

# Presentation on UK Power Networks for Kent County Council

1<sup>st</sup> November 2018

# Who we are

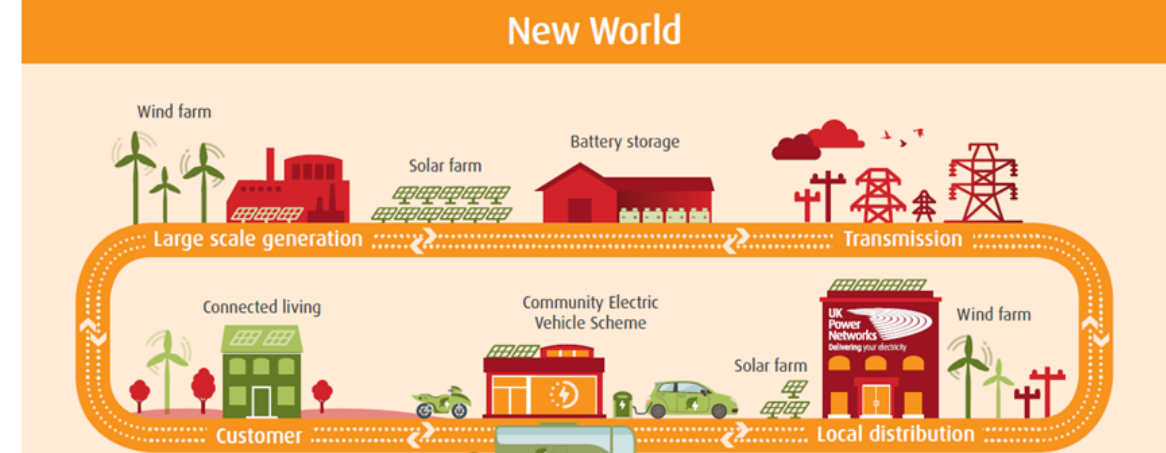
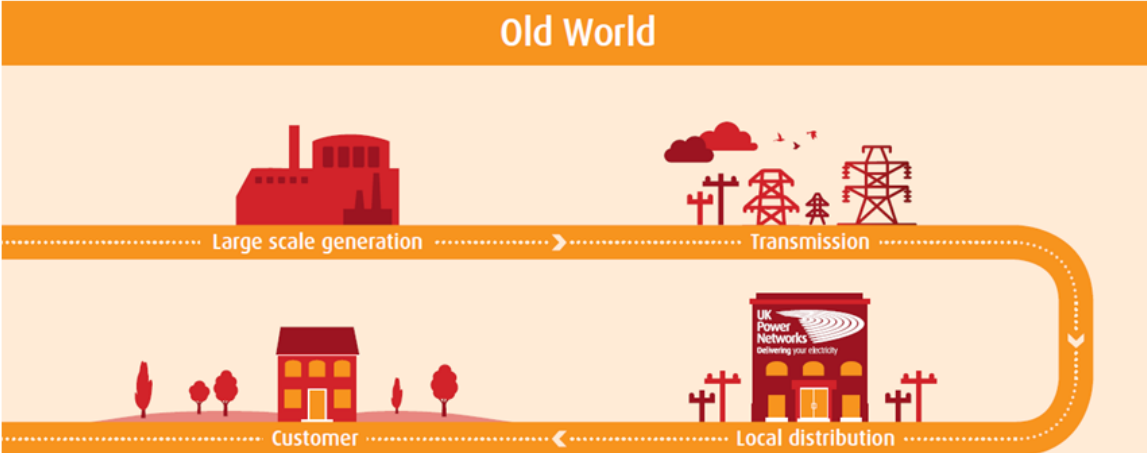
- **187,992km** – total cable length
- **120,000+** substations
- **8.3 million** homes and businesses
- **18 million +** people rely on our service every day



# How your residents experience energy is changing

## *“Traditional”*

## *“Emerging”*



Centralised- few large Generators

Predominantly fossil fuel based

One way power flows

Predictable - Planned

Customers consume only

Flexibility from large generators

Decentralised (Thousands of distributed generators)

Hybrid – Vast volumes of renewables

Bi-directional power and information flows

Intermittent – Actively Managed

Customers self-produce, consume and trade

Flexibility from Demand, Storage and generation

# The future is already happening



## Distributed Generation

**Connecting energy:** we have connected 9GW of Distributed Generation, of which 4.5GW is renewable distributed generation, the equivalent of 1.5 x Hinkley Point Cs.



