


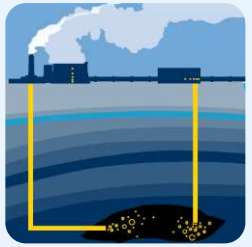



Alternative Fuel Strategy and Action Plan for East Anglia

Cambridgeshire and Peterborough Combined Authority

New Anglia Local Enterprise Partnership

New Anglia Transport Board meeting

1st December 2021

elementenergy
an ERM Group company

Katherine Orchard

The Alternative Fuels Strategy and Action Plan for East Anglia has been commissioned to enable the transition to net zero emissions while supporting recovery objectives

Project context and key objectives

The Alternative Fuels Strategy (AFS) for **East Anglia** aims to:

- **Support clean growth** by providing the necessary infrastructure for businesses, residents and commuters
- **Support the decarbonisation aims of Local Authorities** that have declared climate emergencies
- **Accelerate the uptake of EVs and hydrogen vehicles in the region** which has historically been behind the national average
- **Improve air quality** through uptake of zero emissions vehicles
- **Provide a combined vision** across the region to result in greater impact
- **Support the creation of commercial opportunities** and develop an innovative supply chain

Today's objectives

- **Introduce the project** in terms of approach, outputs, and timeline
- Give a **brief overview of the current situation** for alternative fuelled vehicles in the region
- **Gather your views** on how the AFS can benefit from and foster innovation in Norfolk and Suffolk (and wider East Anglia area)

Core project team:

Katherine Orchard, Senior Consultant – Experienced in low carbon freight transport and EV charging strategy. Leads Element Energy cross-sectoral net zero analysis.
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Ed Wilson, Consultant – Experienced in zero emission vehicle supply chain considerations as well as wider alternative fuels.
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Element Energy, a consultancy focused on the low carbon energy sector – our vision is to see net zero carbon achieved as rapidly as needed to avoid damage to human and environmental well-being

Element Energy covers all major low carbon energy sectors:

CCUS & industrial decarbonisation

Energy Networks

Smart Energy Systems

Hydrogen

Low Carbon Transport

Built Environment

Selected clients:

Public sector

Department for Business, Energy & Industrial Strategy
Climate Change Committee
European Commission
Greater London Authority
Department for Transport
Royal borough of Greenwich
Transport for London
Transport Scotland
Sheffield City Council
Birmingham City Council
seai Sustainable Energy Authority of Ireland
Calderdale Council
West of England Combined Authority
West Yorkshire Combined Authority

Public-Private Partnerships

energy technologies institute
UK H2 Mobility
Zemo Partnership
FCH Fuel Cells and Hydrogen Joint Undertaking

Private Sector

Shell
OGCI Oil and Gas Climate Initiative
equinor
Northern Gas Networks
bp
SGN
Toyota
Nissan
Northern Powergrid
UK Power Networks
Hyundai
Cadent
EDF Energy
Scottish and Southern Energy
electricity north west
British Gas
BOC
Rolls-Royce
ESB Energy for generations
Nissan
Daimler
nationalgrid
zipcar

NGOs

iea International Energy Agency
European Climate Foundation
UNDP
World Bank Group

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Project overview

Current AFV situation in East Anglia

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The project will be delivered between September and March, divided across two core Phases

The key objectives of the Alternative Fuels Strategy and Accompanying action plan are to provide:

- An understanding of the current policy and funding landscape for alternative fuels at local and national level
- An evidence base of likely alternative fuel uptake and best practice policy for supporting this uptake
- A costed and deliverable programme of measures to address barriers to uptake, which reflects the specific challenges and opportunities of the region

Key outputs

- **Phase 1:** Technical report detailing evidence base
- **Phase 2:**
  - Public-facing strategy document
  - Costed and deliverable action plan

Phase 1 – Alternative Fuels Strategy

WP 1: Review of current situation

1. Policy review
2. Funding opportunities review

WP 2: Alternative Fuels Uptake

1. Existing vehicles and infrastructure
2. Scenarios for projected uptake
3. Residential charging demand analysis

WP 3: Opportunities and actions

1. Alternative fuels opportunities by mode
2. Opportunities for innovation
3. Review of best practice
4. Long-list of recommended actions

WP 4: Stakeholder engagement

Targeted engagement and workshops to:

