Non-punitive time of use tariffs (no lose propositions that do not penalise customers for using electricity at peak time) were well received with 86% of active participants consenting to the new tariff arrangements. • The project is currently investigating the potential of these tariffs to shift electricity use to different times and the associated network benefits. • 	<p>http://www.smarternetworks.org/project/prj_1324</p> <p>http://innovation.ukpowernetworks.co.uk/innovation/en/Projects/tier-2-projects/Energywise/</p>

Project Name	Project Status	DNO lead	Project Overview	Key Learnings	Useful Links (ENA's Smarter Networks Portal and/or DNO's project site)
Solent Achieving Value from Efficiency (SAVE)	In Progress	Scottish and Southern Energy Power Distribution	<p>Location: Solent</p> <p>Aim: Compare the effectiveness of four energy efficiency measures - LED installation, data-informed engagement campaign, DNO price-signals direct to customers plus data-informed engagement, and community coaching.</p> <p>Output: investment decision tool that introduces the deployment of energy efficiency measures as a solution to network constraints</p>	<ul style="list-style-type: none"> • Customer segmentations should actively assist in targeting campaigns effectively • Customers need to understand their energy usage • Parties delivering messages to customers need to be recognised as trustworthy and authorities • Financial incentives need to be relatively large and impacts are often not sustainable over time • Normative comparisons between households have been shown to be very successful when based on intelligent like-for-like comparisons and combined with effective messaging • Opt-out designs should be applied where possible • Novel techniques for sharing information can be used • There is a delicate balance to be struck between using negative concepts such as 'waste' or 'loss' while also making customers feel good about themselves • Customer commitments through setting goals and targets can be very effective to achieve longer-term behaviour change • Leading by example in promoting energy efficiency improves the perception of customers and increases the credibility of the project • Energy efficiency results need to be analysed within the context of wider factors such as the wider economic and regional context 	http://www.smarternetworks.org/project/sset206

Project Name	Project Status	DNO lead	Project Overview	Key Learnings	Useful Links (ENA's Smarter Networks Portal and/or DNO's project site)
Less is More (registered as Community Energy Action)	Completed May 2014 Closed-down June 2015	Western Power Distribution	<p>Location: ten communities off a dedicated substation</p> <p>Aim: Help communities reduce their electricity demand, especially at peak times so that less money was spent on upgrading substations, to cope with rising demand.</p> <p>Output: savings for all i.e. encourage communities connected to substations to reduce and/or shift to off-peak times their electricity usage to reduce energy bills and network investment.</p>	<ul style="list-style-type: none"> • Community engagement projects: Although there was engagement its effectiveness was hampered by short timescales and lack of overlap of the intervention area on to a recognisable community. • Greenbank Energy Monitor (GEM): The GEM, despite its delays and clunky interface, the concept seemed to strike a chord with the community. It is an intervention which could actually help deal with critical peak demand issues without resorting to direct control of appliances. 	<p>http://www.smarternetworks.org/project/wpdt1008</p> <p>https://www.westernpower.co.uk/Innovation/Projects/Closed-Projects/Community-Energy-Action.aspx</p>
Power Save Challenge (registered as Capacity to Customers)	Completed – March 2015	Electricity North West	<p>Location: Stockport</p> <p>Aim: Extend the life of existing network assets in urban environments by working with customers to reduce the amount of electricity they use, in return of a reward.</p> <p>Output: prove that investment in urban primary substation was avoided and the life of the existing assets were extended</p>	<ul style="list-style-type: none"> • C2C releases extra capacity and delivers economic and carbon benefits • Our industrial and commercial customers are willing to sign up to C2C contracts • C2C improves our customers' power quality perception 	<p>http://www.smarternetworks.org/project/enwlt203</p> <p>https://www.enwl.co.uk/c2c</p>