## Storage

**Battery storage:** in October 2017 we connected our largest battery yet – a 40MW connection near Tunbridge Wells.



## Electric Vehicles

- **Growth of electric vehicles:**
- **149,000** Plug-in vehicles sold in the UK, **31%** on our networks.
- Over **16,000** public charge points – and an increase of **33%** in the past 12 months!

## Investing for the future

- Last year we invested over £600 million back into the network.
- We are the most innovative network and this enables us to avoid traditional costly grid reinforcements and keep costs as low as possible for constituents.
- We are the lowest cost DNO in the UK, charging just £78.41 on the average energy bill per year to maintain all the cables and substations across our entire distribution network.
- We have committed to invest over £30 million over the next 5 years in monitoring electric vehicle uptake.

Over

£4.5bn

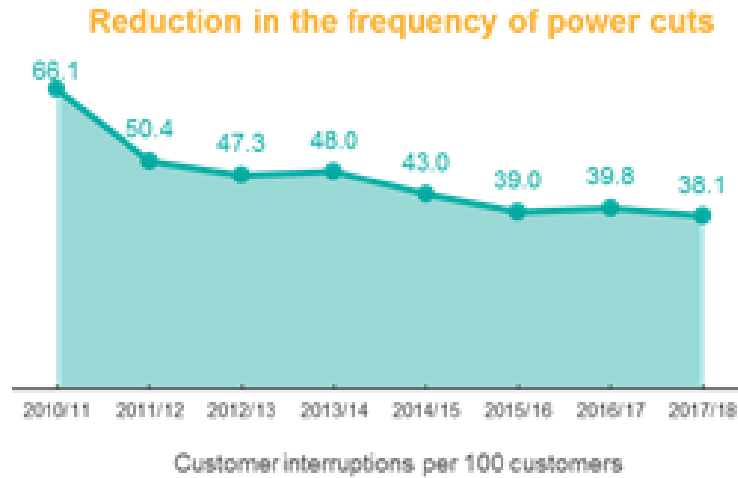
to be invested in the network between 2015 and 2023.

£615m

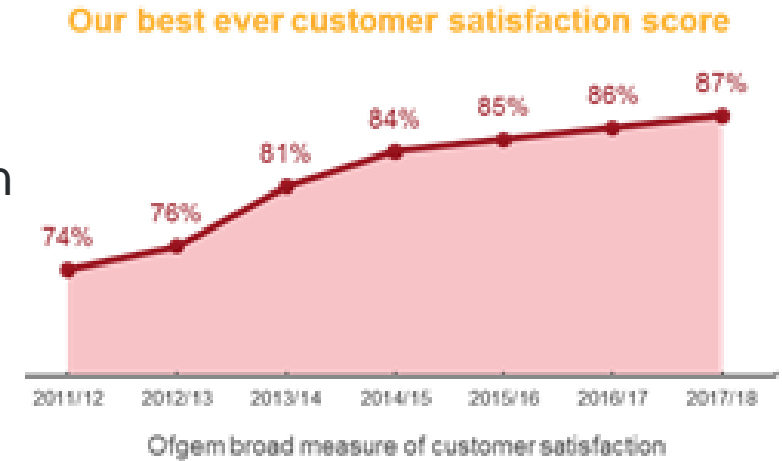
invested in the network in 2017.

