

**Electricity
Distribution**

Local Government Association

Paul Jewell

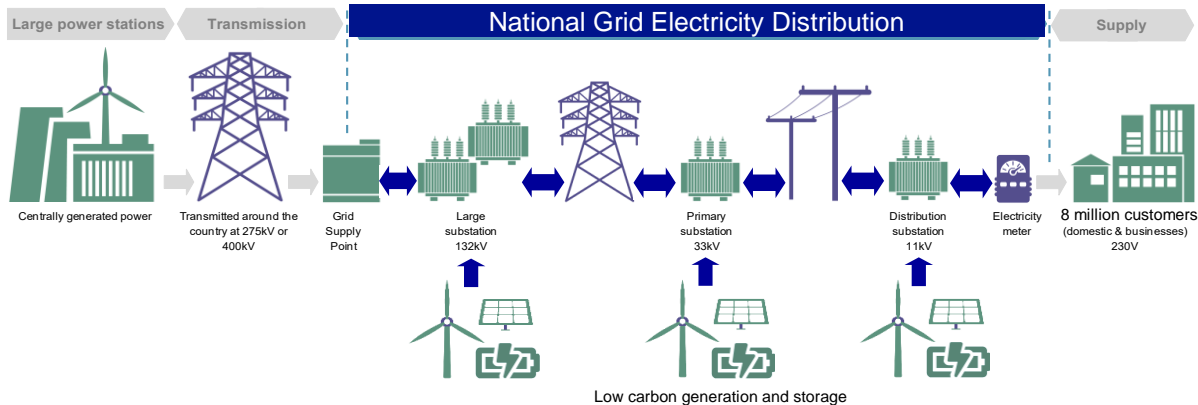
17th November 2022

nationalgrid



Who we are and what we do

- We operate the local electricity network, distributing power to 8 million homes & businesses
- Covering the East and West Midlands, South Wales and South West England



Network assets

Cables and overhead lines	225,000 km
Poles and towers	1,389,000
Transformers	188,000

What we do



Keep the lights on

by operating our network assets effectively



Maintain equipment

so that the network remains reliable



Fix the network

if equipment gets damaged or is faulty



Connect customers

by upgrading existing networks or building new ones



Operate a smart system

by managing two-way power flows and flexibility services

Ofgem

Energy Policy and regulation

- Ofgem is the office of gas and electricity markets
- Ofgem are a non-ministerial government department and an independent national regulatory authority
- Ofgem's role is to protect consumers now and in the future by working to deliver a greener, fairer energy system



Energy Networks Association

Trade Association for Networks

- Regulation and the wider representation in UK, Ireland and the rest of Europe
- Cost-efficient engineering services and related businesses for the benefit of members
- Safety, health and environment across the gas and electricity industries
- The development and deployment of smart technology



What does Net Zero mean?

Net Zero/Climate Change/Environment Awareness.

- Net Zero comes from a Government announcement to reach “Net Zero carbon emissions by 2050”
- Carbon emissions affect Climate Change, reducing them slows the change.
- Governments “The Carbon Plan” (December 2011) set out a long term goal to decarbonise heating and transport
- Decarbonisation is achieved by switching petrol/gas use for heating and transport to electrical solutions. Electricity generation moves to renewable and low carbon production at the same time
- More energy will be supplied via our electricity network