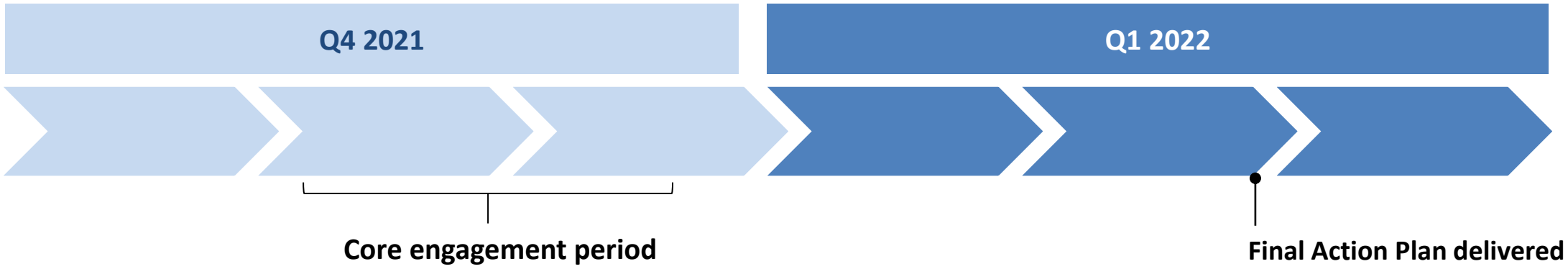
- Gather data, align priorities and identify local opportunities for innovation and investment
- Gain feedback and buy-in into regional actions

Phase 2 – Action Plan

WP 5: Development of the Action Plan

1. Refinement and prioritisation of actions
2. Development of Strategy Document

Input from local stakeholders will be critical to ensure the strategy fully reflects the needs and opportunities of the local area



Targeted stakeholders:

Private sector:

- Cambridge Norwich Tech Corridor
- Greater South East Hub
- Fleet operators: Buses, Car clubs, Large commercial fleets
- Additional interested parties
- Network operators

Public sector

- Local Authorities (workshops – Cambridgeshire & Peterborough, Norfolk & Suffolk)
- Sub-national transport bodies

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The strategy will consider a range of low and zero emissions technologies and supportive infrastructure

Powertrain options within scope include:

- **Electric vehicles (EVs)** – including plug-in hybrid electric vehicles (PHEVs) and battery electric vehicles (BEVs)

- **Hydrogen fuel cell electric vehicles** (FCEVs)

- **(bio)methane** – supplied as Compressed Natural Gas (CNG) or Liquified Natural Gas (LNG) – bridging fuel for Heavy Goods Vehicles

Vehicle scope

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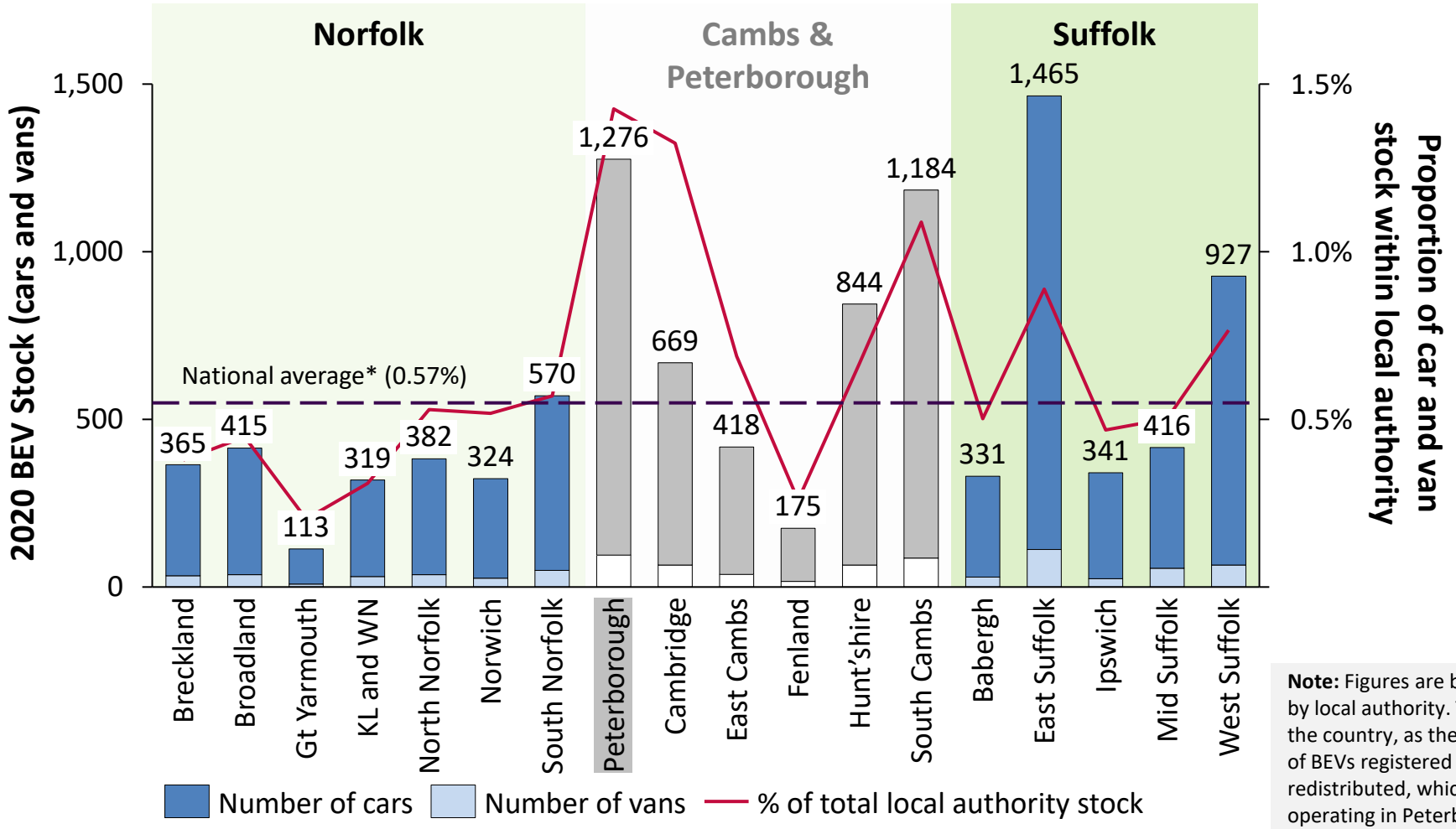
Vehicle scope