# How we serve customers across all of our network

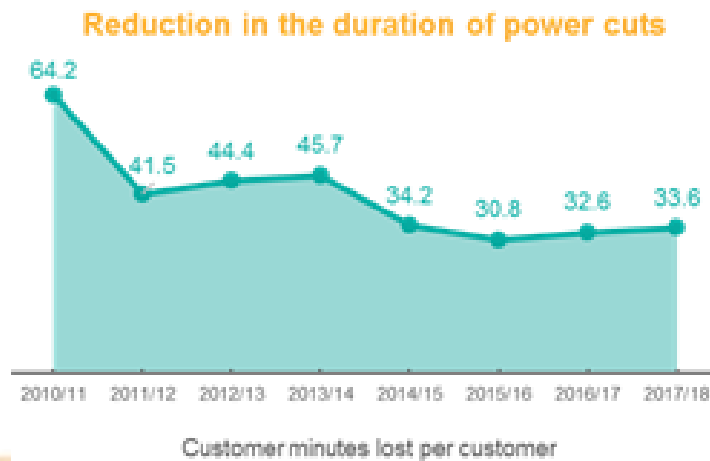
- Our power cut performance has improved by 42% since 2010/11



- 87% customer satisfaction score for 2017/18



- The length of the average power cut has nearly halved since 2010/11.



- UKPN continues to be the lowest cost Distribution Network Operator in the UK.



# How we can help if your residents experience a power cut



- **Call 105** free of charge from a corded landline phone or ring from a mobile phone.
- They can request updates on existing power cuts or make us aware of any immediate issues that you or your residents face.
- They can also tweet us **@ukpowernetworks**

# Residents can track live power cuts online as well



Menu ☰

We're sorry for any disruption this may be causing you.  
We estimate your power will be back on:  
**between 12:30 - 13:30**  
We may be able to get some customers on sooner.



48  
Customers affected



1  
Postcode affected



5  
Customer calls

Track my power cut →

Get text message updates →

Map showing power cut locations in Hastings. Legend: Power cut (lightning bolt icon), Power back on (checkmark icon).

### Track my power cut

Estimated power restoration time  
**between 17:00 - 18:00**

Power cut reported → Engineers on their way → **Engineers investigating and fixing** → Power restored



# Supporting your residents in a power cut

- Our Priority Service Register: free to register!
- There is no cost to the individual or to the council.
- There is a 24 hours a day telephone number.
- Tailored support if needed such as home visits, hot meals, advice and keeping your friends and relatives updated.
- In certain scenarios we may also offer a free hotel overnight and transport to the hotel.
- How to register? Go on our website, e-mail [psr@ukpowernetworks.co.uk](mailto:psr@ukpowernetworks.co.uk) or telephone 0800 169 9970.



# Delivering new growth and meeting demand on the electricity network

# Key drivers for investment

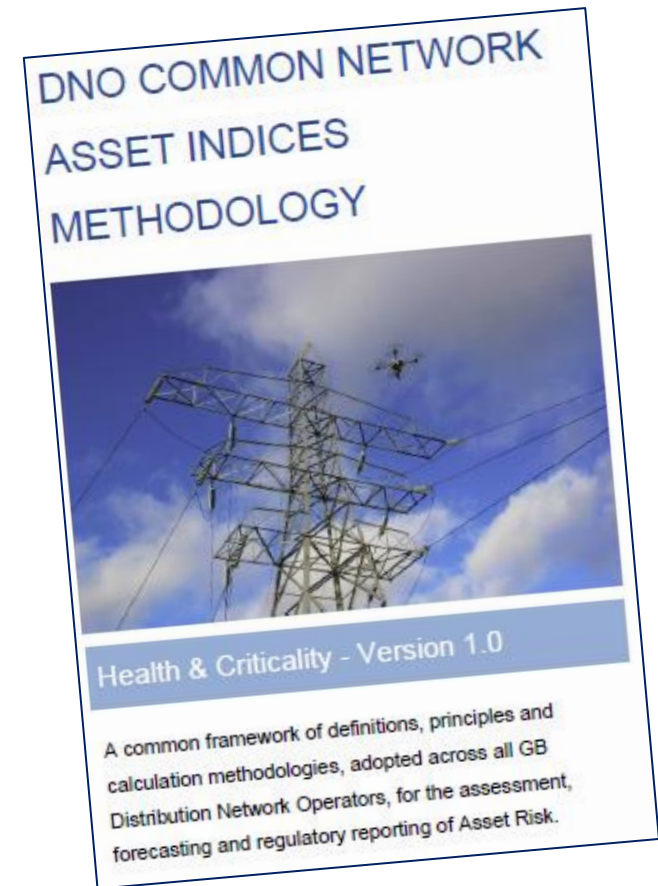
Our aim is to deliver the best network performance in the UK while maintaining the overall health of the network.