The Carbon Plan:
Delivering our
low carbon future



December 2011

 HM Government

Context for Low Carbon Technologies

Volumes of LCT will grow rapidly

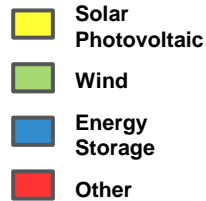
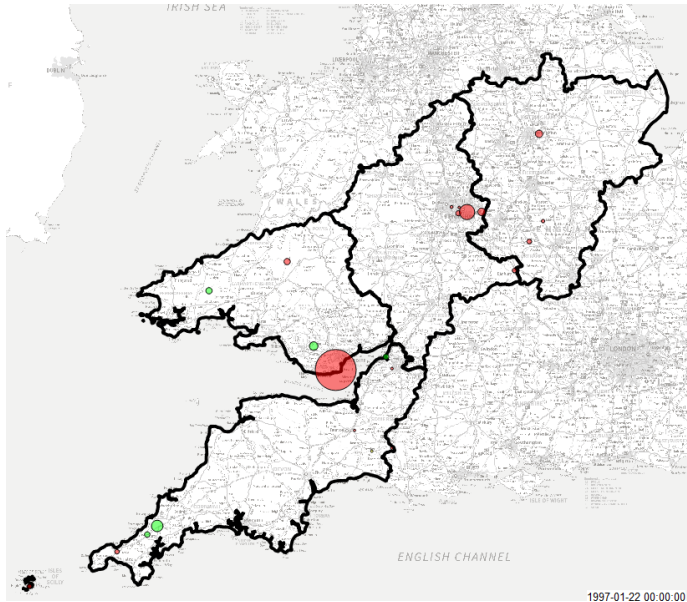
- Government ban on sale of ICE vehicles by 2030 will mean that all new vehicles require charge facility
- This will create over 1 million domestic EV chargers per year
- The Government Heat Pump target adds 600,000 per year
- We operate in approximately 1/3rd of the UK
- Our exposure would be roughly 500,000 low carbon connections per year
-or 2,000 for each working day



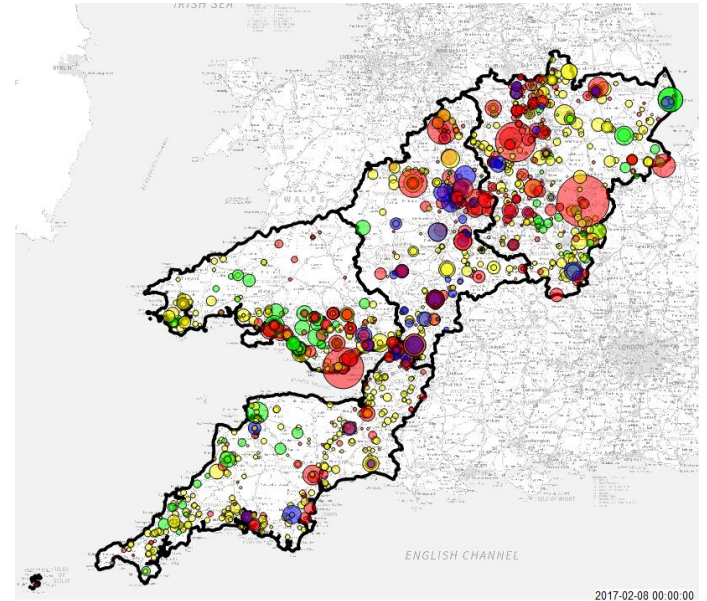
Context for Low Carbon Technologies

Generation Connections are already here

Connected Generation – 1997 data



Connected Generation – 2017 data



Domestic Charging

- Electric Nation showed that EV drivers do not charge every night
- EV drivers will also react to price signals
- We expect tariff structures to move most charging away from peak times
- We have changed our network design models to reduce the overall impact of EV chargers
- We have changed connection policy to allow all domestic (7kW) EV chargers to be accepted for connection, with any network upgrades being completed at a later date



