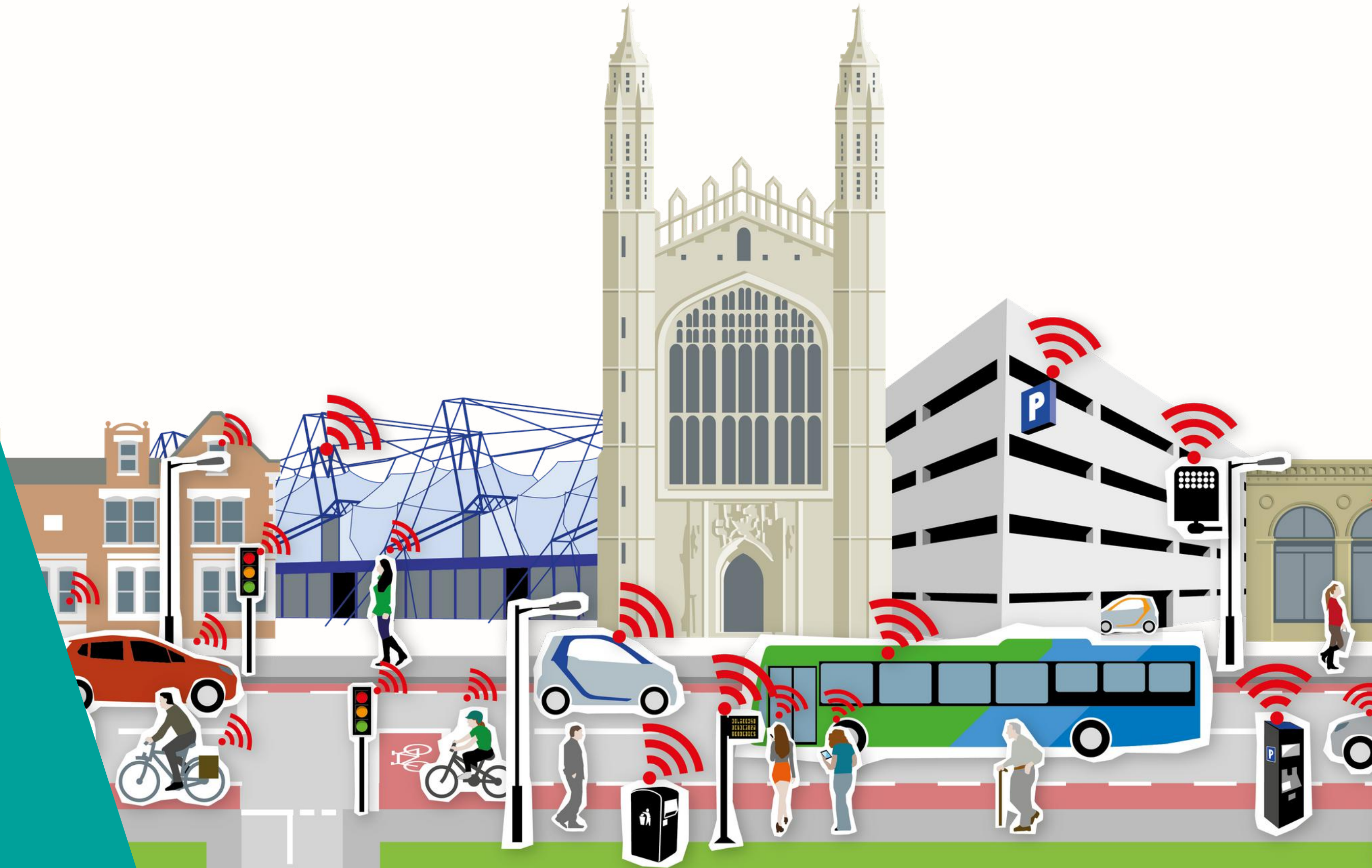


Smart Streets Strategy



INTRODUCTION - SMART STREETS

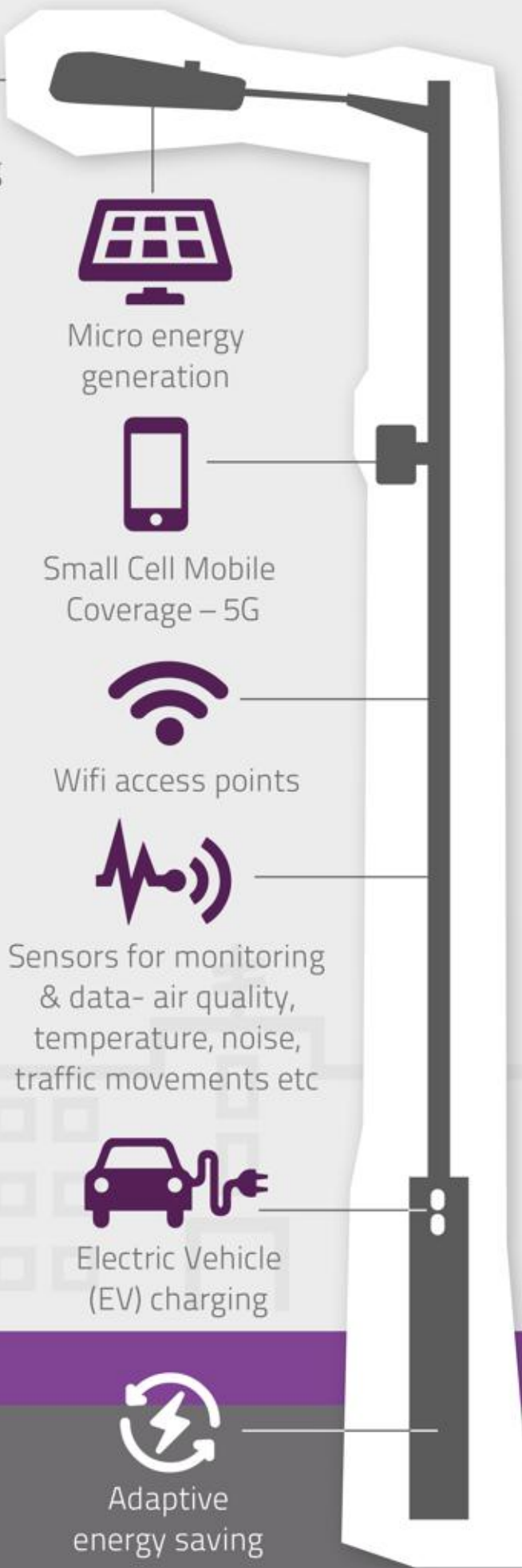
With the advent of new technology and digital communications there is an opportunity, and arguably an imperative, to rethink the approach for the future which will help our area meet sustainability, connectivity, climate change and adaptation challenges as well as improve quality of life for residents.

Street furniture is a ubiquitous part of the built environment. Infrastructure such as street lighting was first deployed in the UK around 150 years ago, and although the design, power and bulb technology has moved on considerably in that time, remarkably little else has changed and the “electric candles” of the 1870s are still very recognizable today.

There is an opportunity to design and develop the concept of a powered, multi-use “utility” pole which provides not just street lighting but can also host other functions such as digital connectivity infrastructure, EV charging facilities, and environmental sensing and monitoring equipment.

Other infrastructure such as bus shelters and real time passenger information boards, which have power, can also be used to mount sensors and small cells.





Current position 2020

Single purpose Street Lighting Columns

- Primary purpose = Street lighting
 - Some Xmas lights/hanging baskets
 - Limited opportunities to mount sensors, Wifi etc
- **53,500 street lights** in Cambridgeshire under CCC PFI contract with Connect Roads - delivery by Balfour Beatty – runs to 2035
 - **5,331** District and Parish maintained street lights
 - **24,000 street lights** maintained by Peterborough City Council

Transition 2021-2035

Opportunity to model new approach

- New road infrastructure and housing developments
 - New contract for multi-use utility poles
 - Model specifications - power, height, strength etc
 - Develop new funding and business models
 - Trial accessible, affordable services
- **37,000 new houses by 2035** – requiring approx. 9000 street lights
 - **New infrastructure** including roads, Park & Ride sites, Green Cycleways, bridges etc requiring many more street lights