We make an ongoing assessment of:

- The condition of our assets (health indices)
- The utilisation of those assets (load indices)

The way in which we assess our assets is common to all DNOs and drives our investment programme. We are funded to maintain health and utilisation at stable levels through the eight year RIIO period.

Replacing ageing assets can also create spare capacity to support future development.



# How new developments are funded

The UK has a common methodology setting out the structure of connection charges

- A 'shallowish' model aimed at protecting connected customers funding reinforcement for commercial developments
- New connecting customers fund the cost of any new assets solely provided for their development and a proportionate share of any reinforcement
- Where reinforcement costs are shared the balance not funded by the customer will be 'socialised' across existing customers and recovered via the networks element of the electricity bill
- The common methodology only applies where a development meets certain criteria



# Investing 'ahead of need'

The current regulatory framework does not provide an adequate framework to enable DNOs to speculatively invest in anticipation of future development.

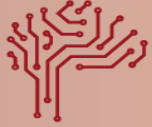
Ofgem requires investment to be efficient and if not deemed efficient they could disallow it. There are a number of risks:

- Development planning is by its nature an optimistic process
- DNOs are not funded to make speculative decision on where development may occur
- Development risk should be borne by those driving development and making the commensurate returns



# How we are facilitating the new decentralised, decarbonised and digitalised world of electricity

# Our Distribution System Operator Strategy



## 1. Facilitate cheaper and quicker connections using proven innovation

Continue rollout of Flexible DG that uses Active Network Management



## 2. Use customer flexibility as an alternative to network upgrades

Run market tenders for flexibility services such as Demand Side Response



## 3. Develop enhanced System Operator capabilities

Develop TSO – DSO Commercial Framework, DER Dispatch capability and readiness for smart meters



## 4. Collaborate with industry to enable GB wide benefits

Actively participate in industry forums to make this transition a reality



## 5. Prepare and facilitate the uptake of Electric Vehicles

Enable connections using smart solutions and ensure business readiness

# Role of a DSO



## Keeping the lights on

Secure and reliable supplies taking into account two way flows and greater intermittency.



## Providing great customer service

Facilitating cheaper and quicker connections using proven innovation.



## Lowering our costs

Optimising network investment decisions using alternative flexible solutions.



## Support whole system optimisation

Collaborating with the ETSO to deliver 'whole system' outcomes that are best for customers.