Light duty vehicles: Uptake of electric cars in Norfolk and Suffolk is largely below average for the UK

Electric cars and vans in East Anglia split by local authority and as a proportion of total local car and van stock



Summary

i There are an estimated 8,600 electric cars and 800 electric vans in East Anglia as of 2020

ii 9 of the 12 local authorities are below the national average in terms of EV uptake

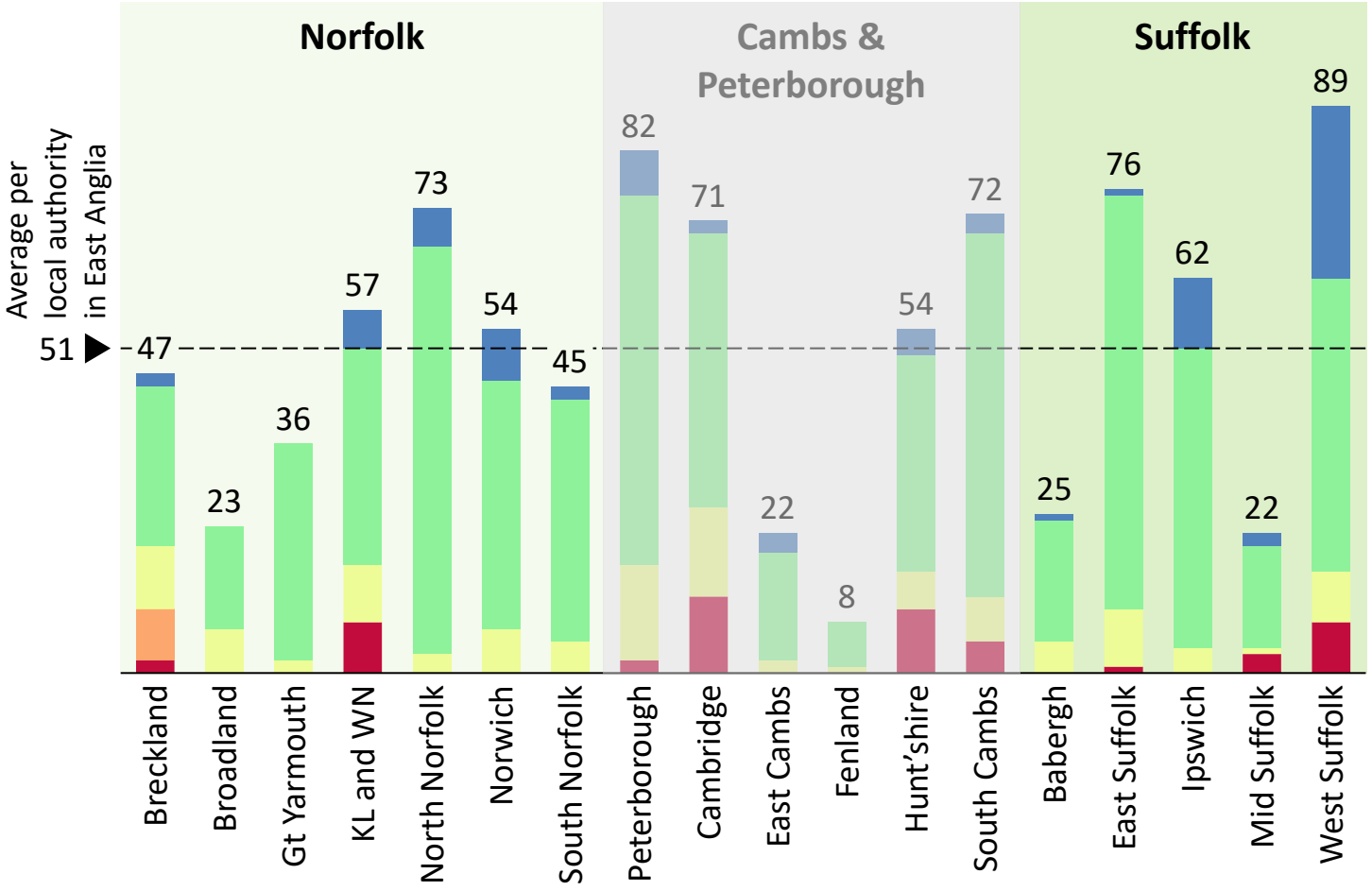
iii Generally the higher the absolute number of EVs in the local authority, the higher the proportion of the total stock this represents