Future Vision post 2035

Multi-use Utility Poles

- Hosting a range of functions including:
- Street lighting
 - Small cell mobile coverage – 5G
 - Wifi access points
 - Electric Vehicle (EV) charging
 - Sensors for monitoring & data
 - Adaptive energy saving
 - Micro energy generation

EMERGING REQUIREMENTS TO SUPPORT:

- Advances in digital infrastructure → Small cells for mobile coverage and Wifi access points
- Increasing reliance on mobile connectivity → Electric Vehicle Charging points
- Net zero climate change challenge → Environmental monitoring - air quality, temperature, noise, traffic etc
- Adaptation targets and strategy → Adaptive energy monitoring and small scale energy generation apparatus



FUTURE OPPORTUNITIES

Connectivity

The deployment of new connectivity infrastructure such as public access Wi-Fi and Small Cell Mobile Coverage - including 5G - will underpin the wider digital transformation that is taking place throughout society. 5G will support the broader technology eco-system with the convergence of AI, cloud, big data, IoT, and immersive technologies. 5G devices and handsets will allow faster downloads and new applications for consumers. Lamp posts are ideally placed to host 5G small cells because of their access to power and ubiquity. There are a number of deployment models for small cells.

Sensors

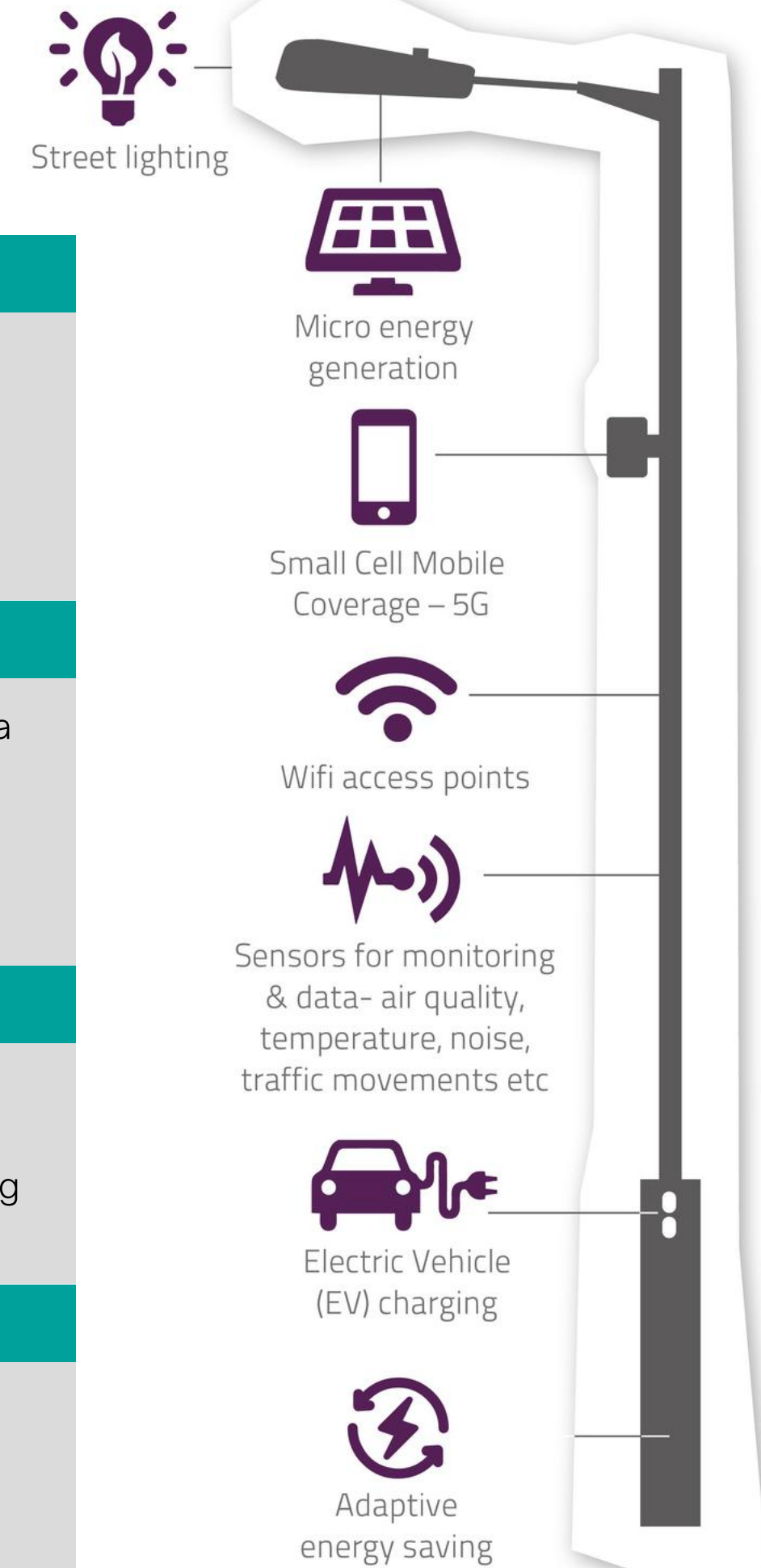
Sensors are important as they allow us to collect granular information about what is happening in a hyper local environment. The data that they produce is increasingly central to the work of the County Council and other public bodies and is helping to transform the delivery of services, better modelling, and the adaption of infrastructure to provide better services for residents. The wide range of information that can be collected by sensors includes: movement (classified counts, cycle, pedestrians), parking spaces, temperature, air quality, noise, and data from sensors surrounding the pole, such as infrastructure data, bin levels etc.