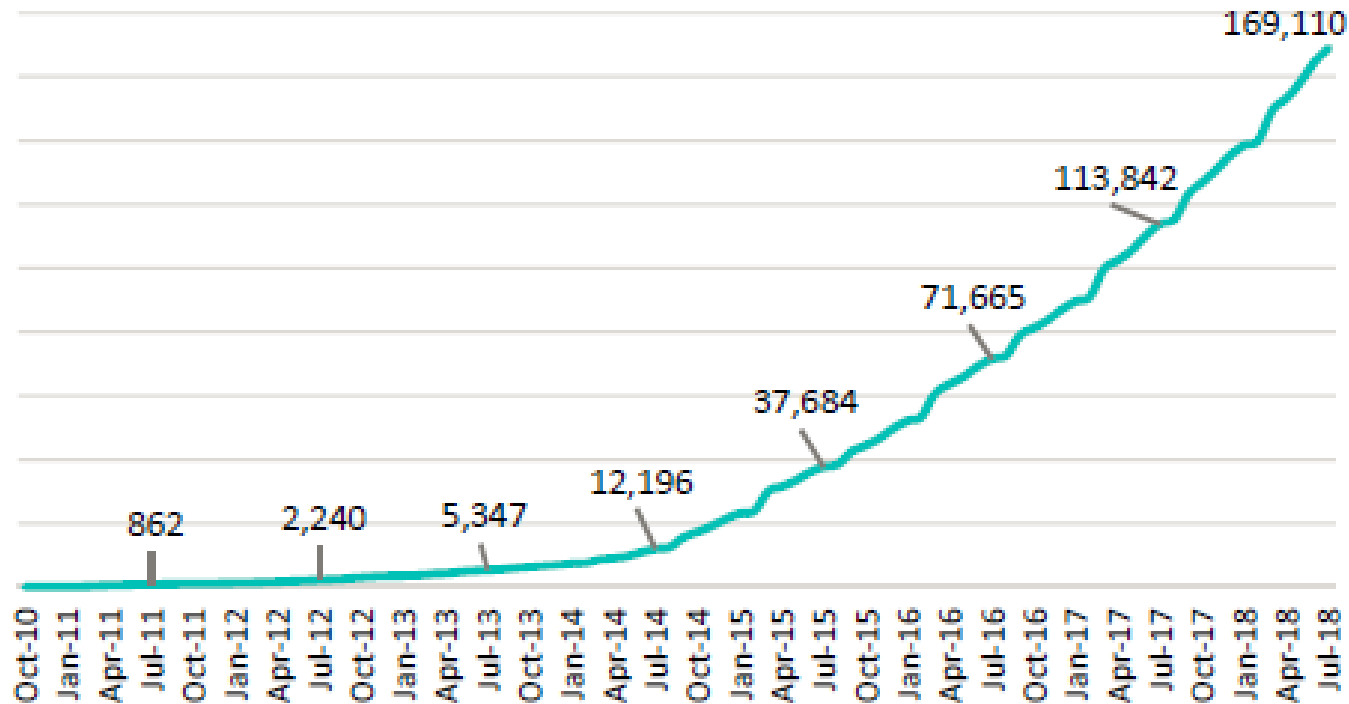


## Enabling markets

Enabling market solutions for DER to provide flexibility to the local and wider system.