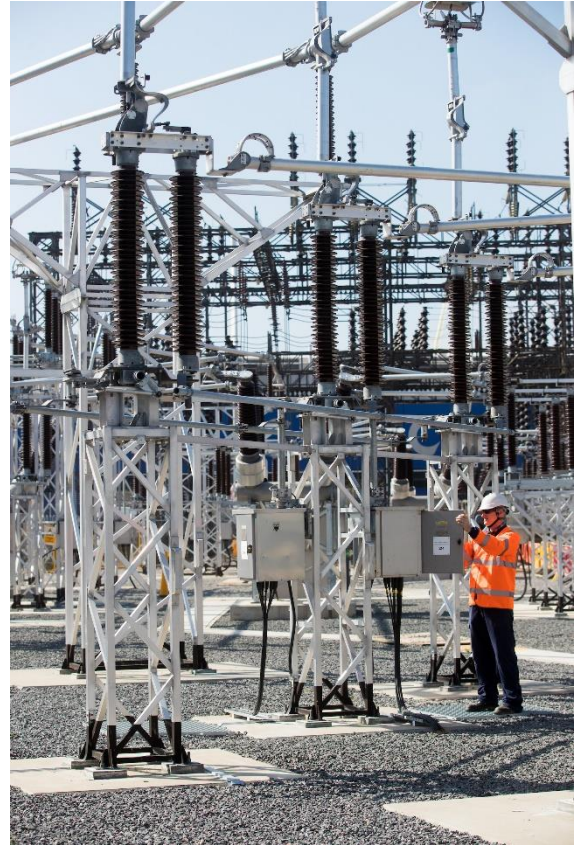
Town Centre Hub Solutions

- Early stakeholder engagement with Local Authorities showed they were more likely to offer car park based charging than on-street solutions
- We are used to building substations to support housing demands
- We have developed a version of our local substation which is specifically wired for EV charger connections
- It will offer 1MW of charge capacity at each location
- It can be used at any car park and takes up two parking spaces



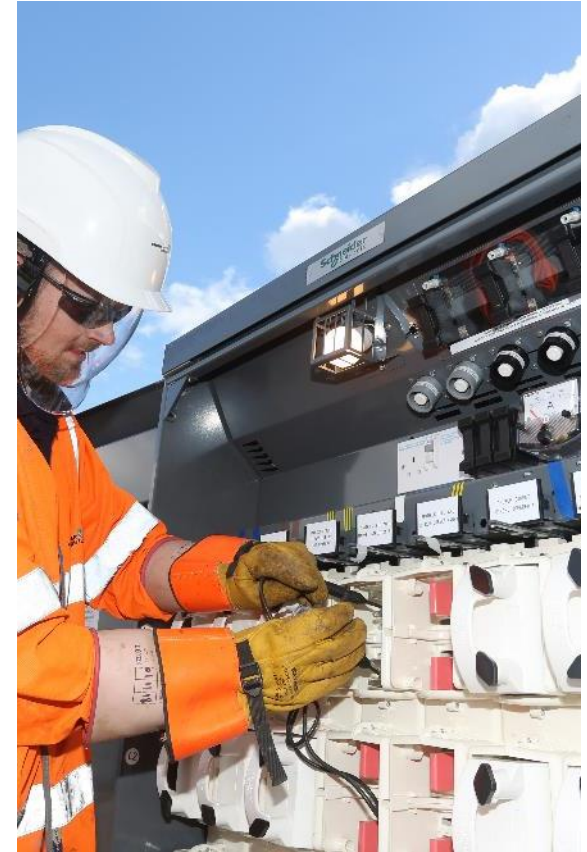
Motorway Service Area (MSA) Charging

- The Government's Project Rapid predicts that MSAs will require multiple MegaWatts of charge capacity
- In many cases the demand will be the same as a small town
- Our "Take Charge" innovation project is developing a solution to the problem
- We have shrunk a version of our 33/11kV substation into two shipping containers for use at MSAs
- Our trial site at Moto Exeter is live Spring 2022 and has 12MW of capacity on site



Significant Code Review

- Ofgem are reviewing the way that customers pay for access to our network. One big area is how we treat reinforcement costs.
- The plan is that, from April 2023, connecting customers will not pay the reinforcement element of their connection charge. All reinforcement costs will be socialised as WPD funded reinforcement.
- For demand customers it applies to all reinforcement, for generation customers it applies to “one voltage level up” (subject to the high cost cap).
- Ofgem want this to open up the networks for connections – we will see increased applications and less customers put off by cost



In Summary

- The drive to Net Zero is one of the biggest changes to electricity networks since rural electrification in the 1950s
- We are already working to make future capacity available, both on existing networks and for newly installed networks
- We want to make the process as simple as possible for all early adopters of EVs
- We have options at all capacity sizes to support charger demands
- Build the network now that we need for the future



national**grid**