Energy

The initial PFI saved 46% of the original energy used on the lighting network, and further savings can be made by moving toward LED lights. In the medium to long term, solar energy can begin to be integrated which supports the County's ambitions to move to zero carbon. A number of local authorities are beginning to use movement data (vehicle, cycling, pedestrian) to change the level of lighting in an area which can generate further energy savings.

Vehicle Charging

The Government has mandated that all new cars sold after 2030 will be electric. To support our climate change ambitions we will need to start to decarbonise all forms of transport and build a network of electric vehicle charging points. Lighting columns can be used to mount charging infrastructure, which would be particularly advantageous in residential areas where it may not be possible to build out separate charging units.

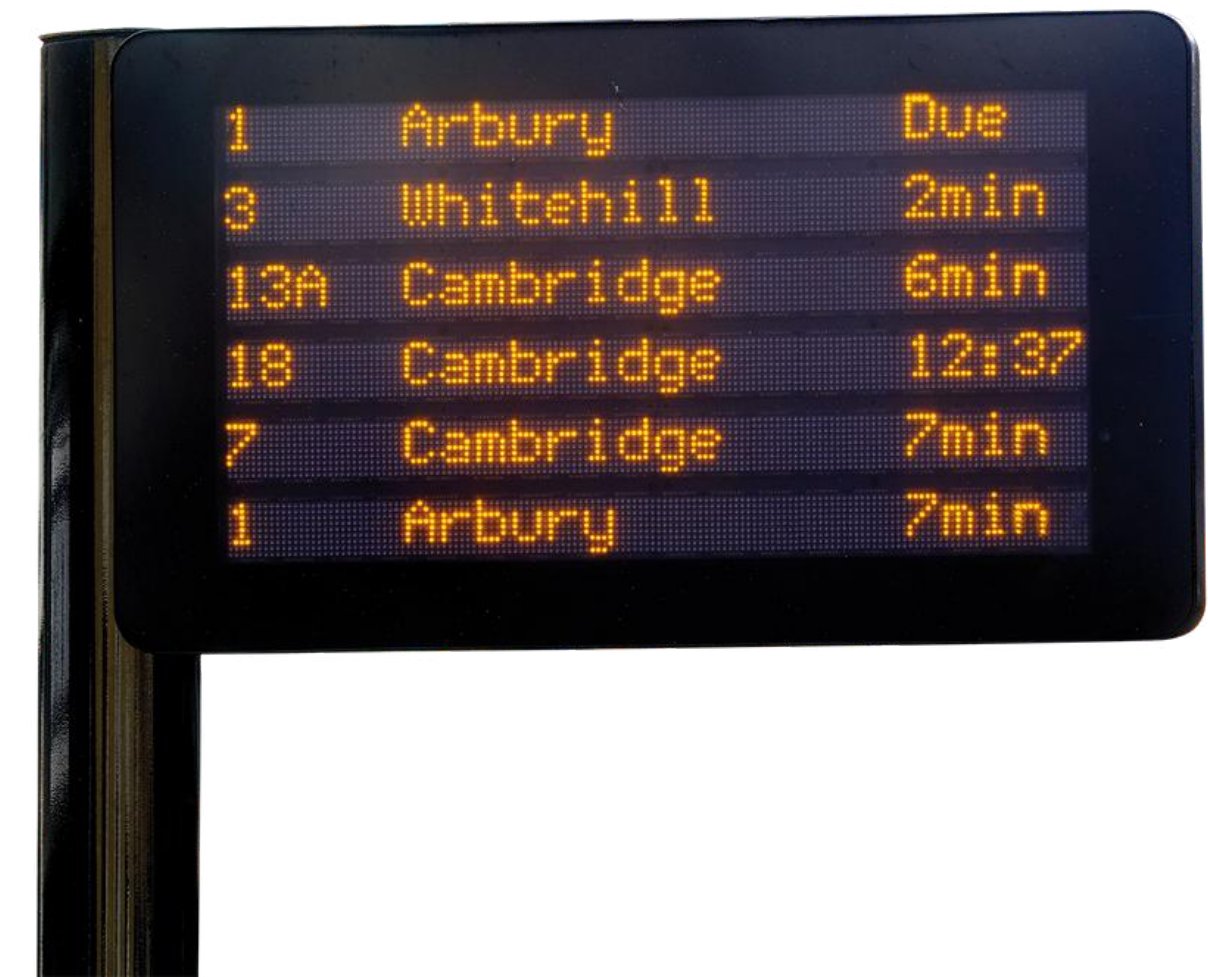


STREET FURNITURE

As well as lighting columns there are a number of items of street furniture that are relatively ubiquitous in the street scene and may have power, including:

Bus Shelters – 5G infrastructure and sensors are already being built into bus shelters in New York. Exploratory work to map suitable bus shelters will be undertaken and engagement with partners to understand the opportunity.

Real Time Bus Displays - Real Time Passenger information displays owned by the County Council and operated by VIX technologies have been rolled out across Cambridgeshire. To understand the opportunity, we are working with VIX initially to embed an air quality sensor as well as exploring how small cells may be attached to them.