Note: Figures are based on EE cleaned version of the DfT's statistics on vehicle stock by local authority. The cleaning process involves redistributing company cars across the country, as they normally do not operate in the region of their registration. 97% of BEVs registered in Peterborough are company cars and thus have been redistributed, which represents a significant anomaly. The precise number of BEVs operating in Peterborough is thus hard to determine.

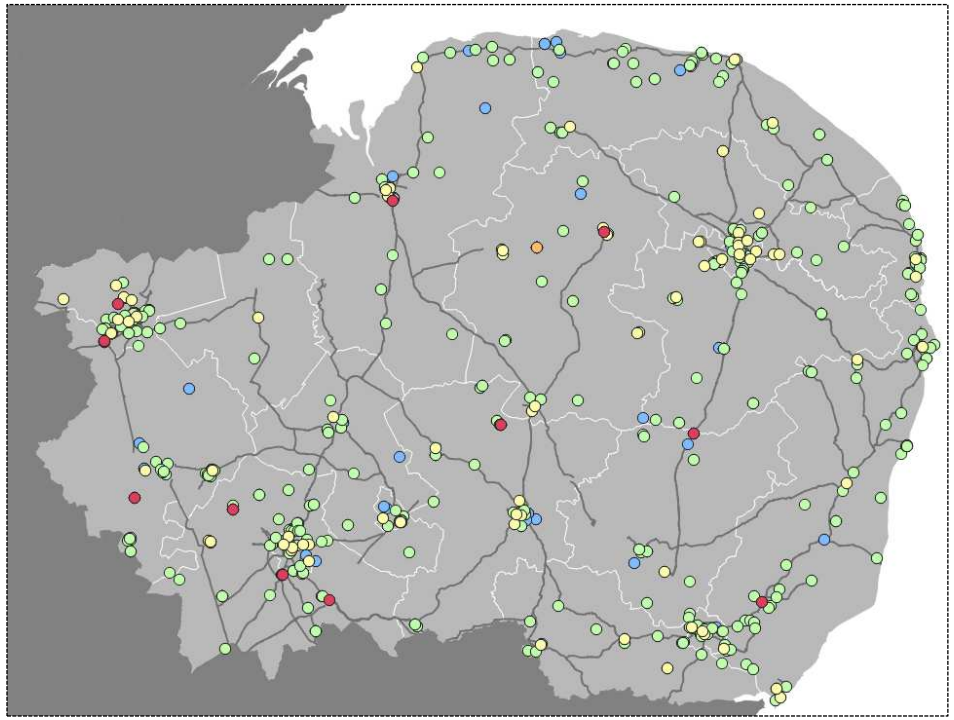
*Shown as weighted average of 0.57% across UK (BEVs as a percentage of total stock). Unweighted average is 0.63% across the 371 local authorities