# Facilitating the future of electric vehicles

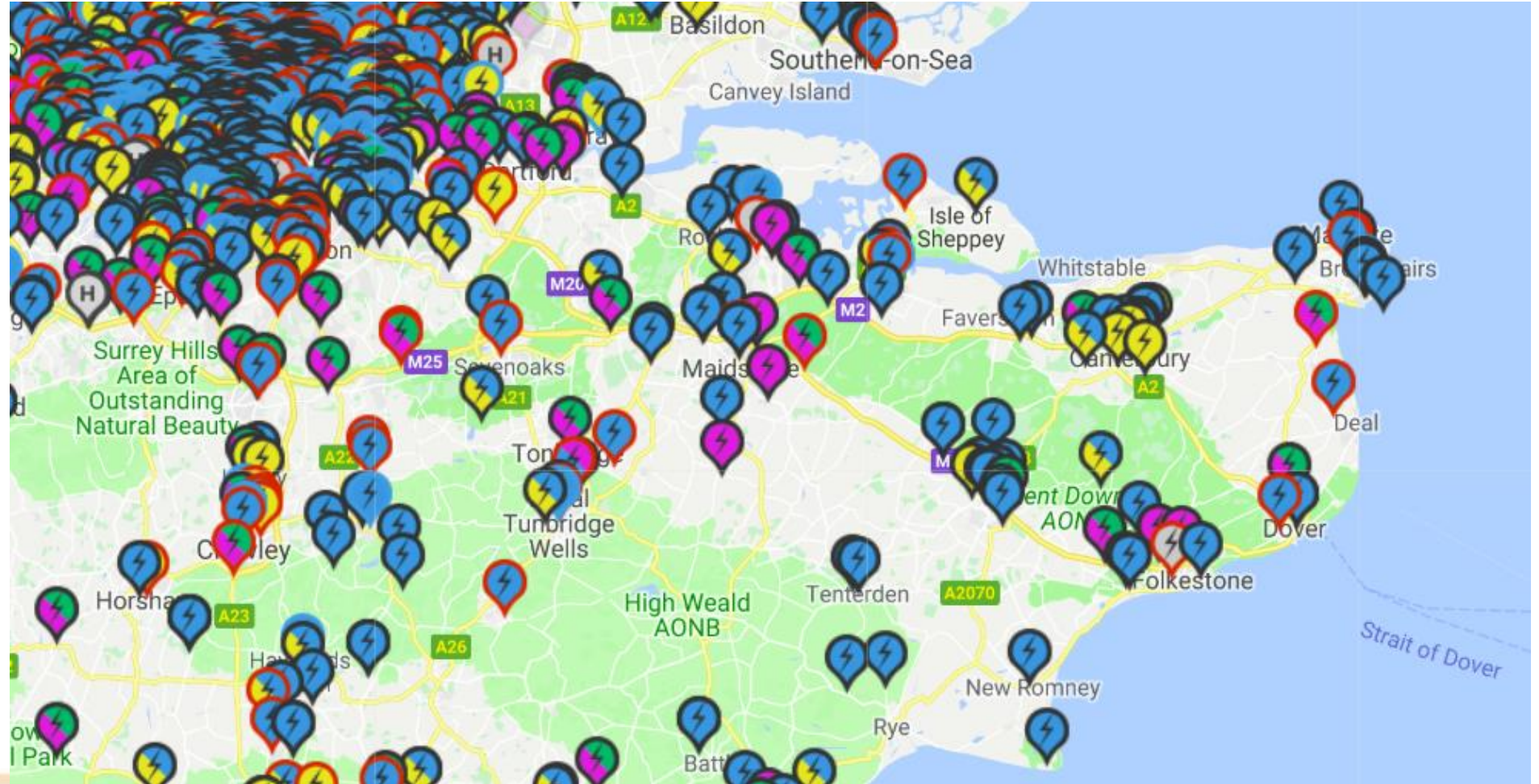


Source: Society of Motor Manufacturers and Traders, Driver and Vehicle Licensing Agency

- By 2040 there will be a ban in the sale of diesel and petrol cars.
- Pure electric vehicles reduce local air pollution. They have zero emissions – no direct CO<sub>2</sub> or NO<sub>2</sub>. They also reduce noise pollution due to quieter engines.
- Some electric vehicles run as little as 2.85p per mile, but have higher initial purchase costs.
- Around 50,000 electric vehicles connected to our network.

# Zap-Map.com – Electric Vehicle Charging Points

-  Slow (3kW)
-  Fast (7-22kW)
-  Rapid DC (50+kW)
-  Rapid AC (43kW)
-  Charging (on some/all devices)
-  Issues reported (on some/all devices)