HELPING TO DELIVER KEY STRATEGIES AND POLICIES

- **Local Transport Plan (CPCA)**
 - Policy theme 4.2: Maintaining and managing the transport network
 - Policy theme 4.1: Building a resilient and adaptive transport network to climate change
 - Policy theme 8.1: Improving air quality
 - Policy theme 10.1: Reducing the carbon emissions from travel
- **Electric Vehicle and Infrastructure Strategy (City Council 2019)**
- **CPIER Report (2018)**
 - Subsidiary Recommendation vii): The government should make Cambridgeshire and Peterborough a vanguard authority for new 5G infrastructure.
- **Delivering a Digital Connectivity Strategy for Cambridgeshire and Peterborough 2018 -2022**
- **Climate Change and Environment Strategy 2020-25 (CCC)**

NEXT STEPS

Existing Lamp posts

Work with other areas to establish variations to existing contracts which allows adaption of the current lamp posts.

Work with other areas and BSI on establishing standards to support a specification for future lamp posts.

RTPI Demonstrator

Work with VIX Technologies to trial the integration of Air Quality and temperature sensors into the Real Time Passenger Information flags.

Explore the potential for communications equipment to be integrated.

Smart Lamp post Demonstrator

Deploy a number of smart lamp posts on the Babraham Park & Ride site to demonstrate the range of functionality that can be integrated into them.

To include:

- Sensors
- Electric Vehicle Charging
- Communications infrastructure
- Solar energy

If you have any questions, please
contact us on:

Smart Streets Strategy