EV charging: There is limited EV charging infrastructure in East Anglia outside of the major towns and 80% of chargers are 25 kW or less

Electric vehicle chargers* in East Anglia



EV charging sites in East Anglia



Max rate at charger**

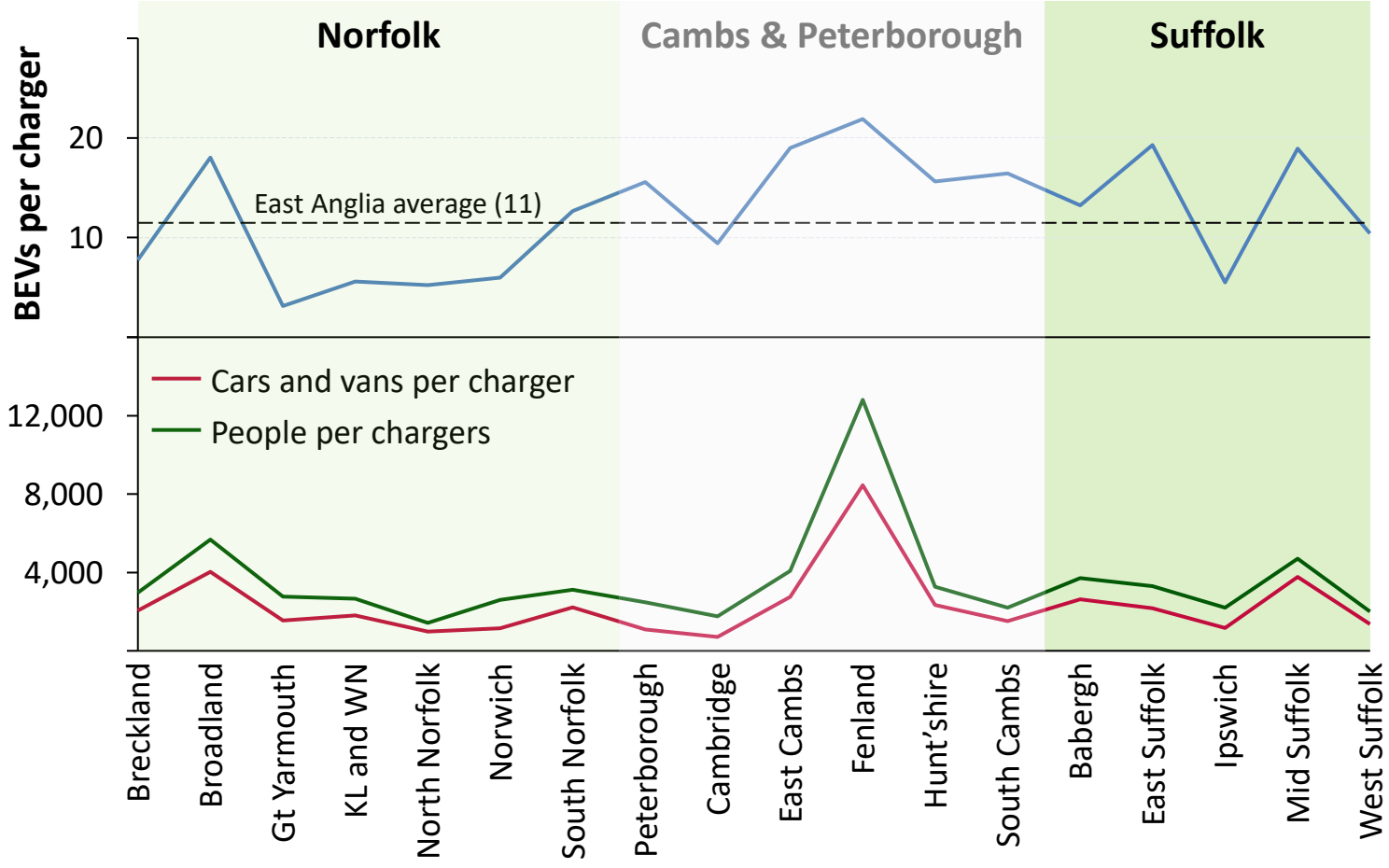
- 3-5 kW
- 7-25 kW
- 43-50 kW
- 51-100 kW
- 101-350 kW

*An EV charger is the standalone charging device, often a tall box with multiple connectors coming out of it. For more details, see appendix