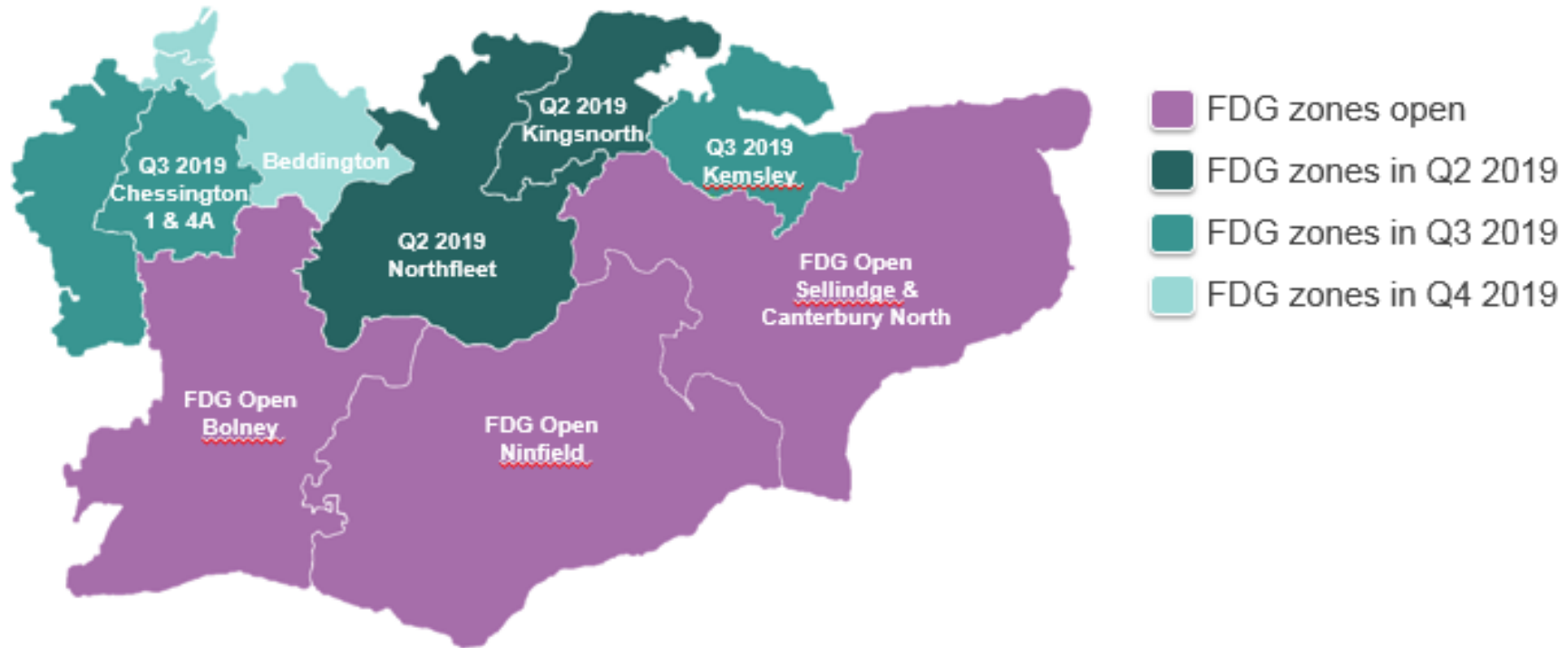
# Helping our customers with innovative and lower cost solutions for delivering electric vehicle charging infrastructure

- Waterloo bus garage – timed demand connections where most charging occurred in the non-peak hours overnight help avoid costly electricity network reinforcement costs for TfL.
- We run free ‘ask the expert’ surgeries to help our customers understand how they could potentially save money on delivering charge point infrastructure.
- We ran a trial with Kensington and Chelsea to retrofit streetlight lampposts to enable on street charging for terraced homes without off street parking or a garage.



# Enabling more generation connections

Our plan to roll-out flexible connections across the South East of England



There are parts of the UK Power Networks distribution network where the cost of connection is very likely to be higher than expected due to additional reinforcement works being required. A flexible connection will provide a connection within the existing network without the need for reinforcement.

# Community Energy

- Community energy refers to community projects or initiatives focused on one or more of the following strands:
  - Reducing energy use
  - Managing energy better
  - Generating energy
  - Purchasing energy
- Community energy organisations help to deliver a smarter, cleaner energy system whilst generating social benefits.
- UK Power Networks has recently become a Principal Supporter of Community Energy England and is the first electricity network operator to run a consultation in partnership with Community Energy England so that it can understand more about the regional needs and aspirations of community groups.



# Local authority energy projects

- Cambridgeshire County Council is planning its own renewable energy park and ride site. It will generate electricity, charge electric vehicles and selling electricity back to the electricity network.
- Forest Heath District Council purchased a 12.4MW solar farm in Lakenheath in 2016, which over a twelve month period, after operating and loan costs, generated over £370,000.
- Nottingham City Council set up the first not-for-profit energy company owned by a local authority, called Robin Hood Energy.



Cambridgeshire County Council's proposed park and ride site at St Ives

# How we can help Kent County Council with its energy and low emission strategy

1. We can help advise on the overall strategy to help ensure it is achievable, practical and sustainable. We are working with other County Councils to discuss their county energy plans.
2. If the County Council is intending to develop its own energy generation or community energy scheme, we can advise from an early stage to ensure we can help deliver it at the lowest cost using innovative solutions.
3. If the County Council wishes to connect its own electrical vehicle charging points, early engagement can potentially save a lot of money.

**Thank you for listening – any questions?**