**Where the charger has multiple connectors, the rate shown is that of the fastest connector

EV charging: There are currently around 11 BEVs per public charger in East Anglia, however if the entire fleet is to become electric significantly more chargers will be needed

Battery electric cars and vans, and all cars and vans, per charger by local authority (2020)



Across East Anglia

- There is an average 11 BEVs per charger in East Anglia, however for each charger there are **1,700 cars and vans of all types**
- There is a moderate correlation (0.55) between EV uptake and charging provision in East Anglia
- Charger provision will clearly need to increase as BEV uptake accelerates

Local variation

- Charging infrastructure is most adequate for the existing BEV stock in Norfolk and Ipswich, and least adequate across Cambridgeshire, Peterborough and the rest of Suffolk
- Broadland and Mid Suffolk currently pose the biggest challenges for charging infrastructure provision, with around 4,000 cars and vans per existing charger

*Shown as unweighted average of 0.63% across 371 local authorities. Weighted average of 0.57%

Heavy duty vehicles: There is limited uptake of alternative fuel vehicles among buses and heavy goods vehicles but upcoming opportunities will improve this

Buses

- There are 5,200 buses registered in East Anglia, with 5 major companies operating over 100 vehicles.
- The proportion of low emissions vehicles is low across the region:
  - Currently 2 BEV buses in Cambridge
  - Previously 13 biomethane buses in Norwich but no longer in fleet
- However, this will increase through successful applications to Zero Emission Bus Regional Area Scheme (ZEBRA)

ZEBRA scheme plans:

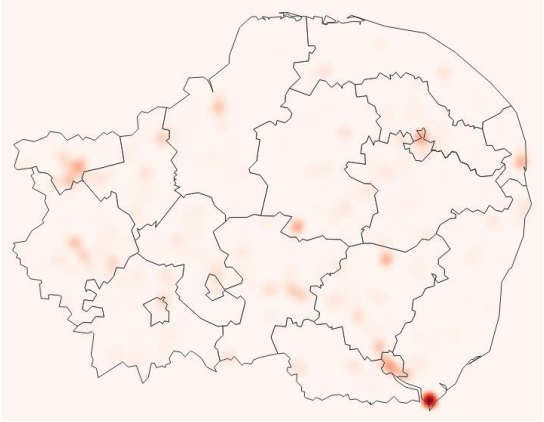
- **Norfolk (standard track):** Aiming to replace 15 single deck buses with electric buses, and install supporting infrastructure. Supported by First, buses would operate on routes through Norwich City Centre.

Heavy Goods Vehicles (HGVs)

- There are 24,400 HGVs registered in East Anglia, with over 400 vehicles operated by Councils and close to a quarter operated by fleets with more than 100 vehicles
- Only 45 are known to run on natural gas (liquified natural gas, see next slide)
- Close to 6% of registered vehicles are in fleets with a known interest in gas trucks, and 4% are in fleets involved in an Innovate UK-funded freight consortium focused on deployment of hydrogen vehicles

Selected fleets with local depots and interest in AFVs

Heat map of HGVs in East Anglia



Sources: DfT Vehicle licencing statistics, Element Energy market research

Green gas infrastructure: There are very limited existing refuelling options for (bio)methane in the region and no current hydrogen refuelling stations

Heat map of HGVs and current GB gas stations

Hydrogen refuelling stations (HRS) in the UK today

Biomethane

- There are currently two semi-private gas stations in East Anglia, both in Cambridgeshire and both dispensing LNG
- However, CNG Fuels, the largest operator of public-access (bioCNG) stations, has ambitious expansion plans over the next 5 years and East Anglia could offer an opportunity for targeted sites

Hydrogen

- Most hydrogen refuelling stations are small and target either light duty vehicles or buses
- The lack of rollout of hydrogen vehicles to date in East Anglia means that no stations have been developed in the area
- However, as hydrogen rolls out more widely, innovation will be needed to enable a step change in the number and size of stations
- Local hydrogen production projects may offer opportunities to drive uptake in the area

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Key topics for discussion

Driving change in East Anglia

- Are there **other ongoing projects** or initiatives that we should be aware of?
- Are there any **local strengths** where you see opportunities to link to/drive transport decarbonisation? Either through: innovation, skills, wider strategies, or other
- Are there **areas that you see as particularly challenging** for decarbonising transport in East Anglia? E.g. skills gaps, infrastructure, planning restrictions, level of local influence, particular needs of major local business sectors, other
- Are there **areas where East Anglia can or should look to lead** ahead of action at national level?

Please do contact us with further comments

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